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Book Reviews

Books for review are to be sent to the Book Review Editor Gösta Forsman, Department of Mathematics, University of Linköping, S-581 83 Linköping, Sweden.

Balakrishnan, N. (Ed.), Handbook of the Logistic Distribution. Marcel Dekker, Inc., New York, 1992. ISBN 0–8247–8587–8, xv+601pp., USD 115 (U.S.A. and Canada) USD 132.14 (All other countries).

The logistic distribution has long been one of the odd distributions mentioned in the theoretical literature but seldom used in practical work. Nevertheless, it has lately received more attention due to its relation to logistic regression. Theoretical results have been scattered in the literature and it is seldom easy to find relevant results when they are needed. Thus, this book is a welcome contribution to the literature.

This comprehensive handbook contains all the basic results of classical mathematical statistics. There are almost complete descriptions of moments, maximum likelihood estimation, censored samples and order statistics. There is a lot on related distributions, characterization theorems and different attempts to generalize the distribution. A couple of nice chapters contain reliability and biometric applications. The book is highly readable and the arguments are easy to follow.

The book contains 18 chapters on different aspects written by 33 different authors. Editor Balakrishnan is responsible for the central parts. On the other hand, different authors are not fully coordinated. Some parts are covered twice but the main disadvantage is the reference and index systems. It is not easy to know where to look for a certain result. For example, generating functions cannot be found by looking in the index system. Confidence intervals can be found but under the heading maximum likelihood estimates. Tolerance limits can either be found under that subject or under maximum likelihood, but the references are to different parts of the book.

Other shortcomings are that the book contains little material on modern developments, e.g., the relation to logistic regression and generalized linear models. There is almost nothing on simple regression situations when the location parameter is a linear function of independent variables. Nor will a Bayesian statistician find much of interest, even though some references to Bayesian statistics are made and the logistic–normal integral is discussed. I also

doubt that a person working with official statistics will find much of interest.

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Jabine, T.B., King, K.E., and Petroni, R.J., Survey of Income and Program Participation Quality Profile. Data User Services, U.S. Bureau of the Census, Washington, D.C., 1990. SIPP Working Paper series No. 8708, vii + 183pp.

This book, available free through Data User Services, U.S. Bureau of the Census (Washington, D.C. 20233), consolidates a vast amount of information on the Survey of Income and Program Participation (SIPP): information about its history, design, procedures and the likely accuracy of estimates produced with its data. In all, over a hundred-and-sixty articles, research reports and official publications on the SIPP are summarized. While already overdue for updating, *SIPP Quality Profile* is a very quick route into a large body of recent methodological literature.

The book is written with two audiences in mind. The first consists of those interested in using the SIPP for their own analysis for whom the book is essential. While it is not intended to replace other documentation volumes, it does consolidate much of the important material from them and presents it in a much more readable form. The second intended audience consists of those individuals who "are responsible for or have an interest in the SIPP design and methodology." Again the book should be required reading for these people. In my opinion, however, *SIPP Quality Profile* is also potentially valuable to a much broader audience — those responsible or interested in the design or methodology of *any* panel survey. I can easily imagine using it as a supplemental reader in an advanced survey methods course. While the book is much less solipsistic than most Census Bureau publications, it is sufficiently narrow in orientation that one would want to augment it with readings on the design and methodology of other large scale panel surveys (e.g., the Panel Study of Income Dynamics, the National Longitudinal Surveys, etc.). Nevertheless, it is well written, technically accessible, comprehensive and the price is right. It is for this third, serendipitous, audience that I will gear my review.

SIPP Quality Profile consists of introductory and summary chapters plus nine substantive chapters covering all aspects of survey design and methods from sample selection through estimation and evaluation. Chapter 2 provides a brief overview of the goals and methods of the study and includes some of its early history. Sampling procedures are discussed in Chapter 3 which would be useful to students as an example of multi-stage sampling in practice with the added twist of selecting longitudinal units. Data collection procedures are briefly described in Chapter 3. Data collection procedures are briefly described in Chapter 4 which should be read by those interested in using the data.

Chapter 5 discusses nonresponse and should be of interest to both students and seasoned methodologists. Unlike most of the book, the nonresponse discussion does contain some "SIPPisms and Bureauese." Household nonresponse due to refusals, etc., is referred to as "Type A Nonresponse" while that due to moves, etc., is labeled "Type D Nonresponse." Presumably Types B and C Nonresponse are

not a problem in the SIPP. Individual and item nonresponse, however, remain a problem and their incidence and effects on estimates are discussed briefly. Chapter 5 also contains a brief description of a formal experiment to test the effect of token incentives on response rates as well as description of two special data collection efforts — a missing wave module for intermittent respondents and an employer benefits study to validate fringe benefit measures.

The chapter on measurement errors (Chapter 6) is particularly strong. The SIPP, and its precursor the Income Survey Development Program (ISDP), have served as measurement-error methodological laboratories. In addition to several formal experiments which have been melded with the ongoing production interviewing, numerous quasi-experimental studies have been made possible by the study's rotating design in which random quarter samples are interviewed in successive months. The effect of this design is that for any given calendar month reports are based on recall varying from one to four months in length depending on which random quarter sample the case is assigned to. For change analysis a random quarter of the cases will be based on between-interview reports and the remaining on within-interview reports. With such a design measurement errors will result in an excess of the between to within interview changes. At the time of writing, 1989, over a dozen studies have been based on analysis of these "seam" transition excesses. In addition to measurement error studies based on seam transitions, Chapter 6 also contains descriptions of three evaluation studies/experiments: the **SIPP Record Check Study; the Asset Feedback Experiment**; and the **Eighth Interview Study.**

Although the very brief discussion of data preparation procedures (Chapter 7) is only of interest to SIPP users, the remaining chapters (8–10) are of somewhat more general interest. Chapters 8 and 9 deal with estimation and sampling errors and include discussions of imputation, weighting and general variance estimation procedures. Super-population modelers may find the discussion of weighting issues one-sided, since it appears that the authors think anyone who does not use weights in analysis is just plain crazy. The issue of weighting, however, especially in estimating the parameters of behavioral models, is much more complicated and depends on the expected relative size of (squared) bias and variance of the estimates, among other things.

The final substantive chapter (10) provides an evaluation of estimates from the SIPP by comparing them with similar estimates from other benchmark studies and with program data. These types of comparisons can be quite useful in evaluating surveys even though the benchmark data are themselves flawed. The SIPP comparisons suggest that it does quite well with respect to wages and salary reports, Social Security and, to a lesser extent, property income. SIPP does not do so well, however, for transfer reports, in particular AFDC income. This result is very similar to that found for other panel surveys (i.e., the PSID).

SIPP Quality Profile is a rather ambitious summary of the methods and history of the study. There are, however, a couple of things that *SIPP Quality Profile* does not and could not say about the SIPP partly because it is a government publication. The SIPP overview chapter (2), for instance, does not dwell on the waste caused by Reagan's cancellation of the development program (ISDP) in midstream. The damage was compounded when the administration quickly reversed itself and rushed the SIPP into the field when it was realized that poverty counts

would be lower with SIPP data. Had the ISDP been allowed to complete its work, a better SIPP could have been fielded and at lower overall costs. The book also fails to include a defense of the study. Such a defense is in order, however. The "seam problem" has received so much attention that even sophisticated analysts may come away with the impression that SIPP is a very dirty data set. But all panel surveys with reference periods greater than the basic time unit of measurement have seam problems. The highly respected Panel Study of Income Dynamics, in fact, has even more pronounced excesses of seam transitions. So much has been written about SIPP seam transitions simply because the design is sufficiently rich to isolate them and because the people in charge of the study have encouraged, even funded, outside analysts to investigate them. They did so in the interest of science and in the long-run interest of SIPP data quality, and despite the fact that in the short run it would have been bureaucratically wiser to cover their behinds.

In summary, *SIPP Quality Profile* is more than just a technical report on the extent and sources of survey error. It is a consolidation of a large body of basic and applied survey methodology literature. It is well written and accessible. It is a must for those planning to use the SIPP and I recommend it for the broader audience of those interested in survey data quality and survey design.

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