

THE CLASSICAL PROBLEM OF INFERENCE— GOODNESS OF FIT

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1. General introduction

As a preface to my lecture, I find it necessary to discuss in general terms the status of the statistical art and what we should mean by the term “inference.” It seems to me that over the whole history of human thought there have been two basic underlying ideas of inference:

- (a) what may best be expressed, perhaps, by the colloquialism “making sense of data”;
- (b) the choice of an action in a prespecified class of possible actions on the basis of data, costs, risks, and opinions.

Of course, to attempt to characterize the whole of statistics in some such way as the preceding is rather like attempting to characterize mathematics by a few brief common sense statements, and this is obviously foredoomed to failure. But the attempt has been made by others, who with a zeal approaching that of religious fanatics attempt to convince the world that there is one true religion, the one they are preaching. We should feel a considerable debt to van Dantzig [10], [11] for calling attention to the phenomenon of “Statistical Priesthood” with which our profession is now plagued. He gave us just two examples and pointed out the moral. It is curious that even in its activities unrelated to ethics, humanity searches for a religion. At the present time, the religion being “pushed” the hardest is Bayesianism. A few years ago it was decision theory. The actions of the proponents are like those of the religious evangelist. It is characteristic of new religions that they are intolerant of the old ones. It seems obvious that the only religion we should uphold is that there is no true religion. I find myself quite intolerant of the several cults.

My own preference is to say that the bulk of the activities of statisticians is encompassed by one or other of the two basic ideas expressed above, and I like to denote them by (a) Statistical Inference and (b) the Theory of Decision-making. It is remarkable that over the years we have had many papers and even books which take the view that statistical inference is a part of decision-making.

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