EXPERIENCE RATING IN MEDICAL MALPRACTICE INSURANCE

Charles E. Phelps

June 1978

P-5877-1

The Rand Paper Series

Papers are issued by The Rand Corporation as a service to its professional Staff. Their purpose is to facilitate the exchange of ideas among those who share the author's research interests; Papers are not reports prepared in fulfillment of Rand's contracts or grants. Views expressed in a Paper are the author's own, and are not necessarily shared by Rand or its research sponsors.

The Rand Corporation
Santa Monica, California 90406

EXPERIENCE RATING IN MEDICAL MALPRACTICE INSURANCE

Charles E. Phelps

The question has frequently been raised why there is not experience rating within specialty groups for medical malpractice insurance. Other professional liability insurance often includes experience rating, and many other types of insurance (drivers insurance, for example) contain such a pricing feature. Physicians seem reluctant to consider the possibility. They argue that the tort system is essentially capricious, and that there is no information contained in tort history of a particular physician to indicate whether or not he is a "bad" doctor. On the other hand, proponents of experience rating argue that it could serve as a powerful quality controlling device, by forcing bad doctors out of the market.

A recent article about a prominent medical malpractice insurance brokerage firm (Johnson and Higgins) recently offered some data which they interpreted as showing no relationship between tort history and quality.* I would like to reinterpret these data here. The basic data provided are as follows: For a 4-year period, some 8,000 physicians were covered by an insurance plan in Los Angeles carried through Johnson and Higgins. Against those doctors were offered 2,300 suits, or 575 per year. It was also indicated that there were 46 physicians who had been sued 4 or more times during the 4 year period. These 46 physicians (0.6% of the 8000) accounted for 10 percent of all suits, and 30 percent of all claims payments against the insurance plan. The *Medical Economics* article argued

---

*_Medical Economics_, "Six Cherished Malpractice Myths," March 17, 1975.

that there was nothing in these doctors' histories to indicate that they were "bad doctors." The average number of suits against these 46 doctors was 4.95, or about 1-1/4 per year.

Are these 46 doctors really representative of the remainder of the population? Suppose that all 8000 doctors had identical probabilities of being sued. The rate of suits against the doctors was 575/8000 per year, or .0719. For independent drawings, the probability of seeing 4 successive years with suits is $(.0719)^4 = .2669 \times 10^{-4}$. For 8000 of such doctors, the expected number to be observed with 4 consecutive years of suits is .21. This is to be contrasted against the actual value of 46!

We know, however, that there is differential experience by specialty. There are about 8 risk classes, and the range of premiums charged across these classes is from 5 to 8, depending upon the insurer. By way of illustration, I will suppose that there are only two classes, and that the relative risk is eightfold between them.* For illustration, suppose that these high-risk doctors comprise 2000 of the 8000 doctors. Maintain further that the within-group risk is constant, i.e. that there are no identifiable bad doctors in either group. What is the expected number of persons with 4 consecutive years of suits? Let $6000(x) + 2000 \cdot (8x) = 575$. Then $x = .0261$, $8x = .20909...$, and the expected number of persons with 4 consecutive suits is $2000\ (.20909)^4 + 6000\ (.0261)^4 = 3.82 + .003 \approx 4$. Further, all of this group of 4 should be high-risk specialists. Note that 4 is still

*The argument can be made in exact parallel with more classes and more premium gradations.

considerably lower than 46. Even the widest type of experience rating underpredicts "suit-prone" doctors by an order of magnitude.

The result is partly sensitive to the number of doctors assumed to be in the high-risk class. If there are only 1000 of them, then each of those doctors has a 31 percent chance of being sued in a given year (again, assuming an eight-fold risk increase across the class). In this case, the expected number of persons with 4 consecutive suits is 8.8. Similarly, if there are 500 high-risk doctors, the expected number with 4+ suits is 12.8. If there are 3000, the expected number is only 1.9. These are critical data.

The results are also sensitive to the relative risk between classes. If the true relative risk is only five, rather than eight, then with 2000 high risk doctors, the expected number observed with 4+ suits is 2.1. This is also a critical parameter.

If there are really a class of doctors who are bad, how much higher must their probability of suits be to observe that 46 of them have 4 consecutive years of suits? Presume that there are 2000 high-risk doctors (eight-fold risk), and that all of the "famous 46" are in this group. The 2000 doctors have p=.2091 of a suit in a year, or 418 suits per year. The 46 doctors have an average of 1-1/4 suits per year, or 58 suits. Thus 1954 doctors have 360 suits, and their true rate of suits is .184 per year. The bad doctors have a seven-fold increase even in the high-risk specialty group.

These arguments need to be made more rigorous and refined with better data. One clearly needs to know the numbers of doctors within risk classes,

relative suit rates by class, etc. The model should be worked out in terms of a poisson probability model allowing for continuous exposure, rather than a simple once-a-year binary model used above. Nevertheless, the data appear at this level of analysis to demonstrate dramatically that the doctors with multiple suits against them are indeed drawn from a very different distribution than their colleagues.

The key question arises here as to the connection, if any, between the incidence of medical malpractice suits and awards (on the one hand) and the actual incidence of medical malpractice events (on the other). It is theoretically possible that some doctors are sued much more frequently than average because of characteristics *other than* their propensity to commit medical negligence, e.g., poor bedside manner, or harsh bill collecting methods. However, for the doctors in the present data base, the striking fact is that the 46 doctors accounting for *ten* percent of suits against the total group also accounted for *thirty* percent of the dollar claims payments. In other words, the average payment per claim filed against these 46 doctors was over three times the average payment per claim filed against all remaining doctors in the pool.

If there were anything to be inferred from the belief that some doctors had a higher propensity to be sued on non-negligence criteria, it would be that those doctors would have a *lower* than average award per claims filed against them. In "capricious" suits the evidence about negligence would be weaker (or non-existent), and the insurance companies should be able to force

settlements for less than the average damage award, if there is any settlement. This should hold true even if there are other factors affecting some malpractice suits, for example if some patients sue (and win) when an unfortunate outcome has occurred even without medical negligence.

If these 46 doctors were sued more often than others, but with the same (or larger) fraction of suits being "capricious," the average claim payment per suit filed would be no larger than the average award per claim filed against the remaining physicians. The only way (aside from negligence) that the claim payments per suit filed could be higher than for other doctors would be under the highly implausible circumstance that courts awarded more (or larger) damages against these doctors in a fashion somehow correlated with their non-negligent characteristics (e.g. poor bedside manner). Such an argument could hardly account for the triple level of payments per case filed against this group of 46 doctors. The inference to be drawn is that more negligence was committed by them than by their remaining colleagues.

If this is true, why do doctors continue to ignore experience rating? One could argue that the within-class community rating provides the doctors with insurance on their insurability--it guarantees that they will be allowed to continue practice even if they become fallen angels. How much do they pay for this insurance on insurability? If the last set of calculations is roughly correct,

we can make a quick estimate. Let there be 50 (2.5%) doctors each with a 7-fold increased probability of suit, and 1950 doctors (97.5%) with the "normal" probability for this risk class. Let the overall premium for the normal doctors be $20,000. (This implies an average payout per suit lost of about $100,000.) The community-rated premium for the risk class is .975 x $20,000 + .025 x ($20,000 x 7) = $23,000. Thus each of the good doctors contributed $3000 a year to the bad doctors.* The good doctors pay $3000 a year to guarantee their insurability, by this hypothesis. Is this plausible? This depends on the risk aversion of the doctors, the ability of the doctors to pass through additional costs, etc.

The innate risk aversion of the physicians may still make it logical for them to opt for community rating. Suppose a criterion is established that 4+ suits in four years leads to a seven-fold increase in insurance premium. Indeed, this criteria would probably catch all of the bad doctors. But it would also catch, with some small probability, some normal doctors. In the 2000 high-risk specialty case, one would expect some 4 of those doctors to have a 4+ suit experience in four years, and they would incorrectly be

---

*The above calculations are based on frequency of claims alone. In fact, the average payout per claim was three times as high for the 46 doctors as for the remaining group. Thus the actual premium inequities arising from the community rating may be even higher than indicated above.

assigned the higher premium. The type-two error problem may be a dominant factor in the doctors' demand for "insurance of his insurability." A formal statement of the problem would of necessity include multi-period implications. If the risk of being misclassified is too high to bear, the doctors may be willing to insure against that risk by opting for community rated insurance.