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Book Reviews

Books for review are to be sent to the Book Review Editor Jaki Stanley, USDA/NASS, Research Division, Room 305, 3251 Old Lee Highway, Fairfax, VA 22030, U.S.A.

Czaja, R. and Blair, J., *Designing Surveys: A Guide to Decisions and Procedures*. Thousand Oaks, CA: Pine Forge Press, 1996. ISBN 0-8039-9056-1, pp. xvii + 269, USD 19.95.

In the last years a growing number of basic textbooks on survey methodology have been published, reflecting the increased interest and the recent developments in survey methods. *Designing surveys* by Czaja and Blair is one of the latest on this topic. The authors are well known in the field and have both a thorough theoretical knowledge and 'hands-on' experience. The book is published in a new series in research methods and statistics by the Pine Forge Press, the youngest educational member of the large Sage family. The aim of this series is to publish core volumes and more specialized 'satellite' volumes for undergraduate courses in methods and statistics. The core volumes are intended to address the basics, the satellite volumes are meant as supplements for more specialized courses. The Czaja and Blair book is one of the satellite books and if it is a fair representation of the whole series, it would be worthwhile to look out for the other books.

Designing Surveys is well written and is intended for novices engaged in designing a (student) survey for the first time as well as for those with some knowledge of and experience with surveys. I would add a third group of potential readers to the list: more experienced researchers who feel the need to update and refresh their knowledge.

Since the mid-seventies the state of the art of survey design has changed much. For instance: the growing reliance on telephone interviews necessitated the development of more sophisticated sampling methods like Random Digit Dialing, the introduction of computer technology in data collection changed the total survey process, emphasizing process quality and quality control, and a growing concern about nonresponse and data quality forced researchers to devise more respondent-friendly questionnaires. Czaja and Blair address these changes and bring together knowledge from such diverse disciplines

as cognitive psychology and sampling theory. That they do not completely succeed in their attempt does not diminish the usefulness of this book.

The book starts with an introduction and a short outline. This is followed in Chapter 2 by a global description of the general stages in a survey and the decisions that have to be made at every stage. These are: 1) designing the survey; in this stage decisions have to be made about the data collection method and the sampling procedures and a questionnaire has to be designed, 2) pretesting, both of the questionnaire and of the logistics of the data collection procedures, 3) revision of the design and completion of the operations plan, 4) data collection, including quality control such as interviewer monitoring, and 5) coding, analysis, and final report. The chapter ends with a very useful example of a time schedule for a study and emphasizes the importance of a careful planning before starting to collect the data.

Chapter 3 very briefly describes the advantages and disadvantages of mail, telephone, and face-to-face surveys. An illustration of an optimal combination of methods in a mixed mode design is given. No mention is made of the added advantages and disadvantages when using new technologies (e.g., CATI, CAPI), although some of these are mentioned later in Chapter 9.

The main emphasis of the book is on steps 1 and 2, the design and pretest of a survey. The Chapters 4, 5, and 6 give an overview of questionnaire construction from stating the initial research topic, through writing the questions, to testing the final questionnaire. Chapter 4 focusses on question writing. This chapter begins with a list of factors involved in questionnaire development. Among the most important ones are: 1) does the respondent understand the question as the researcher intended, 2) does the respondent have the necessary information, and 3) is the respondent able and willing to answer the question. Emphasized is the importance of testing and rewriting questions, a point that is often ignored. Other strong points in Chapter 4 are the discussion of costs and a decision guide to aid a researcher in making justified decisions on which questions to include in the study and which questions to drop. Useful is a summary of response category quantifiers that are commonly used. However, the chapter is far too concise and I dearly miss examples. For instance, in exhibit 3 common response categories are listed for different question types. For knowledge questions are listed among others 'true/false' and 'a lot/some/a little/nothing.' I can come up with several examples of knowledge or quiz items that use 'true/false' as response alternatives, but I am still puzzled to find a question that is meant to measure knowledge and has as possible answers 'a lot, some, a little, and nothing.' I have the same problems with Chapter 5 (organizing the questionnaire) and to a lesser degree with Chapter 6 (testing the questionnaire): these chapters are interesting, they raise relevant points, but I miss examples. When the authors do give examples these are very good indeed; they are clear and help the reader understand the principles involved. For instance, in Chapter 5 special attention is given to the introduction of the study. In the section on telephone introductions the reader is guided step by step through the process of writing and adapting an introduction. These examples make me yearn for more. However, in the section on cover letters only some general points are discussed. Happily, when discussing how to group questions into topics and how to determine the order of topics, the guidelines stated are illucidated by a detailed example.

Chapter 6 is one of the chapters that by itself makes it worth buying the book. Testing

the question is the only way to determine whether respondents have indeed understood the question as worded by the researcher. In the past ten years methods for question testing have been the topic of many papers at methodology conferences and many statistical agencies have recently incorporated a variety of connected methods for questionnaire testing in their 'current best methods.' However, thorough pretesting is not yet standard procedure in day-to-day research and a textbook devoted to question testing methods is clearly needed. Fowler (1995) and Cjaza and Blair are among the first who devote a chapter to this topic. Included in Chapter 6 are short descriptions of conventional pretests and interviewer debriefing, post-interview interviews, cognitive interviews, interaction coding, respondent debriefing, expert panels, and the examination of interviewer tasks. The descriptions are concise and comprehensive and key references to the origins of the methods are given. The chapter ends with a few words on the differences between *pretests* and *pilot tests*. In a pilot test the exact procedures planned for the study are carried out on a small scale; these include sampling, hiring, and training of interviewers, etc. A pilot is a final full dress rehearsal, while in a pretest usually only the questionnaire is tested in various ways.

Chapter 7 and 8 are devoted to sampling. Chapter 7 provides a basic introduction and key terms like *probability sample*, *sampling error* and *confidence intervals* are explained. This introduction includes defining a population, constructing a sample list and handling problems. It also answers in detail the question that practitioners and students always ask: ''how large should my sample be?'' For novices Chapter 7 is hard work, but it is also a sound introduction and well-written and should be obligatory reading in introductory courses on survey design. The chapter ends with an illustration on how to use census data in planning a survey. The illustration is based on the U.S. census; for readers in Europe this illustration is less relevant, but an inventive reader can easily translate the recommendations to his or her own situation and national census data. Chapter 8 gives examples on how to draw a random-digit telephone sample and on how to select a respondent within a household; also list samples are discussed. The examples are clear and comprehensive, but based on the American telephone system. This is no problem for readers in the U.S.A., but novice readers in other countries can experience some problems. These problems do not concern the sampling principles involved, but the intricacies of the American telephone system. Since the telephone systems differ in different countries, this chapter is best read as an illustration of the principles involved.

Chapter 9 is one of the weaker chapters. It shows the imbalance, that to some minor degree also characterizes other parts of the book. The authors use survey error and its sources as a general framework to discuss the implementation of data collection. A strong point in this chapter is the focus on measures for reducing error as well as on quality control; highly recommended is the discussion on budgeting and cost trade-off. But when actually discussing data collection procedures and sources of errors the exposition becomes slightly muddled. The chapter reads as a lot of afterthoughts and important points that did not fit in elsewhere. For instance, suddenly a short paragraph on computer assisted data collection pops up. Furthermore, a lot of attention is given to the interviewer as a source of error and the importance of interviewer training is stressed, which is of course of great relevance. But the respondent as a source of error is only discussed under the subheading 'handling problematic behaviors.' Finally, in the section on nonresponse, effective ways to reach the respondent and reduce nonresponse are discussed for mail and

telephone surveys only. Not included are effective strategies for reducing nonresponse in face-to-face interviews, like the ones developed by Morton-Williams (1993).

Chapter 10, the methodology report, is a very helpful chapter indeed. It gives a complete, annotated outline of a well-written methodology report. The quality profile in exhibit 10.2 is not only a handy checklist for writers, but also for referees of proposals and final reports. This last chapter is followed by three helpful appendices and a combined glossary and subject index. The first two appendices list the full text of a mail questionnaire and of a telephone questionnaire, which serve as a nice example and illustration of how a well-drafted questionnaire looks. The last appendix, which lists the code of professional ethics and practices of the American Association for Public Opinion Research, addresses a much neglected topic in textbooks. I do hope that this example will be followed in other disciplines. Finally the combination of glossary and index was new to me, but after getting used to it I really liked the idea. Providing both a definition of key terms and the reference to places in the book that discuss it, is extremely helpful for teacher and student alike.

All in all, this book is highly advisable for use in introductory courses on survey methodology or as additional reading for graduate students. To supplement the omission of examples on practical aspects of fieldwork, I suggest combining this book with the highly practical ''How to conduct your own survey'' by Salant and Dillman, who give sound advice together with many useful examples of question writing, selecting simple samples, writing introductory letters, and training interviewers.

References

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Morton-Williams, J. (1993). *Interviewer Approaches*. Aldershot: Dartmouth.

Salant, P. and Dillman, D.A. (1994). *How to Conduct Your Own Survey*. New York: Wiley.

Edith D. de Leeuw
MetodikA/University of Amsterdam
Amsterdam, The Netherlands

Hoyle, R.H. (ed.), *Structural Equation Modeling: Concepts, Issues, and Applications*. Newbury Park, CA: Sage Publications, Inc., 1995. ISBN 0-8039-5317-8 (cloth), ISBN 0-8039-5318-6 (pbk), pp. 289, USD 48.00 (cloth), USD 23.95 (pbk).

Structural equation modeling (SEM) takes on many fascinating names (LISREL, analysis of moment structures) but in fact has its roots in some of the more conventional models like multiple regression and ANOVA. Conceptually, it attempts to remedy one potential violation of linear model assumptions: the latent, qualitative nature of some predictor

(independent) variables. With a latent predictor, the variable effect can be measured only with errors and therefore, the traditional modeling approach may give problematic results. While this tremendously powerful tool has caught researchers' attention, its acceptance by applied researchers is at best emerging. This is attributable to the complexity of the model and a lack of user-friendly introductory materials.

The publisher, Sage Publications, Inc., is well-known for the ''applied'' type of introductory texts in advanced statistical topics. This philosophy has been welcomed by social researchers at least for two reasons. First, users who like to learn about the topics can get a relatively gentle exposure to the basic concepts before tackling the more advanced treatments. Second, even for the more seasoned users, books of this nature can be valuable as convenient reference sources.

In view of these two objectives, this book has done a remarkable job in bringing about a concise introduction as well as a rich source of reference materials on the topic of SEM. The volume consists of thirteen chapters, culminating contributions from no less than twenty-three expert researchers in the fields of psychology, psychometrics, education, and medicine. Coverage is in logical order in terms of basic concepts, current issues, and practical applications.

In my opinion, this book should be extremely useful as a supplemental text in applied statistical modeling in behavioral research. This is because the topics covered go well beyond the mere technical aspects of SEM. The first unusual feature is the concise discussion of the various schools of thoughts in philosophy of science, which is nicely extended into statistical modeling. I would find this invaluable as a teaching aid. The second attractive feature is that the book addresses structural equation modeling in terms of the general theory of statistical power analysis, model validation, and result interpretation. With some modifications, the conceptual insights can be carried over into other advanced statistical models beside SEM. Finally, a very extensive list of references is appended and thus a researcher would find these up-to-date citations particulary handy in literature search.

On the practical side, the book cites numerous research findings in ample detail so that a user should find enough guidance to formulate a SEM design. Moreover, there are three studies included as illustrations: (1) *Sex-Race Differences in Social Support and Depression in Older Low-Income Adults*, (2) *Modeling the Relation of Personality Variables to Symptom Complaints: The Unique Role of Negative Affectivity*, (3) *Predictors of Change in Antisocial Behavior During Elementary School for Boys*. Behavioral researchers in social and educational psychology, for instance, should find the reports useful. The comparison of the extant software supports (EQS and LISREL) would also help one's understanding of the algorithm and the underlying assumptions.

A few cautionary remarks, however, are in order. Most of all, this book was not written for readers who lack solid statistical background, despite the author's claim to cater the book towards ''researchers, not methodologists and statisticians... and students in the social and behavioral sciences (p. xxi).'' For example the chi-square goodness-of-fit statistics are mentioned without any preliminary explanation. Similarly, reference to estimation techniques such as maximum likelihood, and generalized least squares are common throughout the chapters along with other sophisticated diagnostics (e.g., likelihood-ratio test, Lagrangian Multiplier test, and Wald test) with little introductory remarks. Readers

who are unfamiliar with these statistical concepts would therefore need supplementary sources of reference.

Furthermore, based on the coverage and examples used, the title of the book may be somewhat of a misnomer. This is because the coverage on ''issues'' and ''applications'' is exceptionally heavy on the psychometric side. Since latent variables are common in many other fields of social science, such a restrictive coverage may be unnecessary or even detrimental to the acceptance of the SEM methodology. For example, many financial constructs (such as liquidity, profitability, leverage, management style, etc.) in business studies are latent, qualitative in nature. Applications of SEM methodology to these areas should be useful and interesting.

In general, the book is a valuable source for researchers, both as an introduction to SEM and as a reference. Particularly, instructors of applied statistical courses in a graduate behavioral program should find this book helpful.

Chak-Tong Chau
College of Business
University of Texas at San Antonio
San Antonio, TX
U.S.A.

Birkes, D. and Dodge, Y., *Alternative Methods of Regression*. New York: John Wiley Pub., 1993. ISBN 1-0-471-56881-3, pp. 240, USD 54.95.

This book provides an introduction to six competing forms of linear regression, namely least squares, least-absolute-deviations, M-, nonparametric, Bayesian and ridge regression. A chapter is devoted to each method, covering estimation and hypothesis tests of the regression coefficients. The authors take an eclectic approach by providing the motivation and some basic theory followed by numerical examples. The motivation and theory will be more meaningful to someone familiar with mathematical statistics and the theory of least squares, but this would not necessarily be a prerequisite to applying the methods because of the numerical examples. On the other hand, as someone who has a good grasp of least squares regression but was mostly unfamiliar with the other methods, I found the theoretical portions uneven and difficult to follow in places. However, the authors do provide extensive references for each method.

One theoretical generalization that comes through nicely in the book is the grouping of least squares, least-absolute-deviations and M-estimation under the general heading L_p-*norm estimation*. In each of these methods, $\sum |\hat{e}_i|^p$ is minimized as a function of the parameters, where $p = 2$ for least squares, $p = 1$ for least-absolute-deviations, and the authors show the similarity of M-estimation to L_p- *norm estimation* with $1 < p < 2$. Nonparametric regression minimizes a function of the parameters similar to $\sum \text{rank}(|\hat{e}_i|)|\hat{e}_i|$. The smallest value of $|\hat{e}_i|$ has rank 1, and the largest has rank n, so this method limits the influence of large residuals more so than least squares.

The other methods, Bayesian and ridge regression, are closely related to least squares regression. Ridge regression has applications when multicollinearity among the predictor

variables exists. In another helpful generalization, the authors point out the relationship of each method to the case of a simple random sample from the error distribution of the regression. Least squares would be appropriate where the sample mean is the best estimator of the mean of error distribution, whereas least-absolute-deviations would be appropriate for error distributions where the sample median is more optimal. M-regression would fall between the two. Nonparametric regression would be appropriate in situations where the univariate Wilcoxon signed rank test is superior to the T-test in hypotheses concerning the mean of the error distribution. In both of these generalizations we see it is the distribution of the errors in the regression model that is the focal point in choosing a method. In the examples, each method is applied to the same data sets, and the reader can see how the estimates of the regression coefficients and inferences drawn from each method vary.

Another feature that distinguishes these methods is that some of them require iterative algorithms to estimate the parameters. The authors provide references to available software for these iterative methods, along with the more common least squares routines.

While this book provides a useful introduction, anyone wanting to make extensive use of any of these methods will probably want to pursue them through some of the references mentioned in the book.

Thomas R. Birkett
National Agricultural Statistics Service, U.S. Department of Agriculture
Washington, DC 20250, U.S.A.

Sirkin, R. Mark, *Statistics for the Social Sciences*. Thousand Oaks, CA: Sage Publications, 1995. ISBN 0-8039-5144-2 (cloth) and 0-8039-5145-0 (pbk) pp. 502, USD 65.00 (cloth), USD 35.00 (pbk)

Are you an instructor of statistics? What happens when your students inform you that they have an aversion to math, and worry aloud about passing statistics as a result of such math anxiety? One solution to these questions is for the teacher to consider texts that attempt to reduce these fears and build analytical confidence within their students. One such text is *Statistics for the Social Sciences* by R. Mark Sirkin.

Sirkin begins his book with an extensive review of the logic of scientific inquiry, levels of measurement, and how we can define variables. The logic of scientific inquiry section explains the scientific method, connects hypothesis testing to theory, and illustrates the unit of analysis concept in clear and concise terminology. In the next chapter, on levels of measurement, Sirkin explains nominal, ordinal, and interval levels by definition and example. Chapter 3 defines variables with an eye towards how one gathers the data, operationalizes concepts, constructs indexes/scales, and maintains a focus on issues related to reliability and validity.

In these opening chapters Sirkin presents the student sufficient background information that allows them to systematically progress towards ever more difficult analytical techniques. These chapters are designed to build the students' self-confidence by creating familiar connections to their methodological training, and situates the statistical production of reality within a theoretical and methodological context. These critical connections

help the student generate the pedagogical self assurance to do more advanced statistical techniques while integrating the connection process into existing scientific frames of reference. Additionally, these chapters allow the teacher the opportunity to integrate information from a typical series of core social science classes and hopefully achieve a symbiosis of interaction between methods, theory, and statistics. Thus, Sirkin's linking of such topics as levels of measurement, data collection, and statistical analysis allows the student to ease into the computational work that follows and connect it to the larger social scientific production of knowledge.

After these three introductory chapters, the instructive strengths of the text become even more apparent. One such strength is the style of writing. This textbook recognizes that a considerable number of typical social science students are not scientifically and mathematically concentrated. To counteract this teaching obstacle the author uses an engaging style of writing and incorporates interesting examples relevant to the typical student's life experience. The complexity of the subject matter is gradually introduced and the intricacy of statistical analysis explained as one progresses through the chapters. Thus, the author has created a presentation that is at once readable, directly connects the information to the student's existing knowledge bases, and can stand alone if no prior knowledge of social science is present. Furthermore, the textbook is designed to facilitate the assimilation of key ideas and the terminology necessary to incorporate this material into any student's cognitive structure.

On the instruction side of the equation the book's examples are extensive. This allows the teacher to tailor the assignment of problems to the speed of instruction, comprehension level of the class, availability of computer software, and the class' /instructor's ability to communicate. Thus, writing and presentation style engages the students, helps reduce their anxiety, and lends itself to quality instruction of this material.

Again we must make note of the strong connections between the textbook's presentation and confidence building pedagogy. Each and every chapter has interesting features that allow the instructor and student to firmly place the material and understand its relevance to social scientific investigation. For example, in the chapter on measures of central tendency we are not only presented the different measures, but their application to specific levels of measurement is also defined. When the text moves on to measuring dispersion we find a meticulous discussion on the visualization of dispersion as well as the computational formulas. This attention to the precise use and imaging of statistical techniques helps the student retain the information and sets the stage for integration of more complex analytical techniques.

Additional presentation strengths in this textbook can be found in the organization of chapters and their logical interconnections. One example is found in the discussion of how to construct and interpret tables. The author talks about the vital role interpreting such tables plays in the statistical investigation process. After that argument we find extensive coverage of statistical inference and how to test significance in statistics. This step by step approach to statistical investigative techniques is just one of many interesting devices the author uses to create cognitive recognition of interpretative statistical procedures.

As one can see the chapters in this textbook allow for many variations in presentation style and cover basic statistical procedures well. For example we find separate chapters on

probability distributions, one-sample *Z*-tests and one/two-sample *t*-tests. The extensive discussion of ANOVA applications offer the student and instructor clear and absorbing examples from which to build captivating class projects. Each of these chapters follows a pattern of presentation that is understandable and cogent for the student and instructor alike.

During the final chapters of the text we find that each sub-section can be grouped for presentation by the teacher for maximum exhibition effectiveness depending upon the needs of the students and/or the program. One example can be found when after several well written chapters on inferential statistics, the discussion turns to one of the chi-square test and its place in social science. Similarly, the chapters on correlation and linear regression are linked to descriptive statistics. Lastly, the book ends with a series of appendices defining various tables necessary for the computation of answers by students. Such extensive and interactive coverage of topics allows the teacher the opportunity to customize classroom discussions and offers a chance to tailor the instruction to meet the needs of both a semester and quarter format.

Is this text for every statistics class? It is clear the answer is no. However, it is suitable for consideration by those that teach one or two semester/quarter undergraduate classes in basic social science statistics. One should consider this text if the undergraduates are not going to be extensive users of statistics in their careers. It is a textbook for non-mathematical statistics instruction and acts as an introduction to the basics. Its greatest strength is the engaging style of writing and the excellent pedagogical devices employed within the text. Sirkin's test also allows the student and instructor to connect statistical techniques to the overall scientific method. It does so by allowing the student to make connections between theory, statistics, and methods. As such, *Statistics for the Social Sciences* represents an attempt to incorporate a more holistic approach to research and is a great improvement over many introductory textbooks.

On the critical side, one of the problems with choosing this text is that the instructor will have limited classroom support from the publisher. Several problem areas exist. First, an instructor's manual is available, but no definitive connection is made to specific statistical software. Examples are used from two major software programs, but these are not necessarily fully integrated into the instruction of materials. This makes the task of integration of computer instruction somewhat more difficult.

Secondly, the publisher has yet to generate supportive documentation that will allow the instructors more free time to educate and reduce their time spent defining tests, quizzes, and exercises. A computerized database of test items would greatly facilitate the teaching of this material. As of now, no such support services are available, and it is unclear if the publisher will offer these in the near future.

In conclusion it is important to note those things *Statistics for the Social Sciences* does well. It sets the stage for understanding statistics by connecting them to methods and theory. Once that stage is set, the author allows the student to progress towards ever more difficult material and build off of their successful assimilation of the key concepts and topics presented. Once the major techniques are presented the students have ample opportunity to test their newfound ability by doing numerous exercises and can check their work by reference to answers in the appendix. What should be clear from this review is that the pedagogical strengths of this text make it an excellent choice

for consideration in a wide variety of social science classes. The author has created an extremely usable and viable textbook for anyone seeking to answer his or her students' anxieties, create an interactive presentation, and thus create a viable learning environment.

James David Ballard
Grand Valley State University
School of Criminal Justice
1 Campus Drive
Allendale, MI 49401–9403 U.S.A.