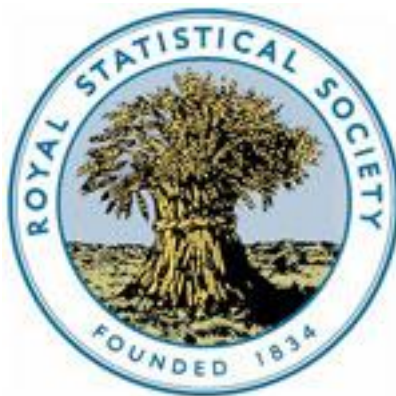


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Review

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my remarks on which still stand. This is an elegant and useful introduction to a branch of probability theory which is playing an ever-increasing role in both theoretical and applied developments.

The translation, by Professor T. P. Speed, is clear and accurate, tending to the literal rather than to the colloquial. But it is a sad commentary on scholarly standards in the English-speaking world that a translation should be found necessary of such a lucid original.

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11. A Programmed Text in Statistics. By J. Hine and G. B. Wetherill. London, Chapman and Hall, 1975. **Book One: Summarising Data.** viii, 95 p. £2.10. **Book Two: Basic Theory.** x, 109 p. £2.25. **Book Three: The t -test and χ^2 Goodness of Fit.** viii, 53 p. £1.30. **Book Four: Tests on Variance and Regression.** viii, 69 p. £1.75. All books 8½".

These booklets are the result of a project which was undertaken at Bath University and financed by a grant from the Nuffield Foundation. Their aim is to provide a common introductory statistics course for all science students. The programmed texts are intended to take the place of lectures and three sets of exercises are given for use in weekly practical classes with the main science groups: i.e. physical sciences and engineering, biological sciences and social sciences. The syllabus includes frequency distributions, sampling for the mean, the use of t , F and χ^2 tests and a short introduction to regression analysis.

Although these texts cover a wide syllabus and the exercises are both interesting and varied, they leave out much that will be regarded as essential by many scientists and teachers of statistics.

For example, Book One does not explain the difference between continuous and discrete variables: consequently the discussion of grouped frequency data involves assumptions which are not made explicit to the reader. Generally these assumptions hold good for the examples discussed here: occasionally they do not. The average age of the mothers quoted on p. 45 should be 30.7 not 30.2 years.

In Book Two the Poisson distribution is introduced as an approximation to the binomial distribution, but the relationship between the binomial and normal distributions is not mentioned. Also there is little information concerning the choice of random samples. The earlier section on probabilities also ignores the practical difficulties involved in ensuring a situation in which all possible events are equally likely. In Frame 31, p. 13, it is assumed that if a man draws one coin from a pocket containing a number of coins of mixed denominations, then all coins will have an equal chance of being chosen even though they differ from each other in size and shape.

The discussion of regression analysis in Book Four makes no explicit reference to the bivariate normal distribution. Only one regression line is considered; and though the examples include both functional relationships and statistical associations, there is no discussion of the difference between these two types of relationship.

First-year courses can never be comprehensive and it seems only reasonable to warn students that many practical problems are too difficult for them to solve at this stage. For example, many actual situations are very complex, and in such situations an analysis which is limited to the study of two variables may lead to false conclusions. Nonsense correlations would be a useful addition to Book Four and similar considerations are relevant to the choice of data for use in significance tests. On p. 11 of Book Three a t -test is applied to the difference between the mean academic achievement of two groups of 15 male students chosen by random sampling from the same student body: the members of one group are car-owners, the others are not. It is suggested that this analysis can be used to determine whether car-ownership is detrimental to academic achievement. But academic achievement is influenced by many factors, some of which may be associated with car-ownership. This type of decision requires much more information than is given here.

Professor Wetherill and Mrs Hine set themselves a very difficult and important task. Introductory courses inevitably raise fundamental questions concerning the nature of statistics, and since there is no general agreement on this matter, it is obviously difficult to please the wide readership for whom these books are intended. Nevertheless the authors' decision to weight this course so heavily in favour of statistical tests was a mistake. All scientists need more descriptive statistics and a fuller discussion of statistical inference than these books provide.

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