The book was found

Observation And Experiment: An Introduction To Causal Inference

Observation & Experiment

An Introduction to Causal Inference

PAUL R. ROSENBAUM
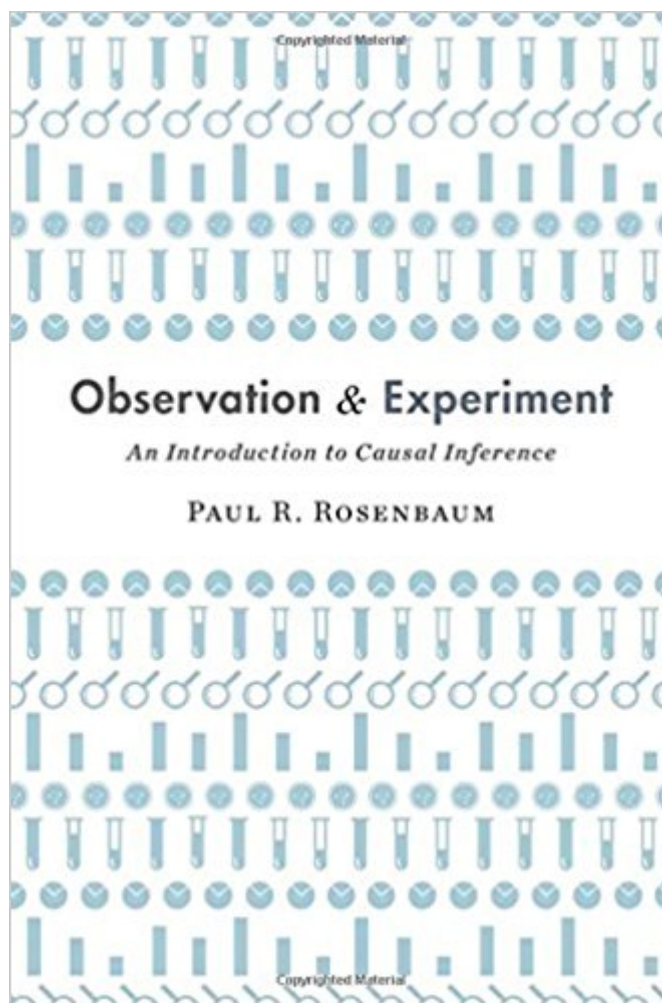
Synopsis

In the daily news and the scientific literature, we are faced with conflicting claims about the effects caused by some treatments, behaviors, and policies. A daily glass of wine prolongs life, or so we are told. Yet we are also told that alcohol can cause life-threatening cancer and that pregnant women should abstain from drinking. Some say that raising the minimum wage decreases inequality while others say it increases unemployment. Investigators once confidently claimed that hormone replacement therapy reduces the risk of heart disease but today investigators confidently claim it raises that risk. How should we study such questions?Observation and Experiment is an introduction to causal inference from one of the fieldÃ¢â ¬â„¢s leading scholars. Using minimal mathematics and statistics, Paul Rosenbaum explains key concepts and methods through scientific examples that make complex ideas concrete and abstract principles accessible.Some causal questions can be studied in randomized trials in which coin flips assign individuals to treatments. But because randomized trials are not always practical or ethical, many causal questions are investigated in nonrandomized observational studies. To illustrate, Rosenbaum draws examples from clinical medicine, economics, public health, epidemiology, clinical psychology, and psychiatry. Readers gain an understanding of the design and interpretation of randomized trials, the ways they differ from observational studies, and the techniques used to remove, investigate, and appraise bias in observational studies. Observation and Experiment is a valuable resource for anyone with a serious interest in the empirical study of human health, behavior, and well-being.

Book Information

Hardcover: 400 pages

Publisher: Harvard University Press (August 14, 2017)

Language: English

ISBN-10: 067497557X

ISBN-13: 978-0674975576

Product Dimensions: 6.4 x 1.3 x 9.4 inches

Shipping Weight: 1.6 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars   2 customer reviews

Best Sellers Rank: #147,053 in Books (See Top 100 in Books)   #137 inÃ Â Books > Textbooks > Medicine & Health Sciences > Research > Epidemiology   #171 inÃ Â Books > Science & Math > Experiments, Instruments & Measurement > Methodology & Statistics   #193 inÃ Â Books > Medical Books > Administration & Medicine Economics > Public Health > Epidemiology

Customer Reviews

RosenbaumÃ¢ ¬â„¢s book is, as would be expected, a carefully and precisely written treatment of its subject, reflecting superb statistical understanding, all communicated with the skill of a master teacher. (Stephen M. Stigler, author of The Seven Pillars of Statistical Wisdom)

Paul R. Rosenbaum is Robert G. Putzel Professor of Statistics at the Wharton School and a Senior Fellow of the Leonard Davis Institute of Health Economics, University of Pennsylvania.

Albert Einstein once said, "All physical theories, their mathematic expression apart, ought to lend themselves to so simple a description that even a child could understand them." Having myself taught graduate students and published papers on causal inference, I know the difficulty of rising to Einstein's standard when teaching this branch of statistics.Thankfully, Paul Rosenbaum has accomplished this task in Observation and Experiment. Himself one of the leaders in the causal inference revolution, publishing with Rubin the classic 1983 Biometrika article on propensity score analysis, Rubinstein describes the essentials of proper causal inference work in terms that should be comprehensible for the wide variety of social scientists, analytics professionals and other researchers who use causal inference techniques in their daily work.I can think of several potential audiences for this text. First, undergraduates majoring in statistics or related disciplines would benefit from the intuitive explanations of causal inference theory provided here before graduating to more mathematically sophisticated accounts. Second, researchers in the private or public sectors who want to improve the accuracy of their casual inference analyses by a deeper understanding of such concepts as sensitivity analysis or elaborate theories will find the explanations in this text at their level of statistical sophistication. Lastly, professors who are looking for ways to better teach causal inference will find many useful examples and descriptions that will make it easier for their students to grasp the essentials.Inevitably, in a text like this, there are parts of causal inference theory that are left out. All the work done by Gary King and others on Coarsened Exact Matching is not even referenced. The complementary but different approach to causal inference developed by Judea Pearl is similarly left out.Even so, to be able to write in a conversational and informative style about causal inference is a significant intellectual achievement. I doubt I will teach the material in Observation and Experiment to my seven year old, as Einstein's criteria might imply, but this book is at the right level for undergraduates and laymen to deepen and strengthen their understanding of these increasingly used statistical techniques.

The economist Paul Samuelson said, "My belief is that nothing that can be expressed by mathematics cannot be expressed by careful use of literary words." Paul Rosenbaum brings this perspective to causal inference in his luminous new book "Observation and Experiment: An Introduction to Causal Inference." The book presents concepts and strategies for causal inference in a way that is accessible to readers of all the background. An example of how Rosenbaum explains causal inference in a literary way is his use of a passage from Robert Frost's poem "The Road Not Taken" to illuminate how causal questions involve comparing potential outcomes under two or more treatments where we can only see one potential outcome:Two roads diverged in a yellow wood,And sorry I could not travel bothAnd be one traveler, long I stoodAnd looked down one as far as I couldTo where it bent in the undergrowth;(Frost, 1916)"Frost creates the mood attending a decision, one whose full consequences we cannot see or anticipate. `Knowing how way leads on to way,' we will not see the road not taken. So it was for Frost in a yellow wood…so it is for a patient at risk of death in the ProCESS trial [a randomized trial comparing two treatments for septic shock], so it is in every causal question.""Observation and Experiment" is accessible to readers of all backgrounds, but at the same time, contains much material of interest to experienced causal inference researchers that is different from Rosenbaum's previous two books "Observational Studies" and "Design of Observational Studies." An example is Chapter 12 which describes a new approach to controlling for biases from general dispositions."Observation and Experiment" is a treasure trove of considerations and strategies for making causal inferences from observational studies and experiments. The book is a joy to read and contains interesting material for readers at all levels of experience with causal inference. A detailed review of the book is provided in the journal Observational Studies.

Observation and Experiment: An Introduction to Causal Inference Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction Counterfactuals and Causal Inference: Methods and Principles for Social Research (Analytical Methods for Social Research) Experimental and Quasi-Experimental Designs for Generalized Causal Inference Discovery and Representation of Causal Relationships from a Large Time-Oriented Clinical Database: The Rx Project (Lecture Notes in Medical , 19) Systems Thinking Basics: From Concepts to Causal Loops (Pegasus Workbook Series) An Introduction to Probability and Statistical Inference, Second Edition Drawing from Observation: An Introduction to Perceptual Drawing The Elements of Statistical Learning: Data

Mining, Inference, and Prediction, Second Edition (Springer Series in Statistics) Model Selection and Multimodel Inference: A Practical Information-Theoretic Approach Chance Encounters: A First Course in Data Analysis and Inference Statistical Inference Based on Divergence Measures (Statistics: A Series of Textbooks and Monographs) Three Philosophical Works: Theoretical Knowledge & Inductive Inference, Popular Lectures on Logic, and Logic, Philosophy & Psychoanalysis Theoretical Knowledge and Inductive Inference Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference (Representation and Reasoning) Causality: Models, Reasoning, and Inference Designing Social Inquiry: Scientific Inference in Qualitative Research All of Statistics: A Concise Course in Statistical Inference (Springer Texts in Statistics) Unifying Political Methodology: The Likelihood Theory of Statistical Inference Drawing the Nude: Structure, Anatomy and Observation