

much historical scholarship was of a narrative form and that the recent availability of mapping techniques allows the development of a geographic or spatial aspect to the discipline. The book comprises an introductory paper followed by nine essays which are presented either as a pure case-study or as a methodological perspective on the topic.

The five case-studies are concerned with mapping of ancient China, the extent and severity of the 1930 dust bowl in the American mid-West, mapping settlement and land use patterns in 17th-century Massachusetts, routes and measurement systems in ancient Rome and a study of the terrain surrounding Gettysburg at the time of the American Civil War battle. This list shows that historical GISs can be applied to a wide range of geographical scales, from empires to the hills surrounding a small town. Inevitably the case-studies are of a specialized nature. The remaining methodological essays, however, have the potential to be more widely appreciated.

The first methodological essay is on the philosophy of teaching history by using a GIS from a non-technical, liberal arts, perspective. This essay uses a range of case-studies to illustrate how to initiate analysis and to develop problem solving skills, how to engage students, where to locate data and how to form and test hypotheses. The second essay is a technical introduction to the principles of GISs showing how to integrate data from different spatial geographies (areal weighting) and how to assess spatial correlation empirically. This essay also includes an introduction to geographically weighted regression. The third essay shows how spatial and temporal information can be used to reveal patterns in historical data that are hidden from a one-dimensional perspective. An early example of such a presentation is Minard's famous map showing Napoleon's 1812–1813 attempt to capture Moscow, revealing correlations between temporal data (e.g. time of year) and spatial data (e.g. location and size of army). The final methodological essay reflects on what impact historical GISs may have on the whole of historical studies.

The book also includes a compact disc containing four well-produced PowerPoint presentations accompanying the book's case-studies. These might be a valuable teaching resource but it would have been better if this additional material were linked to the more general methodological essays of the book. The disc also contains a Java application (ArcExplorer) and some maps and data from the book that provide an opportunity for an interactive experience with the material.

Fully accepting that this book is written for his-

torians I do not think that this is the best material for someone who is interested in the mapping and statistical interpretation of spatial data (Ripley (2004) is a good book in this respect). The middle two methodological essays on the principles of GISs and on integrating spatial and temporal information would be of interest to the general statistician but are ultimately unfulfilling.

Reference

Ripley, B. D. (2004) *Spatial Statistics*. Chichester: Wiley.

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Handbook of Statistical Distributions with Applications

K. KRISHNAMOORTHY, 2006
Boca Raton, Chapman and Hall–CRC
376 pp., £44.99
ISBN 1-584-88635-8

When I first opened the *Handbook of Statistical Distributions with Applications*, I wondered whether to discuss the book or StatCalc, software accompanying it on a compact disc (and, by the way, distributed as well over the author's homepage, <http://www.ucl.ac.uk/~kxk4695/>). The author himself quotes both in one go: the

'main purpose of this book and the software is to provide users with quick and easy access to table values, important formulas, and results of the many commonly used, as well as some specialised, statistical distributions'

(from the preface). Both book and software are intended as references, with

'practitioners and researchers in disciplines other than statistics in mind',

and both book and software follow the same structure. There are chapters and menu points on continuous (namely normal, χ^2 -, F -, t -, exponential, gamma, beta, non-central χ^2 -, F - and t -, Laplace, logistic, log-normal, Pareto, Weibull, extreme value, Cauchy, inverse Gaussian, Rayleigh and bivariate normal distributions) and discrete distributions (the latter to be discrete uniform, binomial, hypergeometric, Poisson, negative binomial and logarithmic distributions). Furthermore, there are book chapters and software modules on non-parametric aspects (such as a non-parametric test for the median) and miscellaneous topics (tolerance intervals for a multivariate normal distribution

and tests and confidence intervals for the sample multiple-correlation coefficient).

All chapters basically follow the same structure: a description of the respective distribution (what does it look like?; when does it occur?) is followed by a list of moments and some density plots, and hints on calculation of table values by using StatCalc are given. For all distributions, elements of statistical inference are discussed (i.e. calculation of confidence intervals or specific tests), and some general 'properties and results' can be found as well as hints (and algorithms) on random-number generation or computation of the distribution function. Chapters on possibly less familiar distributions often provide application examples as well.

As all distributions are described this way in, say, fewer than 20 pages, and as the text is easy to read (to quote an example from the introductory chapter:

'A variable whose numerical values are determined by chance factors is called a random variable. Formally, it is a function from the sample space to a set of real numbers',

page 9), it seems indeed that the book has a chance of becoming a highly valued practitioner's reference—and thus to fulfil the author's intention, quoted above.

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Introduction to Statistics for Biology, 3rd edn
R. H. MCCLEERY, T. A. WATT AND T. HART, 2007
Boca Raton, Chapman and Hall-CRC
296 pp., £27.99
ISBN 978-1-584-88652-5

The third edition of this well-known and accessible to students introductory text was long overdue since the publication of the second edition in 1997. The title has been shortened from *Introductory Statistics for Biology Students* to the more inclusive *Introductory Statistics for Biology* but still provides a painless introduction to the subject while demonstrating the importance of statistics in contemporary biological studies.

Although the ethos of earlier editions has been preserved, this third edition carries some significant changes which deserve to be mentioned:

- (a) many of the exercises have been removed and replaced by worked examples;
- (b) a new general template for carrying out sta-

tistical tests from hypothesis to interpretation has been included and this is repeated throughout to show the generalizability to different types of tests;

- (c) an emphasis on experimental design and simulating data before carrying out an experiment;
- (d) MINITAB analysis and graphics have been updated to release 14 and 15.

As far as the individual chapters are concerned, these changes are better highlighted below.

- (i) Chapters 1–3 have been greatly expanded to enhance the grounding in the basic ideas behind statistical thinking.
- (ii) The chapters on sampling and experimental design have been grouped in Chapter 4.
- (iii) Chapters 5–7 on analysis of variance, though similar in scope, have been rewritten with more emphasis on factorial design and interactions.
- (iv) Chapter 8 on correlation and regression has also been rewritten to follow the line that was adopted in Chapters 5–7 and to bring to light the similarities between analysis of variance and regression.
- (v) A more thorough discussion of categorical data and non-parametric statistics is proposed in Chapters 9 and 10.
- (vi) Chapter 11 now gives advice on how to carry out and write up an undergraduate project. A short report to illustrate the various points mentioned is also included.

Using MINITAB throughout to present practical examples, the authors emphasize the interpretation of computer output. A compact disc that contains a free trial version of MINITAB with its full documentation is included in the book.

With its non-technical approach and practical advice, this accessible to students introductory text lays the foundation for more advanced study of statistical analysis and biometry. I strongly recommend this excellent text to all undergraduate students in the biological sciences.

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Missing Data in Clinical Studies

G. MOLENBERGHS AND M. G. KENWARD, 2007
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xx + 504 pp., \$110.00
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There has been tremendous growth in the theo-