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THE STANDARD OF REASONABLE PROBABILITY IN FORENSIC ECONOMICS: A COMMENT

by

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In personal injury litigation economists are asked to provide estimates of damages suffered by a plaintiff with reasonable probability. Economists expressing such opinions seldom qualify them with disclaimers of scientific precision. This observation came home while reading a NAFE-L e-mail query concerning a projection of lost earnings capacity for an injured college student. The issue raised had to do with the appropriateness of assuming that a child would have completed college given the fact that only 20 percent of students in that population completed college. Is the solution to the dilemma to give a range of earnings loss (high school to college), or should the answer be a weighted result [(high school earnings x probability of high school completion) + (college earnings x probability of college completion)]?

The broader question is, do we have a clear idea of what we are doing when we make such forecasts? The issues raised by Daubert (and a number of state courts) is: if the expert is offering an opinion, the expert should be able to state the statistical reliability of the projection. Does the need for such precision relax if we are not considered to be a science? Two types of expert testimony are solicited from experts; scientific and professional. Scientific evidence carries with it a requirement to state the statistical reliability of the scientific projection or opinion (e.q., The probability of this outcome occurring is 95 percent). Weather forecasters would be happy with a 40 percent success rate, but no one really believes them anyway. Medical testimony falls into both camps. A physician who states that a patient has a 75 percent probability of not living beyond five years may be making that statement on the basis of the results of a longitudinal study of such patients by a prominent researcher, or on the basis of their professional experience. A judge may allow such testimony on both grounds.

The standard of reasonable probability has a variety of possible meanings. In a discrimination case we would want to see an inference, whether for or against discrimination, supported by a 95 percent probability statistic. Conversely, in our PI earnings loss projections are we shooting for "more likely than not", "more likely than any other individual outcome" or "a 95 percent probability of accuracy"? Do we even know? The problem is that the courts increasingly want to know. Failure to respond persuasively to the issue of statistical reliability will increasingly result in a dismissal of expert testimony - rightly so!

Stated simply: Assume that you have a 20 year old college sophomore who has suffered an accident resulting in paraplegia. You are asked to tell the jury what present value of earnings and services have been lost, and future medical costs that will likely be incurred. You venture an answer of $2,345,768 based on census earnings and an LPE methodology. If you had 1,000 similar students with similar injuries, how many, do you think would actually suffer losses of $2,345,768 over their lifetimes? Would it be 51 percent, the reasonable probability standard? Would 66 percent of true costs fall within 1 standard deviation of your projection? Would it matter if the person was a male, female, black, white, high income, low income, from the south, rural, urban, smoked, did not smoke? How would you factor each of these data elements into your projection and how

would their inclusion affect the probable accuracy of your projections?

Now, we can just say, we are not a science, or we are just an imprecise science. We can say we are a profession and the opinions we express are reasoned opinions that rely upon our experience rather than science. CPA's and psychologists seem to do well here, although psychologists increasingly are being asked to support their opinions with test results (which they do while saying that such tests are worthless). In reality, we are all of these things. We use many of the tools of science and the scientific method (when possible). But, as a social science, you can only stretch the principle of rationality so far. When we are asked to forecast future events, the certainty of our science becomes more suspect.

As economists we are asked to perform several types of tasks in our damages projections. One type involves making assumptions about future career directions. Whether the 20 year old would complete a college degree. The response can be in the form of a probability (assuming it is properly tailored). The other type of task involves, say, the choice of a discount or growth rate, which may be based on an average of an historic period or a spot rate. What is this average and what is its distribution? Can we say anything about a future probability of such a rate existing? Using averages just implies a distribution, 50 percent greater and 50 percent less regarding values. But the events may not be normally distributed, in which case we should use a median (correctly or incorrectly) to arrive at a number that we say is fair or average. It is neither. When you combine a median or mean life expectancy with mean or median historic unemployment rates, participation rates, disability rates, earnings rates, earnings growth rates and discount rates, what do we have as a result - an event whose probability of occurrence is virtually zero? So, it appears that what we wish to impart is a sense of fairness rather than precision. Many of us use ranges of loss, in part, to recognize this imprecision.

I once asked a weather forecaster friend how they came up with such a precise number as a 55 percent probability of rain for a particular day. He responded that they had used a local University Meteorology Department faculty member's model for a while, but now they just come up with a number that sounds reasonable using their experience. Besides, they always have a shot to redeem themselves tomorrow.

Daubert is pushing us to a point of decision. We don't have to live with the precision of our models in the classroom or academic journal. We always have another chance to redeem ourselves next year. In the courtroom, we do act as if we are practioners of science. In the courtroom we are asked for a damages number with the expectation that the number meets a standard of reasonable probability. At best we can say that the formula used to calculate damages was correct and we tried to be conservative and fair in selecting data as inputs into our calculations.

What we do is important. I think that it is largely professional opinion and, a product of our experience. I think we are trying to be fair and as precise as our methods will allow. I don't think we meet the Daubert standard as a science in our projections (with the exception of statistical inference in employment litigation). I think we should give our juries ranges of losses to incorporate our risks of error and admit our deficiencies. Economics is a system of logic based on the scientific method and it uses many tools of science, but our projections of damages seldom meet the standards demanded of a science.