Reviews of *Statistical Models: Theory and Practice*

Author: *David A. Freedman*

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"This is an insightful and authoritative textbook. It is also a clarion call for quantitative researchers to clean up their act. Whether you are a newcomer to statistics or a long-time practitioner, working your way through Freedman's extensive exercises and examples will deepen your understanding of how statistical models can reflect—and distort—reality."

Larry M. Bartels, *Stokes Professor of Public and International Affairs, Princeton University*

"Freedman's *Statistical Models: Theory and Practice* is an informative yet entertaining tour of linear models and their current uses in social and biological sciences by a leading expert in the field. The book begins with clear explanations of simple regression and the basics of experimental design, and with this as a foundation then introduces the reader to more advanced models currently used in the literature, including multiple regression, path models, probit and logit models, the bootstrap, and maximum likelihood. For examples, the book draws on real case studies in sociology, medicine, epidemiology, and economics from the literature, seamlessly including excerpts from the original papers right in the text; full articles are reprinted in the appendix in some cases. The book's congenial and relaxed style causes it to read like a novel, and it is just formal enough to explain technical concepts when needed. In addition, a variety of exercises are included as well as computer labs. The book would be valuable to students or researchers wanting to understand the statistics used in the current social and biological sciences literature. Thus, it could be used by researchers in these fields wanting a review or reference, as a basis for a graduate or advanced undergraduate Statistics course, or as a supplement to Freedman, Pisani, and Purves' popular introductory text in a beginning undergraduate course in Statistics. In addition, it can be used as a supplementary text or reference in a wide variety of courses on quantitative methods in the social sciences."

Jay Bartroff, *Statistics Department, Stanford University*

Tze Leung Lai, *Professor of Statistics, Stanford University*

"This is a great book. It can be read like a detective novel, long descriptive passages being intertwined with major plot developments. The superbly crafted descriptive passages are needed to get a full appreciation of the reasoning. However, even without the detail, the plot line is clear—and there is a resounding climax."

Lawrence D. Brown, *Professor of Statistics, University of Pennsylvania*

"Freedman's marvelous book has three striking features. First, using concise and lively prose, he offers a clear-eyed view of statistical modeling. Second, the book is filled with examples drawn from published studies, in contrast to many texts which focus on hypothetical examples and thereby fail to illustrate problems that arise in making inferences from real data. Third, although Freedman provides a rigorous introduction to statistical modeling, offering carefully structured exercises to teach these tools, he makes it clear that mastery of the tools should not mean uncritical acceptance. Rather, true mastery requires a rigorous understanding of both the statistical tools themselves and the challenges of applying them in real-world research."

David Collier, *Professor of Political Science, University of California, Berkeley*

"At last, a second course in statistics that is serious, correct, and interesting. The book teaches regression, causal modeling, maximum likelihood, and the bootstrap. Everyone who analyzes real data should read this book."

Persi Diaconis, *Professor of Mathematics and Statistics, Stanford University*

"Master of a conversational style that is precise and clear, David Freedman is the statistics professor we all deserved but weren't lucky enough to get. His new book, *Statistical Models*, makes up for what we missed. It skillfully guides the reader through the complexities of theory and the nuts-and-bolts of practice, with cogent explanations and lively applications."

Shari Seidman Diamond, *Howard J. Trienens Professor of Law, Northwestern University*

"A pleasure to read, *Statistical Models* shows the field's most elegant writer at the height of his powers. While most textbooks hurry past core assumptions in order to explicate technique, this book places the spotlight on the core assumptions, challenging readers to think critically about how they are invoked in practice."

Donald Green, *A. Whitney Griswold Professor of Political Science, Yale University*

"Freedman is a master of exposition—concise, rigorous, and sometimes wickedly funny. The essential mathematics are here with real, not just toy, examples. A unique feature is Freedman's wise advice against misusing models. All students and users of statistical models should read this book. It is a methodological gold mine."

Paul Humphreys, *Professor of Philosophy, University of Virginia*

"Written with rapier wit and surgical precision, *Statistical Models* lays bare the foundations of causal inference, and exposes the dangers of blind reliance on complex statistical models. Without slighting the mathematical foundations of the subject, this text lucidly explains the logical underpinnings for both simple and sophisticated statistical models of the kind that are increasingly used in epidemiology, economics, political science, sociology, and law. A cornucopia of rich case studies, thought-provoking problems, and well-selected references for further reading, this work is valuable both as a textbook and as a reference manual."

David H. Kaye, *Regents' Professor, Arizona State University School of Law*

"In *Statistical Models*, David Freedman explains the main statistical techniques used in causal modeling—and where the skeletons are buried. Complex statistical ideas are clearly presented and vividly illustrated with interesting examples. Both newcomers and practitioners will benefit from reading this book."

Alan Krueger, *Bendheim Professor of Economics and Public Policy, Princeton University*

"This book is outstanding for the clarity of its thought and writing. It prepares readers for a critical assessment of the technical literature in the social and health sciences, and provides a welcome antidote to the standard formulaic approach to statistics."

Erich L. Lehmann, *Professor of Statistics Emeritus, University of California, Berkeley*

"Freedman brings unmatched clarity to the enterprise of statistical modeling. A concise presentation illuminates the mathematics, while case studies lead to a thoughtful analysis of the link between

theory and practice. The exercises and computer labs make the text eminently suited to self-study as well as to the classroom. There is no other book like it."

Russell D. Lyons, *Professor of Mathematics, Indiana University*

"Statistical models are everywhere, often developed by analysts who do not understand the underlying theory. Freedman's book brings modeling down to earth. The book covers the theory and the assumptions, with many examples drawn from social science and medicine. It will find an immediate audience as a text for advanced undergraduates and beginning graduate students, because it is so practical. The wider audience will be those who make policy based on statistical models, and those who want to think about the basis for the policies."

Diana B. Petitti, *Senior Scientific Advisor, Kaiser Permanent Southern California*

"*Statistical Models*, a modern introduction to the subject, discusses graphical models and simultaneous equations among other topics. There are plenty of instructive exercises and computer labs. Especially valuable is the critical assessment of the main "philosophers's stones" in applied statistics. This is an inspiring book and a very good read, for teachers as well as students."

Gesine Reinert, *Professor of Statistics, Oxford University*

"A cogent introduction to the use of linear models for causal assessment, this book deftly investigates the interacting role of statistical methods and subject-matter theory. Four reprints from the social-science literature are included; this is most unusual but eminently sensible. Each article is examined carefully to elucidate the assumptions behind the methodology. It is hard to imagine the student of statistics or quantitative sociology who would not benefit from this book."

Michael Stein, *Ralph and Mary Otis Isham Professor of Statistics, University of Chicago*

"Regression techniques are often applied to observational data with the intent of drawing causal conclusions. In what circumstances is this justified? What are the assumptions underlying the analysis? *Statistical Models* answers these questions. The book is essential reading for anybody who uses regression to do more than summarize data. The treatment is original, and extremely well written. Critical discussions of research papers from the social sciences are most insightful. I highly recommend this book to anybody who engages in statistical modeling, or teaches regression, and most certainly to all of my students."

Aad van der Vaart, *Professor of Statistics, Vrije Universiteit Amsterdam*