



Paul R. Rosenbaum

Design of Observational Studies

Series: Springer Series in Statistics

- Introduces the concepts of causal inference in experiments and observational studies using elementary mathematics
- Presents many examples and with reference to implementation in R
- Discusses design sensitivity in detail for the first time in book form
- Features new to this edition include: a new R package DOS2, four new chapters about the analysis of counterclaims (Chapter 7), the choice of statistic for sensitivity analyses (Chapter 19), evidence factors (Chapter 20), and the construction of several comparison groups (Chapter 21)

This second edition of *Design of Observational Studies* is both an introduction to statistical inference in observational studies and a detailed discussion of the principles that guide the design of observational studies. An observational study is an empiric investigation of effects caused by treatments when randomized experimentation is unethical or infeasible.

Observational studies are common in most fields that study the effects of treatments on people, including medicine, economics, epidemiology, education, psychology, political science and sociology. The quality and strength of evidence provided by an observational study is determined largely by its design. *Design of Observational Studies* is organized into five parts. Chapters 2, 3, and 5 of Part I cover concisely many of the ideas discussed in Rosenbaum's *Observational Studies* (also published by Springer) but in a less technical fashion. Part II discusses the practical aspects of using propensity scores and other tools to create a matched comparison that balances many covariates, and includes an updated chapter on matching in R. In Part III, the concept of design sensitivity is used to appraise the relative ability of competing designs to distinguish treatment effects from biases due to unmeasured covariates. Part IV is new to this edition; it discusses evidence factors and the computerized construction of more than one comparison group.

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