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## Book Reviews

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D. VAN TASSEL

**BASIC-Pack Statistics Programs for Small Computers**

Prentice-Hall, Englewood Cliffs, New Jersey, 1981. 230 pp. \$16.95.

I suspect that many statisticians other than myself have been tempted recently to forsake their bureaucratic mainframes with in-built powerful statistics packages and to join the micro revolution. The almost complete absence of statistical software on micros is a big disincentive, one that this book aims to overcome. It describes 33 self-containing programs, written in BASIC and reproduced in the usual eye-straining way from printed listings. They cover simple descriptive statistics, binomial and Poisson probabilities, sorting and ranking, the usual  $t$ ,  $F$  and chi-square tests with various nonparametric equivalents. Machine-readable copies of the programs are available from the author—at a price.

Worthy though the whole project undoubtedly is, it suffers from inevitable handicaps. BASIC is, of course, a notoriously variable language and the need to avoid any file handling has forced these programs to run interactively, limiting their usefulness to small datasets only. The programs are, moreover, unrelated, causing much duplication of code (e.g. for correcting a wrongly input value) and lack of interaction. One program outputs a value of Student's  $t$ , say, which has to be fed into another program to be converted into a  $p$ -value.

The author has clearly spent much time developing these programs, protecting them against invalid input and inserting plenty of REM statements, albeit too intermingled with the code, but more remains to be done. The potentially inaccurate formula for calculating sums of squares about the mean is used throughout (a serious problem with short-word-length micros), and many programs are dependent on the notation used in the book. Users should never be confronted by a program that simply prints out 'A = ?' and waits for you to guess what it wants.

Now, unfortunately, we come to the book's major drawback—its very poor, nay downright

misleading, explanation of statistical theory. All the old chestnuts about what significance levels and confidence intervals do *not* mean crop up here: page 45: 'our population mean will fall between 68.0 and 70.0 [calculated confidence limits] 95% of the time'; page 84: 'the larger the value of the  $t$ -statistic, the more likely it is that the two groups are significantly different'; and page 172: 'if the  $t$ -statistic is large enough to be significant, this means that the variances are probably different'.

Several programs are statistically inadequate too. The variance from grouped data is calculated without Shepard's correction. The degrees of freedom for the goodness-of-fit test are given as  $k - 1$  regardless of other constraints there may have been on the expected frequencies. Different programs perform identical jobs, e.g. for comparing two proportions by both normal approximation and  $2 \times 2$  table, without explanatory comment.

If you know enough statistics not to be deceived by these failings, and if you want a few simple programs, it may be safe to use these, but for goodness sake keep them (and the book itself) well away from students.

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A. WREN (ED.)

**Computer Scheduling of Public Transport**  
North-Holland, Amsterdam, 1981. 359 pp.  
\$58.50.

The book is a collection of refereed and edited papers which were presented at the International Workshop on the topic. The Workshop was organized by the University of Leeds special courses division, under the auspices of the International Union of Public Transport, the Association of European Operational Research Societies and the Transportation Science Section of the Operations Research Society of America. The volume is edited by A. Wren, Head of OR Unit, Leeds University.

I myself presented a paper at this workshop which is included in the volume. What impressed me most at this workshop was the interest shown by practising mathematicians and specialists in applications software to the

scheduling problems in the public transport industry. A number of executives of the public transport industry were present and they also showed their involvement in applying computer-based mathematical methods for their problems.

The edited volume reflects this flavour of the workshop. Any person interested in this topic can start from this volume which summarizes the state of the art in transport scheduling applications as reported in July 1980. Not a great deal more has happened since then.

The volume will not be of interest just for its computer software or mathematical contents. However, an applied mathematician or an optimization specialist looking for new and lively problems will find the bus scheduling, crew rostering and allied problems discussed in this volume, extremely rewarding.

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P. B. DESHPANDE AND R. H. ASH  
**Elements of Computer Process Control**  
Wiley, Chichester, for Instrument Society of America, 1981. 382 pp. £21.35.

The use of digital computers in process control has steadily increased since the first systems were made operational in the early 1960s, till now when it is becoming commonplace.

What is not commonplace, though, is a reference work which can be drawn upon. This book goes a long way towards this, but unfortunately is too heavily biased towards the Control Engineer who is to use computers, possibly for the first time.

Nevertheless, I would recommend it to anyone moving into this use of computers and especially for use on computing courses, so long as no-one seriously considers using the suggested languages, BASIC or FORTRAN, for process control when we in the UK have Coral 66 and RTL/2.

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