experts or consultants could use some guidance from Professor Gray in order to avoid being caught up in the adversary nature of the proceedings and pitfalls created by the legal rules of procedure and evidence.

In *Ottaviani*, the plaintiffs' expert first asserted that a data set was too small to analyze. I believe the defendant's expert agreed. Subsequently, the plaintiffs desired to apply a formal statistical test to the data, but the court did not allow them to. Presumably, procedural rules designed to ensure fairness to both parties justify the court's decision. A similar situation arose in another case when at a pre-trial deposition an expert asserted that a 2×2 table should be analyzed by the chi-square test. Because of the small sample size, at trial the expert desired to use Fisher's exact test, as the computer output for the chi-square included a warning that the expected cell count was less than five in some cells so the conditions for the validity of the chi-square approximation were not satisfied. Again the court did not allow this testimony as the opposing side could not be prepared for a proper cross-exam. While new computer programs such as STATXACT may alleviate the small sample-size problem, as the data set can readily be analyzed, new approaches often occur to us after we make our first analysis. How can statisticians, especially at pre-trial depositions, appear knowledgeable and yet leave the door open for alternative analyses to be given later at trial? The problem with small samples is their low power to detect meaningful differences. Unfortunately, courts have often failed to appreciate this. With STATXACT and other programs (Goldstein, 1989) hopefully we will be more persuasive in future cases.

The ethical constraints on lawyers differ from those of academia, and experts face a number of unusual problems (Fienberg and Straf, 1991). Should one carry out an analysis that will likely not be in the best interest of the client? Should one do something that the lawyer should not do because it violates their ethical canons? A problem I have faced is the existence of other data sets that the lawyer did not tell me about. When analyses of the new data are submitted by the opposing party we do not have time properly to assess the comparative reliability and relevance to the issue at hand of the two data sets. The lawyer who has put you on the stand desires you to criticize the "new" data set, for example, to point out that some data are missing, some applicants are counted twice and so on. Statistical experts might well wish to avoid commenting without studying the data for a while, and it is tempting to assert that one should avoid any testimony. However, some of the flaws just cited may apply to the new data set. Is it fair to the court not to point them out? Is there a way to obtain a reasonable amount of time to carry out an assessment of the data? Remember, the lawyer who hired you did not tell you about it, so assume it will not help the party that hired you. I am unaware of any way prospective experts can assure that they will be given all the data relevant to the issue they are asked to study before the trial. I hope Professor Gray might offer some suggestions for avoiding these problems.

Comment

Harry V. Roberts

INTRODUCTION: WHAT IS THE RIGHT QUESTION?

When I first looked at the title, "Can Statistics Tell Us What We Do Not Want to Hear?" my reaction was, "Only with great difficulty." Professor Gray almost immediately echoed my reaction by saying, "It often appears that the most, indeed perhaps the only, effective role of statistics is to bolster decisions policymakers were prepared to take on other grounds." She added, "A corollary to the assertion that statistics are believed only when they conform to how one wants the world to look is the theory that the more closely statistics challenge one's own interest, the less likely they are to be relied upon."

The specific testing ground is the area of employment discrimination, with alleged salary discrimination against female faculty members as the principal illustration. Professor Gray provides a lucid overview of the problems in using statistics—regression analysis in particular—to illuminate the legal question of whether or not discrimination against females, minorities, or other protected groups has occurred. Her description of the evolving legal background, groundrules and guidelines for the use of statistics in discrimination cases is most helpful. The difficulties and seemingly erratic variations in the response of courts to statistical argumentation are skillfully and accurately depicted.

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