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Book Reviews

Raymond L. Horton. *The General Linear Model, Data Analysis in the Social and Behavioral Sciences.* New York: McGraw-Hill International Book Company. 1978. pp. xi + 274.

It is a parsimonious book for the massive material it contains. Written for advanced students of social and behavioural sciences, it presents the analytic uses, limitations, and assumptions underlying the application of five techniques: factorial analysis of variance designs, latin square designs, repeated measures designs, analysis of covariance, and general regression analysis.

The slimness of the book is made possible partly by the parsimony of style – a parsimony which did not impair the clarity of exposition – but mainly by the unifying factor of the general linear model (GLM) presented in the first two chapters. In this respect, the work reviewed resembles a 1978 book on demographic technique of analysis by Guillaume J. Wunsch and Marc G. Termote (Plenum Press). There, too, in introductory chapters the common elements of cohort analysis and period analysis were first presented in a general manner and then applied to the four fields of mortality, nuptiality, natality, and migration. These examples of generalizability are recommended to expositors of intricacies in our profession. Such methodological generalizations are a condition of real interdisciplinary exchanges, of which this journal is a notable example. There is something genuine about that kind of generalizations in comparison with the more desperate attempts to generalize about the society so beloved of recent Ph.Ds.

Another contribution to the slimness of the book is made by the avoidance of detailed computational formulae. These, when presented in a textbook, tend to be rather unique for each specific application of GLM. The avoidance of these detailed presentations is possible in the age of the computer, when, provided the general principle is understood, the computational detail can be left to the computer software. The general principle to be understood and used here is matrix algebra.

The author shows how all techniques of analysis of variance and regression analysis hinge on the solution of a single matrix equation, the so-called "normal equation". The student must thus pay the price of learning matrix algebra, a bargain price, when discounted by future uses and benefits. The investment required is the slow reading of three pages of an appendix with the basics of matrix algebra, again clearly written and easy to understand.

This reviewer found the discussion of mean square error (MSE) somewhat incomplete. In sampling, up to five components have been identified in recent literature. To the author, the traditional focus of statistics courses on sampling theory (and the detailed computational methods avoidable in the age of computers) seems to be responsible for the confusing separation of ANOVA and regression analysis as two separate analytic tools. Skipping over MSE and avoiding the most recent achievements in the field, the author is only consistent with his general approach, but the reader should be aware of this one limitation.

There are complete indices, a brief but well-balanced bibliography, an elaborate list of contents (repeated helpfully with further elaborations at the beginning of each chapter), and the usual statistical tables required for the pursuit of the text.

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