

regression analysis book

The Ultimate Guide to Finding the Perfect Regression Analysis Book

Are you drowning in data and desperately seeking a clear path to understanding its secrets? Do you need to master regression analysis but feel overwhelmed by the sheer volume of information available? Then you've come to the right place. This comprehensive guide will help you navigate the world of regression analysis books, ensuring you find the perfect resource to unlock your analytical potential. We'll explore what to look for in a good regression analysis book, delve into specific book recommendations, and answer your burning questions. This isn't just a list; it's your roadmap to mastering this powerful statistical technique.

Understanding Your Needs: Choosing the Right Regression Analysis Book

Before diving into specific titles, it's crucial to understand your current skill level and the specific goals you hope to achieve. Are you a complete beginner looking for a gentle introduction? Or are you a seasoned statistician seeking advanced techniques and applications? Your choice of book will depend heavily on this.

Consider these factors:

Your Mathematical Background: Some books assume a strong foundation in calculus and linear algebra, while others cater to readers with less mathematical expertise. Be honest about your abilities; choosing a book too advanced will only lead to frustration.

Your Statistical Knowledge: Do you understand basic statistical concepts like probability distributions and hypothesis testing? If not, you'll need a book that covers these fundamentals alongside regression analysis.

Your Application Area: Regression analysis is used across numerous fields, including economics, finance, marketing, and engineering. A book focusing on a specific application area might be more beneficial than a general-purpose text.

Software Proficiency: Many books incorporate software like R, SPSS, or SAS. If you're familiar with a particular software package, choose a book that utilizes it. Conversely, if you're new to statistical software, a book with clear explanations and beginner-friendly tutorials will be invaluable.

Types of Regression Analysis Books

Regression analysis books fall into several categories:

Introductory Texts: These books provide a gentle introduction to the core concepts and techniques, often with minimal mathematical prerequisites. They are ideal for beginners and those seeking a general understanding.

Intermediate Texts: These books delve deeper into the theoretical underpinnings of regression

analysis, covering more advanced techniques and assumptions. They assume a basic understanding of statistics and mathematics.

Advanced Texts: These books are designed for experienced statisticians and researchers, covering complex topics such as generalized linear models, time series analysis, and non-parametric regression.

Application-Specific Texts: These books focus on the application of regression analysis within a particular field, such as econometrics, biostatistics, or machine learning.

Recommended Regression Analysis Book: "Regression Analysis by Example" (Hypothetical Example)

This hypothetical book, "Regression Analysis by Example," provides a comprehensive introduction to regression analysis suitable for beginners and intermediate learners.

Contents Outline:

Introduction: What is regression analysis? Types of regression, applications, and the importance of understanding assumptions.

Chapter 1: Basic Statistical Concepts: Review of descriptive statistics, probability distributions, hypothesis testing, and confidence intervals.

Chapter 2: Simple Linear Regression: Understanding the model, estimation using least squares, assessing model fit (R-squared, adjusted R-squared), hypothesis testing for coefficients.

Chapter 3: Multiple Linear Regression: Adding multiple predictor variables, interpreting coefficients, dealing with multicollinearity, model selection techniques (stepwise regression, AIC, BIC).

Chapter 4: Model Diagnostics and Assumptions: Checking for violations of assumptions (linearity, normality, homoscedasticity), remedies for violations (transformations, robust regression).

Chapter 5: Advanced Regression Techniques: Introduction to polynomial regression, interaction terms, dummy variables, and qualitative predictors.

Chapter 6: Regression Analysis Software: Practical examples using R or Python (choose one). Data import, model fitting, interpretation of output, and visualization.

Chapter 7: Applications in [Specific Field]: Case studies showcasing regression analysis in a particular area (e.g., economics, marketing).

Conclusion: Summary of key concepts, future directions in regression analysis, and resources for further learning.

Detailed Explanation of Book Contents:

Introduction: This section sets the stage, defining regression analysis clearly, outlining different types (simple linear, multiple linear, logistic, etc.), and showcasing its widespread applications in various fields. The importance of understanding underlying assumptions is emphasized to avoid misinterpretations.

Chapter 1: Basic Statistical Concepts: This chapter serves as a foundation for understanding the core concepts of regression analysis. It reviews descriptive statistics (mean, median, standard deviation), explains different probability distributions (normal, t, F), introduces hypothesis testing (p-values, significance levels), and clarifies the meaning of confidence intervals. This ensures readers have the necessary statistical prerequisites before delving into regression itself.

Chapter 2: Simple Linear Regression: This chapter introduces the simplest form of regression, focusing on the relationship between a single predictor and a single outcome variable. The least squares estimation method is explained, providing a clear understanding of how the regression line is obtained. Key metrics like R-squared are defined and interpreted. The chapter concludes with hypothesis testing of the regression coefficients to determine the statistical significance of the relationship.

Chapter 3: Multiple Linear Regression: This chapter extends the concepts from simple linear regression to include multiple predictor variables. The interpretation of coefficients becomes more nuanced, as the effect of each predictor is considered while holding others constant. The important issue of multicollinearity (high correlation between predictor variables) is addressed. The chapter also introduces model selection techniques to determine the best subset of predictors.

Chapter 4: Model Diagnostics and Assumptions: This is a critical chapter that focuses on assessing the validity of the regression model. The key assumptions of regression (linearity, normality of residuals, homoscedasticity) are explained, and methods for checking these assumptions are presented. Techniques for addressing violations of assumptions, such as data transformations, are discussed.

Chapter 5: Advanced Regression Techniques: This chapter introduces more advanced regression techniques, such as polynomial regression (modeling non-linear relationships), interaction terms (modeling the joint effect of multiple predictors), and the use of dummy variables to incorporate categorical predictors.

Chapter 6: Regression Analysis Software: This practical chapter guides readers through the process of conducting regression analysis using statistical software. It provides step-by-step instructions, clear explanations of outputs, and visual aids to help users understand and interpret the results. The software choice (e.g., R or Python) would depend on the target audience and the book's overall focus.

Chapter 7: Applications in [Specific Field]: This chapter showcases the real-world applications of regression analysis within a chosen field. Case studies, drawn from real-world data, illustrate the practical use of regression techniques and how they can provide valuable insights.

Conclusion: This section summarizes the key concepts covered throughout the book, provides guidance on further learning and explores the future directions in regression analysis, potentially highlighting emerging techniques and challenges.

Frequently Asked Questions (FAQs)

1. What is the difference between simple and multiple linear regression? Simple linear regression involves one predictor variable, while multiple linear regression involves two or more.
1. What are the assumptions of linear regression? Linearity, independence of errors, homoscedasticity (constant variance of errors), and normality of errors.

1. How do I interpret the R-squared value? R-squared represents the proportion of variance in the dependent variable explained by the independent variables.
1. What is multicollinearity, and how can I address it? Multicollinearity is high correlation between predictor variables. Solutions include removing redundant variables or using regularization techniques.
1. What are residuals, and why are they important? Residuals are the differences between observed and predicted values. Analyzing residuals helps assess model fit and assumptions.
1. How do I choose the best regression model? Use techniques like AIC, BIC, or adjusted R-squared to compare models and choose the best one.
1. What is logistic regression? Logistic regression is used to model the probability of a binary outcome.
1. What software packages are commonly used for regression analysis? R, Python (with libraries like statsmodels and scikit-learn), SPSS, SAS.
1. Where can I find datasets for practicing regression analysis? Kaggle, UCI Machine Learning Repository, and government data websites.

Related Articles:

1. Introduction to Statistical Modeling: A foundational article covering basic statistical concepts relevant to regression analysis.
2. Understanding Hypothesis Testing in Regression: A deep dive into hypothesis testing within the context of regression models.
3. Interpreting Regression Coefficients: A guide to understanding and interpreting the meaning of regression coefficients.

4. Dealing with Multicollinearity in Regression: Strategies and techniques for addressing multicollinearity.
5. Model Selection Techniques in Regression: A comparison of various model selection methods.
6. Regression Analysis in R: A practical tutorial on performing regression analysis using R.
7. Regression Analysis in Python: A practical tutorial on performing regression analysis using Python.
8. Advanced Regression Techniques: An Overview: An exploration of more advanced regression methods.
9. Applications of Regression Analysis in Finance: Case studies showcasing the use of regression in financial modeling.

regression analysis book: *Introduction to Regression Analysis* Michael A. Golberg, Hokwon A. Cho, 2004 In order to apply regression analysis effectively, it is necessary to understand both the underlying theory and its practical application. This book explores conventional topics as well as recent practical developments, linking theory with application. Intended to continue from where most basic statistics texts end, it is designed primarily for advanced undergraduates, graduate students and researchers in various fields of engineering, chemical and physical sciences, mathematical sciences and statistics.

regression analysis book: Introduction to Linear Regression Analysis Douglas C. Montgomery, Elizabeth A. Peck, G. Geoffrey Vining, 2015-06-29 Praise for the Fourth Edition As with previous editions, the authors have produced a leading textbook on regression. —Journal of the American Statistical Association A comprehensive and up-to-date introduction to the fundamentals of regression analysis *Introduction to Linear Regression Analysis*, Fifth Edition continues to present both the conventional and less common uses of linear regression in today's cutting-edge scientific research. The authors blend both theory and application to equip readers with an understanding of the basic principles needed to apply regression model-building techniques in various fields of study, including engineering, management, and the health sciences. Following a general introduction to regression modeling, including typical applications, a host of technical tools are outlined such as basic inference procedures, introductory aspects of model adequacy checking, and polynomial regression models and their variations. The book then discusses how transformations and weighted least squares can be used to resolve problems of model inadequacy and also how to deal with influential observations. The Fifth Edition features numerous newly added topics, including: A chapter on regression analysis of time series data that presents the Durbin-Watson test and other techniques for detecting autocorrelation as well as parameter estimation in time series regression models Regression models with random effects in addition to a discussion on subsampling and the importance of the mixed model Tests on individual regression coefficients and subsets of coefficients Examples of current uses of simple linear regression models and the use of multiple regression models for understanding patient satisfaction data. In addition to Minitab, SAS, and S-PLUS, the authors have incorporated JMP and the freely available R software to illustrate the discussed techniques and procedures in this new edition. Numerous exercises have been added throughout, allowing readers to test their understanding of the material. *Introduction to Linear Regression Analysis*, Fifth Edition is an excellent book for statistics and engineering courses on regression at

the upper-undergraduate and graduate levels. The book also serves as a valuable, robust resource for professionals in the fields of engineering, life and biological sciences, and the social sciences.

regression analysis book: Linear Regression Analysis George A. F. Seber, Alan J. Lee, 2012-01-20 Concise, mathematically clear, and comprehensive treatment of the subject. * Expanded coverage of diagnostics and methods of model fitting. * Requires no specialized knowledge beyond a good grasp of matrix algebra and some acquaintance with straight-line regression and simple analysis of variance models. * More than 200 problems throughout the book plus outline solutions for the exercises. * This revision has been extensively class-tested.

regression analysis book: Applied Regression Analysis Norman R. Draper, Harry Smith, 2014-08-25 An outstanding introduction to the fundamentals of regression analysis-updated and expanded The methods of regression analysis are the most widely used statistical tools for discovering the relationships among variables. This classic text, with its emphasis on clear, thorough presentation of concepts and applications, offers a complete, easily accessible introduction to the fundamentals of regression analysis. Assuming only a basic knowledge of elementary statistics, Applied Regression Analysis, Third Edition focuses on the fitting and checking of both linear and nonlinear regression models, using small and large data sets, with pocket calculators or computers. This Third Edition features separate chapters on multicollinearity, generalized linear models, mixture ingredients, geometry of regression, robust regression, and resampling procedures. Extensive support materials include sets of carefully designed exercises with full or partial solutions and a series of true/false questions with answers. All data sets used in both the text and the exercises can be found on the companion disk at the back of the book. For analysts, researchers, and students in university, industrial, and government courses on regression, this text is an excellent introduction to the subject and an efficient means of learning how to use a valuable analytical tool. It will also prove an invaluable reference resource for applied scientists and statisticians.

regression analysis book: Regression Analysis by Example Samprit Chatterjee, Ali S. Hadi, 2006-10-20 The essentials of regression analysis through practical applications Regression analysis is a conceptually simple method for investigating relationships among variables. Carrying out a successful application of regression analysis, however, requires a balance of theoretical results, empirical rules, and subjective judgement. Regression Analysis by Example, Fourth Edition has been expanded and thoroughly updated to reflect recent advances in the field. The emphasis continues to be on exploratory data analysis rather than statistical theory. The book offers in-depth treatment of regression diagnostics, transformation, multicollinearity, logistic regression, and robust regression. This new edition features the following enhancements: Chapter 12, Logistic Regression, is expanded to reflect the increased use of the logit models in statistical analysis A new chapter entitled Further Topics discusses advanced areas of regression analysis Reorganized, expanded, and upgraded exercises appear at the end of each chapter A fully integrated Web page provides data sets Numerous graphical displays highlight the significance of visual appeal Regression Analysis by Example, Fourth Edition is suitable for anyone with an understanding of elementary statistics. Methods of regression analysis are clearly demonstrated, and examples containing the types of irregularities commonly encountered in the real world are provided. Each example isolates one or two techniques and features detailed discussions of the techniques themselves, the required assumptions, and the evaluated success of each technique. The methods described throughout the book can be carried out with most of the currently available statistical software packages, such as the software package R. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

regression analysis book: Applied Regression Analysis and Generalized Linear Models John Fox, 2015-03-18 Combining a modern, data-analytic perspective with a focus on applications in the social sciences, the Third Edition of Applied Regression Analysis and Generalized Linear Models provides in-depth coverage of regression analysis, generalized linear models, and closely related methods, such as bootstrapping and missing data. Updated throughout, this Third Edition includes new chapters on mixed-effects models for hierarchical and longitudinal data. Although the text is

largely accessible to readers with a modest background in statistics and mathematics, author John Fox also presents more advanced material in optional sections and chapters throughout the book.

regression analysis book: Regression Analysis J. Holton Wilson, 2012-08-02 The technique of regression analysis is used so often in business and economics today that an understanding of its use is necessary for almost everyone engaged in the field. This book will teach you the essential elements of building and understanding regression models in a business/economic context in an intuitive manner. The authors take a non-theoretical treatment that is accessible even if you have a limited statistical background. It is specifically designed to teach the correct use of regression, while advising you of its limitations and teaching about common pitfalls. This book describes exactly how regression models are developed and evaluated —where real data is used, instead of contrived textbook-like problems. Completing this book will allow you to understand and build basic business/economic models using regression analysis. You will be able to interpret the output of those models and you will be able to evaluate the models for accuracy and shortcomings. Even if you never build a model yourself, at some point in your career it is likely that you will find it necessary to interpret one; this book will make that possible. Included are instructions for using Microsoft Excel to build business/economic models using regression analysis with an appendix using screen shots and step-by-step instructions.

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regression analysis book: Understanding Regression Analysis Michael Patrick Allen, 2007-11-23 By assuming it is possible to understand regression analysis without fully comprehending all its underlying proofs and theories, this introduction to the widely used statistical technique is accessible to readers who may have only a rudimentary knowledge of mathematics. Chapters discuss: -descriptive statistics using vector notation and the components of a simple regression model; -the logic of sampling distributions and simple hypothesis testing; -the basic operations of matrix algebra and the properties of the multiple regression model; -testing compound hypotheses and the application of the regression model to the analyses of variance and covariance, and -structural equation models and influence statistics.

regression analysis book: The SAGE Handbook of Regression Analysis and Causal Inference Henning Best, Christof Wolf, 2013-12-20 'The editors of the new SAGE Handbook of Regression Analysis and Causal Inference have assembled a wide-ranging, high-quality, and timely collection of articles on topics of central importance to quantitative social research, many written by leaders in the field. Everyone engaged in statistical analysis of social-science data will find something of interest in this book.' - John Fox, Professor, Department of Sociology, McMaster University 'The authors do a great job in explaining the various statistical methods in a clear and simple way - focussing on fundamental understanding, interpretation of results, and practical application - yet being precise in their exposition.' - Ben Jann, Executive Director, Institute of Sociology, University of Bern 'Best and Wolf have put together a powerful collection, especially valuable in its separate discussions of uses for both cross-sectional and panel data analysis.' -Tom Smith, Senior Fellow, NORC, University of Chicago Edited and written by a team of leading international social scientists, this Handbook provides a comprehensive introduction to multivariate methods. The Handbook focuses on regression analysis of cross-sectional and longitudinal data with an emphasis on causal analysis, thereby covering a large number of different techniques including selection models, complex samples, and regression discontinuities. Each Part starts with a

non-mathematical introduction to the method covered in that section, giving readers a basic knowledge of the method's logic, scope and unique features. Next, the mathematical and statistical basis of each method is presented along with advanced aspects. Using real-world data from the European Social Survey (ESS) and the Socio-Economic Panel (GSOEP), the book provides a comprehensive discussion of each method's application, making this an ideal text for PhD students and researchers embarking on their own data analysis.

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regression analysis book: Regression Analysis and Linear Models Richard B. Darlington, Andrew F. Hayes, 2016-08-22 Emphasizing conceptual understanding over mathematics, this user-friendly text introduces linear regression analysis to students and researchers across the social, behavioral, consumer, and health sciences. Coverage includes model construction and estimation, quantification and measurement of multivariate and partial associations, statistical control, group comparisons, moderation analysis, mediation and path analysis, and regression diagnostics, among other important topics. Engaging worked-through examples demonstrate each technique, accompanied by helpful advice and cautions. The use of SPSS, SAS, and STATA is emphasized, with an appendix on regression analysis using R. The companion website (www.afhayes.com) provides datasets for the book's examples as well as the RLM macro for SPSS and SAS. Pedagogical Features: *Chapters include SPSS, SAS, or STATA code pertinent to the analyses described, with each distinctively formatted for easy identification. *An appendix documents the RLM macro, which facilitates computations for estimating and probing interactions, dominance analysis, heteroscedasticity-consistent standard errors, and linear spline regression, among other analyses. *Students are guided to practice what they learn in each chapter using datasets provided online. *Addresses topics not usually covered, such as ways to measure a variable's importance, coding systems for representing categorical variables, causation, and myths about testing interaction.

regression analysis book: Regression Analysis with R Giuseppe Ciaburro, 2018-01-31 Build effective regression models in R to extract valuable insights from real data Key Features Implement different regression analysis techniques to solve common problems in data science - from data exploration to dealing with missing values From Simple Linear Regression to Logistic Regression - this book covers all regression techniques and their implementation in R A complete guide to building effective regression models in R and interpreting results from them to make valuable predictions Book Description Regression analysis is a statistical process which enables prediction of relationships between variables. The predictions are based on the casual effect of one variable upon another. Regression techniques for modeling and analyzing are employed on large set of data in order to reveal hidden relationship among the variables. This book will give you a rundown explaining what regression analysis is, explaining you the process from scratch. The first few chapters give an understanding of what the different types of learning are - supervised and unsupervised, how these learnings differ from each other. We then move to covering the supervised learning in details covering the various aspects of regression analysis. The outline of chapters are arranged in a way that gives a feel of all the steps covered in a data science process - loading the training dataset, handling missing values, EDA on the dataset, transformations and feature engineering, model building, assessing the model fitting and performance, and finally making

predictions on unseen datasets. Each chapter starts with explaining the theoretical concepts and once the reader gets comfortable with the theory, we move to the practical examples to support the understanding. The practical examples are illustrated using R code including the different packages in R such as R Stats, Caret and so on. Each chapter is a mix of theory and practical examples. By the end of this book you will know all the concepts and pain-points related to regression analysis, and you will be able to implement your learning in your projects. What you will learn

- Get started with the journey of data science using Simple linear regression
- Deal with interaction, collinearity and other problems using multiple linear regression
- Understand diagnostics and what to do if the assumptions fail with proper analysis
- Load your dataset, treat missing values, and plot relationships with exploratory data analysis
- Develop a perfect model keeping overfitting, under-fitting, and cross-validation into consideration
- Deal with classification problems by applying Logistic regression
- Explore other regression techniques - Decision trees, Bagging, and Boosting techniques
- Learn by getting it all in action with the help of a real world case study.

Who this book is for This book is intended for budding data scientists and data analysts who want to implement regression analysis techniques using R. If you are interested in statistics, data science, machine learning and wants to get an easy introduction to the topic, then this book is what you need! Basic understanding of statistics and math will help you to get the most out of the book. Some programming experience with R will also be helpful

regression analysis book: Handbook of Regression Analysis Samprit Chatterjee, Jeffrey S. Simonoff, 2013-05-30 A Comprehensive Account for Data Analysts of the Methods and Applications of Regression Analysis. Written by two established experts in the field, the purpose of the Handbook of Regression Analysis is to provide a practical, one-stop reference on regression analysis. The focus is on the tools that both practitioners and researchers use in real life. It is intended to be a comprehensive collection of the theory, methods, and applications of regression methods, but it has been deliberately written at an accessible level. The handbook provides a quick and convenient reference or “refresher” on ideas and methods that are useful for the effective analysis of data and its resulting interpretations. Students can use the book as an introduction to and/or summary of key concepts in regression and related course work (including linear, binary logistic, multinomial logistic, count, and nonlinear regression models). Theory underlying the methodology is presented when it advances conceptual understanding and is always supplemented by hands-on examples. References are supplied for readers wanting more detailed material on the topics discussed in the book. R code and data for all of the analyses described in the book are available via an author-maintained website. I enjoyed the presentation of the Handbook, and I would be happy to recommend this nice handy book as a reference to my students. The clarity of the writing and proper choices of examples allows the presentations of many statistical methods shine. The quality of the examples at the end of each chapter is a strength. They entail explanations of the resulting R outputs and successfully guide readers to interpret them. American Statistician

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analysis are clearly demonstrated, and examples containing the types of irregularities commonly encountered in the real world are provided. Each example isolates one or two techniques and features detailed discussions, the required assumptions, and the evaluated success of each technique. Additionally, methods described throughout the book can be carried out with most of the currently available statistical software packages, such as the software package R. *Regression Analysis by Example*, Fifth Edition is suitable for anyone with an understanding of elementary statistics.

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regression analysis book: *Solutions Manual to accompany Introduction to Linear Regression Analysis* Douglas C. Montgomery, Elizabeth A. Peck, G. Geoffrey Vining, 2013-04-23 As the Solutions Manual, this book is meant to accompany the main title, *Introduction to Linear Regression Analysis*, Fifth Edition. Clearly balancing theory with applications, this book describes both the conventional and less common uses of linear regression in the practical context of today's mathematical and scientific research. Beginning with a general introduction to regression modeling, including typical applications, the book then outlines a host of technical tools that form the linear regression analytical arsenal, including: basic inference procedures and introductory aspects of model adequacy checking; how transformations and weighted least squares can be used to resolve problems of model inadequacy; how to deal with influential observations; and polynomial regression models and their variations. The book also includes material on regression models with autocorrelated errors, bootstrapping regression estimates, classification and regression trees, and regression model validation.

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regression analysis book: *Regression Analysis* Ashish Sen, Muni Srivastava, 1997-04-01 An up-to-date, rigorous, and lucid treatment of the theory, methods, and applications of regression analysis, and thus ideally suited for those interested in the theory as well as those whose interests lie primarily with applications. It is further enhanced through real-life examples drawn from many disciplines, showing the difficulties typically encountered in the practice of regression analysis. Consequently, this book provides a sound foundation in the theory of this important subject.

regression analysis book: *Applied Regression Analysis* Christer Thrane, 2019-10-16 This book

is an introduction to regression analysis, focusing on the practicalities of doing regression analysis on real-life data. Contrary to other textbooks on regression, this book is based on the idea that you do not necessarily need to know much about statistics and mathematics to get a firm grip on regression and perform it to perfection. This non-technical point of departure is complemented by practical examples of real-life data analysis using statistics software such as Stata, R and SPSS. Parts 1 and 2 of the book cover the basics, such as simple linear regression, multiple linear regression, how to interpret the output from statistics programs, significance testing and the key regression assumptions. Part 3 deals with how to practically handle violations of the classical linear regression assumptions, regression modeling for categorical y-variables and instrumental variable (IV) regression. Part 4 puts the various purposes of, or motivations for, regression into the wider context of writing a scholarly report and points to some extensions to related statistical techniques. This book is written primarily for those who need to do regression analysis in practice, and not only to understand how this method works in theory. The book's accessible approach is recommended for students from across the social sciences.

regression analysis book: Bayesian and Frequentist Regression Methods Jon Wakefield, 2013-01-04 Bayesian and Frequentist Regression Methods provides a modern account of both Bayesian and frequentist methods of regression analysis. Many texts cover one or the other of the approaches, but this is the most comprehensive combination of Bayesian and frequentist methods that exists in one place. The two philosophical approaches to regression methodology are featured here as complementary techniques, with theory and data analysis providing supplementary components of the discussion. In particular, methods are illustrated using a variety of data sets. The majority of the data sets are drawn from biostatistics but the techniques are generalizable to a wide range of other disciplines.

regression analysis book: Regression Analysis Richard A. Berk, 2003-07-17 Berk has incisively identified the various strains of regression abuse and suggests practical steps for researchers who desire to do good social science while avoiding such errors. --Peter H. Rossi, University of Massachusetts, Amherst I have been waiting for a book like this for some time. Practitioners, especially those doing applied work, will have much to gain from Berk's volume, regardless of their level of statistical sophistication. Graduate students in sociology, education, public policy, and any number of similar fields should also use it. It will also be a useful foil for conventional texts for the teaching of the regression model. I plan to use it for my students as a text, and hope others will do the same. --Herbert Smith, Professor of Demography & Sociology, University of Pennsylvania Regression is often applied to questions for which it is ill equipped to answer. As a formal matter, conventional regression analysis does nothing more than produce from a data set a collection of conditional means and conditional variances. The problem, though, is that researchers typically want more: they want tests, confidence intervals and the ability to make causal claims. However, these capabilities require information external to that data themselves, and too often that information makes implausible demands on how nature is supposed to function. Convenience samples are treated as if they are random samples. Causal status is given to predictors that cannot be manipulated. Disturbance terms are assumed to behave not as nature might produce them, but as required by the model. Regression Analysis: A Constructive Critique identifies a wide variety of problems with regression analysis as it is commonly used and then provides a number of ways in which practice could be improved. Regression is most useful for data reduction, leading to relatively simple but rich and precise descriptions of patterns in a data set. The emphasis on description provides readers with an insightful rethinking from the ground up of what regression analysis can do, so that readers can better match regression analysis with useful empirical questions and improved policy-related research. An interesting and lively text, rich in practical wisdom, written for people who do empirical work in the social sciences and their graduate students. --David A. Freedman, Professor of Statistics, University of California, Berkeley

regression analysis book: Regression Analysis Franklin A. Graybill, Hariharan K. Iyer, 1994 The focus of the text is on thinking clearly about and solving practical statistical problems. The

approach leads from the theoretical (meaning conceptual not mathematical) to the applied, with the concept being that samples (theory) tell the investigator what needs to be known about populations (application). The authors stress regression in practice and assume that a population has a finite number of elements, which is always the case in real problems.

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