Rosenbaum, Paul R.
Observational studies. (English) Zbl 0851.62081

An “observational study” is an empirical investigation of the effects of treatments, policies, or exposures. It differs from an experiment in that the investigator cannot control the assignment of treatments to subjects. Scientists across a wide range of disciplines undertake such studies, and the aim of this book is to provide a sound statistical account of the principles and methods for the design and analysis of observational studies.

Chapter 1 defines the subject more carefully, presents several observational studies, and indicates some of the issues that structure the subject. The statistical theory of randomized experiments is reviewed in Chapter 2. Chapter 3 examines the circumstances under which the adjustments succeed. Chapter 4 discusses sensitivity analyses that ask how the findings of a study might be altered by hidden biases of various magnitudes. Chapters 5 through 7 concern attempts to detect hidden biases using devices such as multiple control groups, multiple reference groups in a case-reference study, or known effects. Chapter 8 concerns coherence in observational studies and Chapter 9 discusses methods and algorithms for matched pairs or sets or strata exactly homogeneous in the observed covariates. Chapter 10 discusses the relationships between the design of an observational study and its intended audience. Readers are assumed to have a working knowledge of basic probability and statistics.

Reviewer: T.Postelnicu (Bucureşti)

MSC:
62Pxx Applications of statistics
62-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to statistics
62P99 Applications of statistics

Keywords:
observational studies; randomized experiments; hidden biases; multiple control groups; multiple reference groups; case-reference study; coherence; matched pairs; covariates