

Observational Studies.

Paul R. ROSENBAUM. New York: Springer-Verlag, 1995. xv + 230 pp. \$44.95(H).

Rosenbaum states, "Observational studies are common in most fields that study the effects of treatments or policies on people." This definition of observational studies establishes for most readers the relevance and importance of the topic. A great deal of research outside a laboratory examines the effects of treatments or policies on people, and therefore, most studies are concerned with the issues Rosenbaum considers in his book. Although not the first book on issues related to observational studies, this book serves its topic well.

This book begins with a preface that defines observational study for the reader, and for some it will appear as if the author is revisiting the topic of "quasi-experimental design." However, it soon becomes apparent that the text is not a rehashing of old information, but a reorganization of information in usable and readable terms. Beginning with Chapter 1, the reader is introduced to a feature of the book that is useful and engaging: throughout the entire text the author utilizes case studies as examples of topics being presented to move the reader out of the theoretical and into the practical. Chapter 2 discusses randomized experiments and includes a

discussion of models for treatment effect and of testing the hypothesis of no treatment effect. A section on confidence intervals and point estimates wrap up the essential components of the chapter. Chapter 3 begins a presentation of adjustments that are made in observational studies to remove overt bias. The opening section presents a simple approach to controlling for bias. Chapter 4 focuses further on the issue of bias in research, and provides more detailed discussions of sensitivity analyses. These three chapters rely heavily on useful practical examples. Chapter 5 begins a discussion of methods to detect hidden bias, such as multiple control groups or, as in Chapter 6, multiple reference groups in case-referent studies and matched studies with two referent groups. Chapter 7 considers multiple control groups, in particular the role of a second control group (an interesting design consideration). In chapter 8 the author discusses coherence and focused hypotheses, including a discussion of the sensitivity of a test for coherent association. Chapter 9 considers constructing matched sets and strata, and discusses at length propensity scores and optimal matching. Chapter 10 wraps up the text with a discussion of strategic issues, such as the relationship between design and intended audience in observational studies.

At first glance Rosenbaum's text appears overwhelming to any but those most comfortable with extensive formulas and calculations. For many researchers utilizing observational studies, practical applications and case studies of research in action are the most effective means of establishing research designs. However, Rosenbaum's text does a great job of merging the theoretical with the practical, and provides a nice resource for a broad range of researchers. Additionally, the preface of the text also provides three paths to the text: a "main" path, a "path around the technical discussion," and a "quick path to what's new." These paths make the text useful to three different audiences, and are a good reference for consultants, field researchers, and students.

Consultants and field researchers, particularly in public health, will appreciate the examples and discussion of different research designs. Problems are provided at the end of each chapter, but an appendix with answers would be helpful for those who use the book for independent study outside a classroom situation.

In summary, this text skillfully brings together theoretical and practical issues related to observational studies. With three different path options through the book, it can serve a broad range of needs, providing concise discussions of the issues, practical applications, and mathematical models for those interested. It is particularly helpful for those who need a good reference for managing potential problems in field research.

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