BOOK REVIEWS

Comparison and harmonisation of denominator data for primary health care research in countries of the European Community

Edited by M Schaud. (Pp 129; price not stated). Amsterdam: IOS Press, 1999. ISBN 0-9673355-2-3.

Several countries in the European Community have developed sentinel networks for the surveillance of morbidity, particularly communicable disease, in primary care. This book compares the ways the denominator is derived for different networks and ways that the denominators can be harmonised to allow international comparisons of disease frequency.

The book describes the work of the European Denominator Project, which was funded between 1994 and 1996. The collaborators came from Germany, Belgium, France, the Netherlands, and the United Kingdom. The different health care systems in these countries, affect the frequency with which patients consult, and more importantly the available information from which the denominator populations covered by the sentinel practices can be estimated.

After the introduction, the first two chapters provide an overview of different ways of determining the denominators for sentinel practices. These chapters have appeared previously in this journal.¹ The next two chapters describe the actual ways the denominator are derived for the sentinel systems of the collaborators' countries and the extent to which the doctors and patients involved in the sentinel practices are representative of the population at large. There follows a slightly incongruous literature review of the factors affecting healthcare utilisation. The final chapters cover comparisons between the sentinel networks for different conditions, ways of estimating the total population from the population consulting (estimation of the "zero class") and potential ways of harmonising the denominators of the different sentinel systems.

The authors conclude that the only realistic denominator for international comparison at present is the "yearly contact group" (patients

consulting during the year), which can be used to estimate the underlying denominator population of the sentinel practices.

Although the area covered by this book is not as wide as its title suggests, it does provide a useful guide to a practical problem.

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Reference

- 1 Schaud M, Brenner MH, Hoopman M, *et al*. Approaches to the denominator in practice-based epidemiology—a critical review. *J Epidemiol Community Health* 1998;52 (suppl 1):13–19S.

Multilevel modelling of health statistics

Edited by A H Leyland, H Goldstein. New York: Wiley, 2001.

This is a collaborative work that reunites many of the best authors in the area of multilevel analysis. The book fulfils the need of explaining multilevel modelling to researchers in the health sciences. It has a practical orientation, focusing on a series of applications of relevance by means of thoroughly explained, pertinent examples, rather than simply presenting algebraic formulations.

The book opens with a good introductory chapter that provides a didactically sound general survey of multilevel concepts and models, and is well complemented by "Context and composition" in Section 12.4. If studied in conjunction with some instructional aids (see <http://tramss.data-archive.ac.uk/> and <http://multilevel.ioe.ac.uk/>), it is probable that this chapter will increase the number of multilevel analyses performed in the field of community health. After this highly readable beginning, the book moves on to address statistical techniques in sections on "Modelling repeated measurements", "Binomial regression" (with an interesting example concerning equity in health care access), "Poisson regression", "Multivariate models", "Outlier, robustness, and detection of discrepant data", "Modelling non-hierarchical structures", "Multinomial regression", and "Spatial analysis". There is also a chapter about the time honoured "Institutional performance" (although the reader should not fail to supplement it by reading its

longer version¹). A well presented chapter on "Sampling" by Snijders provides a good understanding of sample size calculations, and the similarities and differences between multistage samples and multilevel study designs. Finally, there is a useful overview of the software currently available (this reviewer personally uses MLwiN).

The pedagogical challenge of explaining multilevel analysis to the health epidemiologist is an ambitious one, and this volume is an important step in the right direction. Leyland and Goldstein have provided a tool that will not only benefit health epidemiologists who already possess statistical skills, but should also considerably improve the dialogue between epidemiologists and statisticians.

Multilevel analysis is nothing new for many mathematicians, statisticians, economists, sociologists, geographers—and even certain dentists and pharmacologists. For the health epidemiologist, however, it represents a major scientific advance. In all likelihood, multilevel analysis would have satisfied Thomas S Kuhn, when he wrote: "My main goal is to urgently demand a change in the perception and in the evaluation of the known data".² But whether "changes in the perception and in the evaluation of known data" are always welcome may be another question.

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References

- 1 Goldstein H, Spiegelhalter D. League tables and their limitations: statistical issues in comparisons of institutional performance. *Journal of the Royal Statistical Society, Soc A* 1996;159:385–443.
- 2 Kuhn TS. *The structure of scientific revolutions*. Chicago: University of Chicago Press, 1962.

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