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AN INTRODUCTION TO CATEGORICAL DATA ANALYSIS

John Wiley & Sons *A valuable new edition of a standard reference The use of statistical methods for categorical data has increased dramatically, particularly for applications in the biomedical and social sciences. An Introduction to Categorical Data Analysis, Third Edition summarizes these methods and shows readers how to use them using software. Readers will find a unified generalized linear models approach that connects logistic regression and loglinear models for discrete data with normal regression for continuous data. Adding to the value in the new edition is: • Illustrations of the use of R software to perform all the analyses in the book • A new chapter on alternative methods for categorical data, including smoothing and regularization methods (such as the lasso), classification methods such as linear discriminant analysis and classification trees, and cluster analysis • New sections in many chapters introducing the Bayesian approach for the methods of that chapter • More than 70 analyses of data sets to illustrate application of the methods, and about 200 exercises, many containing other data sets • An appendix showing how to use SAS, Stata, and SPSS, and an appendix with short solutions to most odd-numbered exercises Written in an applied, nontechnical style, this book illustrates the methods using a wide variety of real data, including medical clinical trials, environmental questions, drug use by teenagers, horseshoe crab mating, basketball shooting, correlates of happiness, and much more. An Introduction to Categorical Data Analysis, Third Edition is an invaluable tool for statisticians and biostatisticians as well as methodologists in the social and behavioral sciences, medicine and public health, marketing, education, and the biological and agricultural sciences.*

CATEGORICAL DATA ANALYSIS

John Wiley & Sons *Agresti provides a comprehensive introduction to methods for categorical data analysis. He presents the most prominent methods, such as logistic regression modelling and clearly presents new methods for correlated multivariate categorical responses.*

ANALYSIS OF CATEGORICAL DATA WITH R

CRC Press *Learn How to Properly Analyze Categorical Data Analysis of Categorical Data with R presents a modern account of categorical data analysis using the popular R software. It covers recent techniques of model building and assessment for binary, multicategory, and count response variables and discusses fundamentals, such as odds ratio and probability estimation. The authors give detailed advice and guidelines on which procedures to use and why to use them. The Use of R as Both a Data Analysis Method and a Learning Tool Requiring no prior experience with R, the text offers an introduction to the essential features and functions of R. It incorporates numerous examples from medicine, psychology, sports, ecology, and other areas, along with extensive R code and output. The authors use data simulation in R to help readers understand the underlying assumptions of a procedure and then to evaluate the procedure's performance. They also present many graphical demonstrations of the features and properties of various analysis methods. Web Resource The data sets and R programs from each example are available at www.chrisbilder.com/categorical. The programs include code used to create every plot and piece of output. Many of these programs contain code to demonstrate additional features or to perform more detailed analyses than what is in the text. Designed to be used in tandem with the book, the website also uniquely provides videos of the authors teaching a course on the subject. These videos include live, in-class recordings, which instructors may find useful in a blended or flipped classroom setting. The videos are also suitable as a substitute for a short course.*

ORDINAL DATA MODELING

Springer Science & Business Media *Ordinal Data Modeling is a comprehensive treatment of ordinal data models from both likelihood and Bayesian perspectives. A unique feature of this text is its emphasis on applications. All models developed in the book are motivated by real datasets, and considerable attention is devoted to the description of diagnostic plots and residual analyses. Software and datasets used for all analyses described in the text are available on websites listed in the preface.*

AN INTRODUCTION TO CATEGORICAL DATA ANALYSIS

Wiley-Interscience *Praise for the First Edition "This is a superb text from which to teach categorical data analysis, at a variety of levels. . . [t]his book can be very highly recommended." —Short Book Reviews "Of great interest to potential readers is the variety of fields that are represented in the examples: health care, financial, government, product marketing, and sports, to name a few." —Journal of Quality Technology "Alan Agresti has written another brilliant account of the analysis of categorical data." —The Statistician The use of statistical methods for categorical data is ever increasing in today's world. An Introduction to Categorical Data Analysis, Second Edition provides an applied introduction to the most important methods for analyzing categorical data. This new edition summarizes methods that have long played a prominent role in data analysis, such as chi-squared tests, and also places special emphasis on logistic regression and other modeling techniques for univariate and correlated multivariate categorical responses. This Second Edition features: Two new chapters on the methods for clustered data, with an emphasis on generalized estimating equations (GEE) and random effects models A unified perspective based on generalized linear models An emphasis on logistic regression modeling An appendix that demonstrates the use of SAS(r) for all methods An entertaining historical perspective on the development of the methods Specialized methods for ordinal data, small samples, multicategory data, and matched pairs More than 100 analyses of real data sets and nearly 300 exercises Written in an applied, nontechnical style, the book illustrates methods using a wide variety of real data, including medical clinical trials, drug use by teenagers, basketball shooting, horseshoe crab mating, environmental opinions, correlates of happiness, and much more. An Introduction to Categorical Data Analysis, Second Edition is an invaluable tool for social, behavioral, and biomedical scientists, as well as researchers in public health, marketing, education, biological and agricultural sciences, and industrial quality control.*

STUDENT SOLUTIONS MANUAL TO ACCOMPANY LOSS MODELS: FROM DATA TO DECISIONS, FOURTH EDITION

John Wiley & Sons *Student Solutions Manual to Accompany Loss Models: From Data to Decisions, Fourth Edition. This volume is organised around the principle that much of actuarial science consists of the construction and analysis of mathematical models which describe the process by which funds flow into and out of an insurance system.*

ANALYSIS OF ORDINAL CATEGORICAL DATA

John Wiley & Sons *Statistical science's first coordinated manual of methods for analyzing ordered categorical data, now fully revised and updated, continues to present applications and case studies in fields as diverse as sociology, public health, ecology, marketing, and pharmacy. Analysis of Ordinal Categorical Data, Second Edition provides an introduction to basic descriptive and inferential methods for categorical data, giving thorough coverage of new developments and recent methods. Special emphasis is placed on interpretation and application of methods including an integrated comparison of the available strategies for analyzing ordinal data. Practitioners of statistics in government, industry (particularly pharmaceutical), and academia will want this new edition.*

DISCRETE DATA ANALYSIS WITH R

VISUALIZATION AND MODELING TECHNIQUES FOR CATEGORICAL AND COUNT DATA

CRC Press *An Applied Treatment of Modern Graphical Methods for Analyzing Categorical DataDiscrete Data Analysis with R: Visualization and Modeling Techniques for Categorical and Count Data presents an applied treatment of modern methods for the analysis of categorical data, both discrete response data and frequency data. It explains how to use graphical meth*

FOUNDATIONS OF LINEAR AND GENERALIZED LINEAR MODELS

John Wiley & Sons *A valuable overview of the most important ideas and results in statistical modeling Written by a highly-experienced author, Foundations of Linear and Generalized Linear Models is a clear and comprehensive guide to the key concepts and results of linearstatistical models. The book presents a broad, in-depth overview of the most commonly usedstatistical models by discussing the theory underlying the models, R software applications,and examples with crafted models to elucidate key ideas and promote practical modelbuilding. The book begins by illustrating the fundamentals of linear models, such as how the model-fitting projects the data onto a model vector subspace and how orthogonal decompositions of the data yield information about the effects of explanatory variables.*

Subsequently, the book covers the most popular generalized linear models, which include binomial and multinomial logistic regression for categorical data, and Poisson and negative binomial loglinear models for count data. Focusing on the theoretical underpinnings of these models, Foundations ofLinear and Generalized Linear Models also features: An introduction to quasi-likelihood methods that require weaker distributional assumptions, such as generalized estimating equation methods An overview of linear mixed models and generalized linear mixed models with random effects for clustered correlated data, Bayesian modeling, and extensions to handle problematic cases such as high dimensional problems Numerous examples that use R software for all text data analyses More than 400 exercises for readers to practice and extend the theory, methods, and data analysis A supplementary website with datasets for the examples and exercises An invaluable textbook for upper-undergraduate and graduate-level students in statistics and biostatistics courses, Foundations of Linear and Generalized Linear Models is also an excellent reference for practicing statisticians and biostatisticians, as well as anyone who is interested in learning about the most important statistical models for analyzing data.

APPLIED CATEGORICAL AND COUNT DATA ANALYSIS

CRC Press Developed from the authors' graduate-level biostatistics course, Applied Categorical and Count Data Analysis explains how to perform the statistical analysis of discrete data, including categorical and count outcomes. The authors describe the basic ideas underlying each concept, model, and approach to give readers a good grasp of the fundamentals of the methodology without using rigorous mathematical arguments. The text covers classic concepts and popular topics, such as contingency tables, logistic models, and Poisson regression models, along with modern areas that include models for zero-modified count outcomes, parametric and semiparametric longitudinal data analysis, reliability analysis, and methods for dealing with missing values. R, SAS, SPSS, and Stata programming codes are provided for all the examples, enabling readers to immediately experiment with the data in the examples and even adapt or extend the codes to fit data from their own studies. Designed for a one-semester course for graduate and senior undergraduate students in biostatistics, this self-contained text is also suitable as a self-learning guide for biomedical and psychosocial researchers. It will help readers analyze data with discrete variables in a wide range of biomedical and psychosocial research fields.

STATISTICS: THE ART AND SCIENCE OF LEARNING FROM DATA

This package includes a physical copy of Statistics: The Art and Science of Learning from Data by Alan Agresti and Christine Franklin, as well as access to the eText and MyMathLab. Statistics: The Art and Science of Learning from Data, Third Edition, helps you become statistically literate by encouraging you to ask and answer interesting statistical questions. This book takes the ideas that have turned statistics into a central science in modern life and makes them accessible. The Third Edition has been edited for conciseness and clarity to keep you focused on the main concepts. The data-rich examples that feature intriguing human-interest topics now include topic labels to indicate which statistical topic is being applied.

BAYESIAN DATA ANALYSIS, THIRD EDITION

CRC Press Now in its third edition, this classic book is widely considered the leading text on Bayesian methods, lauded for its accessible, practical approach to analyzing data and solving research problems. Bayesian Data Analysis, Third Edition continues to take an applied approach to analysis using up-to-date Bayesian methods. The authors—all leaders in the statistics community—introduce basic concepts from a data-analytic perspective before presenting advanced methods. Throughout the text, numerous worked examples drawn from real applications and research emphasize the use of Bayesian inference in practice. New to the Third Edition Four new chapters on nonparametric modeling Coverage of weakly informative priors and boundary-avoiding priors Updated discussion of cross-validation and predictive information criteria Improved convergence monitoring and effective sample size calculations for iterative simulation Presentations of Hamiltonian Monte Carlo, variational Bayes, and expectation propagation New and revised software code The book can be used in three different ways. For undergraduate students, it introduces Bayesian inference starting from first principles. For graduate students, the text presents effective current approaches to Bayesian modeling and computation in statistics and related fields. For researchers, it provides an assortment of Bayesian methods in applied statistics. Additional materials, including data sets used in the examples, solutions to selected exercises, and software instructions, are available on the book's web page.

LEARNING STATISTICS WITH R

Lulu.com

STATISTICAL METHODS FOR THE SOCIAL SCIENCES

The fourth edition has an even stronger emphasis on concepts and applications, with greater attention to "real data" both in the examples and exercises. The mathematics is still downplayed, in particular probability, which is all too often a stumbling block for students. On the other hand, the text is not a cookbook. Reliance on an overly simplistic recipe-based approach to statistics is not the route to good statistical practice. Changes in the Fourth Edition: Since the first edition, the increase in computer power coupled with the continued improvement and accessibility of statistical software has had a major

impact on the way social scientists analyze data. Because of this, this book does not cover the traditional shortcut hand-computational formulas and approximations. The presentation of computationally complex methods, such as regression, emphasizes interpretation of software output rather than the formulas for performing the analysis. Teh text contains numerous sample printouts, mainly in the style of SPSS and occasionaly SAS, both in chapter text and homework problems. This edition also has an appendix explaining how to apply SPSS and SAS to conduct the methods of each chapter and a website giving links to information about other software.

CATEGORICAL DATA ANALYSIS

John Wiley & Sons *Praise for the Second Edition "A must-have book for anyone expecting to do research and/orapplications in categorical data analysis." —Statistics in Medicine "It is a total delight reading this book." —Pharmaceutical Research "If you do any analysis of categorical data, this is anessential desktop reference." —Technometrics The use of statistical methods for analyzing categorical datahas increased dramatically, particularly in the biomedical, socialsciences, and financial industries. Responding to new developments,this book offers a comprehensive treatment of the most importantmethods for categorical data analysis. Categorical Data Analysis, Third Edition summarizes thelatest methods for univariate and correlated multivariatecategorical responses. Readers will find a unified generalizedlinear models approach that connects logistic regression andPoisson and negative binomial loglinear models for discrete datawith normal regression for continuous data. This edition alsofeatures: An emphasis on logistic and probit regression methods forbinary, ordinal, and nominal responses for independent observationsand for clustered data with marginal models and random effectsmodels Two new chapters on alternative methods for binary responsedata, including smoothing and regularization methods,classification methods such as linear discriminant analysis andclassification trees, and cluster analysis New sections introducing the Bayesian approach for methods inthat chapter More than 100 analyses of data sets and over 600 exercises Notes at the end of each chapter that provide references torecent research and topics not covered in the text, linked to abibliography of more than 1,200 sources A supplementary website showing how to use R and SAS; for allexamples in the text, with information also about SPSS and Stataand with exercise solutions Categorical Data Analysis, Third Edition is an invaluabletool for statisticians and methodologists, such as biostatisticiansand researchers in the social and behavioral sciences, medicine andpublic health, marketing, education, finance, biological andagricultural sciences, and industrial quality control.*

FOUNDATIONS OF STATISTICS FOR DATA SCIENTISTS

WITH R AND PYTHON

CRC Press *Foundations of Statistics for Data Scientists: With R and Python is designed as a textbook for a one- or two-term introduction to mathematical statistics for students training to become data scientists. It is an in-depth presentation of the topics in statistical science with which any data scientist should be familiar, including probability distributions, descriptive and inferential statistical methods, and linear modeling. The book assumes knowledge of basic calculus, so the presentation can focus on "why it works" as well as "how to do it." Compared to traditional "mathematical statistics" textbooks, however, the book has less emphasis on probability theory and more emphasis on using software to implement statistical methods and to conduct simulations to illustrate key concepts. All statistical analyses in the book use R software, with an appendix showing the same analyses with Python. The book also introduces modern topics that do not normally appear in mathematical statistics texts but are highly relevant for data scientists, such as Bayesian inference, generalized linear models for non-normal responses (e.g., logistic regression and Poisson loglinear models), and regularized model fitting. The nearly 500 exercises are grouped into "Data Analysis and Applications" and "Methods and Concepts." Appendices introduce R and Python and contain solutions for odd-numbered exercises. The book's website has expanded R, Python, and Matlab appendices and all data sets from the examples and exercises.*

PREDICTIVE MODELING WITH SAS ENTERPRISE MINER

PRACTICAL SOLUTIONS FOR BUSINESS APPLICATIONS, THIRD EDITION

SAS Institute *« Written for business analysts, data scientists, statisticians, students, predictive modelers, and data miners, this comprehensive text provides examples that will strengthen your understanding of the essential concepts and methods of predictive modeling. »--*

STATISTICAL METHODS FOR CATEGORICAL DATA ANALYSIS

Emerald Group Publishing *This book provides a comprehensive introduction to methods and models for categorical data analysis and their applications in social science research. Companion website also available, at https://webspace.utexas.edu/dpowers/www/*

CATEGORICAL DATA ANALYSIS USING SAS, THIRD EDITION

SAS Institute *Statisticians and researchers will find this book, newly updated for SAS/STAT 12.1, to be a useful discussion of categorical data analysis techniques as well as an invaluable aid in applying these methods with SAS.*

PRACTICAL STATISTICS FOR DATA SCIENTISTS

50 ESSENTIAL CONCEPTS

"O'Reilly Media, Inc." *Statistical methods are a key part of of data science, yet very few data scientists have any formal statistics training. Courses and books on basic statistics rarely cover the topic from a data science perspective. This practical guide explains how to apply various statistical methods to data science, tells you how to avoid their misuse, and gives you advice on what's important and what's not. Many data science resources incorporate statistical methods but lack a deeper statistical perspective. If you're familiar with the R programming language, and have some exposure to statistics, this quick reference bridges the gap in an accessible, readable format. With this book, you'll learn: Why exploratory data analysis is a key preliminary step in data science How random sampling can reduce bias and yield a higher quality dataset, even with big data How the principles of experimental design yield definitive answers to questions How to use regression to estimate outcomes and detect anomalies Key classification techniques for predicting which categories a record belongs to Statistical machine learning methods that "learn" from data Unsupervised learning methods for extracting meaning from unlabeled data*

STATISTICAL METHODS FOR PSYCHOLOGY

Cengage Learning *STATISTICAL METHODS FOR PSYCHOLOGY surveys the statistical techniques commonly used in the behavioral and social sciences, particularly psychology and education. To help students gain a better understanding of the specific statistical hypothesis tests that are covered throughout the text, author David Howell emphasizes conceptual understanding. This Eighth Edition continues to focus students on two key themes that are the cornerstones of this book's success: the importance of looking at the data before beginning a hypothesis test, and the importance of knowing the relationship between the statistical test in use and the theoretical questions being asked by the experiment. New and expanded topics--reflecting the evolving realm of statistical methods--include effect size, meta-analysis, and treatment of missing data. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.*

MODERN STATISTICS WITH R

FROM WRANGLING AND EXPLORING DATA TO INFERENCE AND PREDICTIVE MODELLING

BoD - Books on Demand *The past decades have transformed the world of statistical data analysis, with new methods, new types of data, and new computational tools. The aim of Modern Statistics with R is to introduce you to key parts of the modern statistical toolkit. It teaches you: - Data wrangling - importing, formatting, reshaping, merging, and filtering data in R. - Exploratory data analysis - using visualisation and multivariate techniques to explore datasets. - Statistical inference - modern methods for testing hypotheses and computing confidence intervals. - Predictive modelling - regression models and machine learning methods for prediction, classification, and forecasting. - Simulation - using simulation techniques for sample size computations and evaluations of statistical methods. - Ethics in statistics - ethical issues and good statistical practice. - R programming - writing code that is fast, readable, and free from bugs. Starting from the very basics, Modern Statistics with R helps you learn R by working with R. Topics covered range from plotting data and writing simple R code to using cross-validation for evaluating complex predictive models and using simulation for sample size determination. The book includes more than 200 exercises with fully worked solutions. Some familiarity with basic statistical concepts, such as linear regression, is assumed. No previous programming experience is needed.*

APPLIED LONGITUDINAL DATA ANALYSIS FOR EPIDEMIOLOGY

A PRACTICAL GUIDE

Cambridge University Press *A practical guide to the most important techniques available for longitudinal data analysis, essential for non-statisticians and researchers.*

COMPOSITIONAL DATA ANALYSIS

THEORY AND APPLICATIONS

John Wiley & Sons *Compositional Data Analysis: Theory and Applications Edited by Vera Pawlowsky-Glahn, Department of Computer Science and Applied Mathematics, University of Girona, Spain. Antonella Buccianti, Department of Earth Sciences, University of Florence, Italy It is difficult to imagine that the statistical analysis of compositional data has been a major issue of concern for more than 100 years. It is even more difficult to realize that so many statisticians and users of statistics are unaware of the particular problems affecting compositional data, as well as their solutions. The issue of spurious correlation'', as the situation was phrased by Karl Pearson back in 1897, affects all data that measures parts of some whole, such as percentages, proportions, ppm and ppb. Such measurements are present in all fields of science, ranging from geology, biology, environmental sciences, forensic sciences, medicine and hydrology. This book presents the history and development of compositional data analysis along with Aitchison's log-ratio approach. "Compositional Data Analysis" describes the state of the art both in theoretical fields as well as applications in the different fields of science. Key Features: - Reflects the state-of-the-art in compositional data analysis. - Gives an overview of the historical development of compositional data analysis, as well as basic concepts and procedures. - Looks at advances in algebra and calculus on the simplex. - Presents applications in different fields of science, including, genomics, ecology, biology, geochemistry, planetology, chemistry and economics. - Explores connections to correspondence analysis and the Dirichlet distribution. - Presents a summary of three available software packages for compositional data analysis. - Supported by an accompanying website featuring R code. Applied scientists working on compositional data analysis in any field of science, both in academia and professionals will benefit from this book, along with graduate students in any field of science working with compositional data.*

STATISTICS

AN INTRODUCTION USING R

John Wiley & Sons *Computer software is an essential tool for many statistical modelling and data analysis techniques, aiding in the implementation of large data sets in order to obtain useful results. R is one of the most powerful and flexible statistical software packages available, and enables the user to apply a wide variety of statistical methods ranging from simple regression to generalized linear modelling. Statistics: An Introduction using R is a clear and concise introductory textbook to statistical analysis using this powerful and free software, and follows on from the success of the author's previous best-selling title Statistical Computing. * Features step-by-step instructions that assume no mathematics, statistics or programming background, helping the non-statistician to fully understand the methodology. * Uses a series of realistic examples, developing step-wise from the simplest cases, with the emphasis on checking the assumptions (e.g. constancy of variance and normality of errors) and the adequacy of the model chosen to fit the data. * The emphasis throughout is on estimation of effect sizes and confidence intervals, rather than on hypothesis testing. * Covers the full range of statistical techniques likely to be need to analyse the data from research projects, including elementary material like t-tests and chi-squared tests, intermediate methods like regression and analysis of variance, and more advanced techniques like generalized linear modelling. * Includes numerous worked examples and exercises within each chapter. * Accompanied by a website featuring worked examples, data sets, exercises and solutions: http://www.imperial.ac.uk/bio/research/crawley/statistics Statistics: An Introduction using R is the first text to offer such a concise introduction to a broad array of statistical methods, at a level that is elementary enough to appeal to a broad range of disciplines. It is primarily aimed at undergraduate students in medicine, engineering, economics and biology - but will also appeal to postgraduates who have not previously covered this area, or wish to switch to using R.*

THE SAGE HANDBOOK OF QUANTITATIVE METHODOLOGY FOR THE SOCIAL SCIENCES

SAGE *Quantitative methodology is a highly specialized field. This handbook is intended to introduce applied statisticians, empirical researchers & graduate students to the broad array of state-of-the-art quantitative methodologies in the social sciences.*

AN INTRODUCTION TO STATISTICS AND DATA ANALYSIS USING STATA®

FROM RESEARCH DESIGN TO FINAL REPORT

SAGE Publications *An Introduction to Statistics and Data Analysis Using Stata® by Lisa Daniels and Nicholas Minot provides a step-by-step introduction for statistics, data analysis, or research methods classes with Stata. Concise descriptions emphasize the concepts behind statistics for students rather than the derivations of the formulas. With real-world examples from a variety of disciplines and extensive detail on the commands in Stata, this text provides an integrated approach to research design, statistical analysis, and report writing for social science students.*

DATA ANALYSIS USING STATA

Stata Press *Provides an introduction to Stata with an emphasis on data management, linear regression, logistic modeling, and using programs to automate repetitive tasks. This book gives an introduction to the Stata interface and then proceeds with a discussion of Stata syntax and simple programming tools like for each loops.*

INTRODUCTION TO PROBABILITY AND STATISTICS USING R

Lulu.com

MATHEMATICS FOR MACHINE LEARNING

Cambridge University Press *Distills key concepts from linear algebra, geometry, matrices, calculus, optimization, probability and statistics that are used in machine learning.*

STATISTICAL INTERVALS

A GUIDE FOR PRACTITIONERS AND RESEARCHERS

John Wiley & Sons *Describes statistical intervals to quantify sampling uncertainty,focusing on key application needs and recently developed methodology in an easy-to-apply format Statistical intervals provide invaluable tools for quantifying sampling uncertainty. The widely hailed first edition, published in 1991, described the use and construction of the most important statistical intervals. Particular emphasis was given to intervals—such as prediction intervals, tolerance intervals and confidence intervals on distribution quantiles—frequently needed in practice, but often neglected in introductory courses. Vastly improved computer capabilities over the past 25 years have resulted in an explosion of the tools readily available to analysts. This second edition—more than double the size of the first—adds these new methods in an easy-to-apply format. In addition to extensive updating of the original chapters, the second edition includes new chapters on: Likelihood-based statistical intervals Nonparametric bootstrap intervals Parametric bootstrap and other simulation-based intervals An introduction to Bayesian intervals Bayesian intervals for the popular binomial, Poisson and normal distributions Statistical intervals for Bayesian hierarchical models Advanced case studies, further illustrating the use of the newly described methods New technical appendices provide justification of the methods and pathways to extensions and further applications. A webpage directs readers to current readily accessible computer software and other useful information. Statistical Intervals: A Guide for Practitioners and Researchers, Second Edition is an up-to-date working guide and reference for all who analyze data, allowing them to quantify the uncertainty in their results using statistical intervals.*

MAKING SENSE OF DATA II

A PRACTICAL GUIDE TO DATA VISUALIZATION, ADVANCED DATA MINING METHODS, AND APPLICATIONS

John Wiley & Sons *A hands-on guide to making valuable decisions from data using advanced data mining methods and techniques This second installment in the Making Sense of Data series continues to explore a diverse range of commonly used approaches to making and communicating decisions from data. Delving into more technical topics, this book equips readers with advanced data mining methods that are needed to successfully translate raw data into smart decisions across various fields of research including business, engineering, finance, and the social sciences. Following a comprehensive introduction that details how to define a problem, perform an analysis, and deploy the results, Making Sense of Data II addresses the following key techniques for advanced data analysis: Data Visualization reviews principles and methods for understanding and communicating data through the use of visualization including single variables, the relationship between two or more variables, groupings in data, and dynamic approaches to interacting with data through graphical user interfaces. Clustering outlines common approaches to clustering data sets and provides detailed explanations of methods for determining the distance between observations and procedures for clustering observations. Agglomerative hierarchical clustering, partitioned-based clustering, and fuzzy clustering are also discussed. Predictive Analytics presents a discussion on how to build and assess models, along with a series of predictive analytics that can be used in a variety of situations including principal component analysis, multiple linear regression, discriminate analysis, logistic regression, and Naïve Bayes. Applications demonstrates the current uses of data mining across a wide range of industries and features case studies that illustrate the related applications in real-world scenarios. Each method is discussed within the context of a data mining process including defining the problem and deploying the results, and readers are provided with guidance on when and how each method should be used. The related Web site for the series (www.makingsenseofdata.com) provides a hands-on data analysis and data mining experience. Readers wishing to gain more practical experience will benefit from the tutorial section of the book in conjunction with the TraceisTM software, which is freely available online. With its comprehensive collection of advanced data mining methods coupled with tutorials for applications in a range of fields, Making Sense of Data II is an indispensable book for courses on data analysis and data mining at the upper-undergraduate and graduate levels. It also serves as a valuable reference for researchers and professionals who are interested in learning how to accomplish effective decision*

making from data and understanding if data analysis and data mining methods could help their organization.

STATISTICS FOR THE LIFE SCIENCES

PEARSON NEW INTERNATIONAL EDITION

Statistics for the Life Sciences, Fourth Edition, is the perfect book for introductory statistics classes, covering the key concepts of statistics as applied to the life sciences, while incorporating the tools and themes of modern data analysis. This text uses an abundance of real data in the exercises and examples to minimize computation, so that students can focus on the statistical concepts and issues, not the mathematics. Basic algebra is assumed as a prerequisite.

STATISTICAL ANALYSIS OF LONGITUDINAL CATEGORICAL DATA IN THE SOCIAL AND BEHAVIORAL SCIENCES

AN INTRODUCTION WITH COMPUTER ILLUSTRATIONS

Psychology Press *A comprehensive resource for analyzing a variety of categorical data, this book emphasizes the application of many recent advances of longitudinal categorical statistical methods. Each chapter provides basic methodology, helpful applications, examples using data from all fields of the social sciences, computer tutorials, and exercises. Written for social scientists and students, no advanced mathematical training is required. Step-by-step command files are given for both the CDAS and the SPSS software programs.*

A HANDBOOK OF STATISTICAL GRAPHICS USING SAS ODS

CRC Press *Easily Use SAS to Produce Your Graphics Diagrams, plots, and other types of graphics are indispensable components in nearly all phases of statistical analysis, from the initial assessment of the data to the selection of appropriate statistical models to the diagnosis of the chosen models once they have been fitted to the data. Harnessing the full graphics capabilities of SAS, A Handbook of Statistical Graphics Using SAS ODS covers essential graphical methods needed in every statistician's toolkit. It explains how to implement the methods using SAS 9.4. The handbook shows how to use SAS to create many types of statistical graphics for exploring data and diagnosing fitted models. It uses SAS's newer ODS graphics throughout as this system offers a number of advantages, including ease of use, high quality of results, consistent appearance, and convenient semiautomatic graphs from the statistical procedures. Each chapter deals graphically with several sets of example data from a wide variety of areas, such as epidemiology, medicine, and psychology. These examples illustrate the use of graphic displays to give an overview of data, to suggest possible hypotheses for testing new data, and to interpret fitted statistical models. The SAS programs and data sets are available online.*

R FOR DUMMIES

John Wiley & Sons *Master the programming language of choice among statisticians and data analysts worldwide Coming to grips with R can be tough, even for seasoned statisticians and data analysts. Enter R For Dummies, the quick, easy way to master all the R you'll ever need. Requiring no prior programming experience and packed with practical examples, easy, step-by-step exercises, and sample code, this extremely accessible guide is the ideal introduction to R for complete beginners. It also covers many concepts that intermediate-level programmers will find extremely useful. Master your R ABCs ? get up to speed in no time with the basics, from installing and configuring R to writing simple scripts and performing simultaneous calculations on many variables Put data in its place ? get to know your way around lists, data frames, and other R data structures while learning to interact with other programs, such as Microsoft Excel Make data dance to your tune ? learn how to reshape and manipulate data, merge data sets, split and combine data, perform calculations on vectors and arrays, and much more Visualize it ? learn to use R's powerful data visualization features to create beautiful and informative graphical presentations of your data Get statistical ? find out how to do simple statistical analysis, summarize your variables, and conduct classic statistical tests, such as t-tests Expand and customize R ? get the lowdown on how to find, install, and make the most of add-on packages created by the global R community for a wide variety of purposes Open the book and find: Help downloading, installing, and configuring R Tips for getting data in and out of R Ways to use data frames and lists to organize data How to manipulate and process data Advice on fitting regression models and ANOVA Helpful hints for working with graphics How to code in R What R mailing lists and forums can do for you*

NOISE CONTROL, REDUCTION AND CANCELLATION SOLUTIONS IN ENGINEERING

BoD – Books on Demand *Noise has various effects on comfort, performance, and human health. For this reason, noise control plays an increasingly central role in the development of modern industrial and engineering applications. Nowadays, the noise control problem excites and attracts the attention of a great number of scientists in different disciplines. Indeed, noise control has a wide variety of*

applications in manufacturing, industrial operations, and consumer products. The main purpose of this book, organized in 13 chapters, is to present a comprehensive overview of recent advances in noise control and its applications in different research fields. The authors provide a range of practical applications of current and past noise control strategies in different real engineering problems. It is well addressed to researchers and engineers who have specific knowledge in acoustic problems. I would like to thank all the authors who accepted my invitation and agreed to share their work and experiences.

GENERALIZED ADDITIVE MODELS

AN INTRODUCTION WITH R

CRC Press *Now in widespread use, generalized additive models (GAMs) have evolved into a standard statistical methodology of considerable flexibility. While Hastie and Tibshirani's outstanding 1990 research monograph on GAMs is largely responsible for this, there has been a long-standing need for an accessible introductory treatment of the subject that also emphasizes recent penalized regression spline approaches to GAMs and the mixed model extensions of these models. Generalized Additive Models: An Introduction with R imparts a thorough understanding of the theory and practical applications of GAMs and related advanced models, enabling informed use of these very flexible tools. The author bases his approach on a framework of penalized regression splines, and builds a well-grounded foundation through motivating chapters on linear and generalized linear models. While firmly focused on the practical aspects of GAMs, discussions include fairly full explanations of the theory underlying the methods. Use of the freely available R software helps explain the theory and illustrates the practicalities of linear, generalized linear, and generalized additive models, as well as their mixed effect extensions. The treatment is rich with practical examples, and it includes an entire chapter on the analysis of real data sets using R and the author's add-on package mgcv. Each chapter includes exercises, for which complete solutions are provided in an appendix. Concise, comprehensive, and essentially self-contained, Generalized Additive Models: An Introduction with R prepares readers with the practical skills and the theoretical background needed to use and understand GAMs and to move on to other GAM-related methods and models, such as SS-ANOVA, P-splines, backfitting and Bayesian approaches to smoothing and additive modelling.*

ANALYSIS OF MULTIVARIATE SOCIAL SCIENCE DATA

CRC Press *Drawing on the authors' varied experiences working and teaching in the field, Analysis of Multivariate Social Science Data, Second Editionenables a basic understanding of how to use key multivariate methods in the social sciences. With updates in every chapter, this edition expands its topics to include regression analysis, con*

ADVANCED STATISTICS WITH APPLICATIONS IN R

John Wiley & Sons *Advanced Statistics with Applications in R fills the gap between several excellent theoretical statistics textbooks and many applied statistics books where teaching reduces to using existing packages. This book looks at what is under the hood. Many statistics issues including the recent crisis with p-value are caused by misunderstanding of statistical concepts due to poor theoretical background of practitioners and applied statisticians. This book is the product of a forty-year experience in teaching of probability and statistics and their applications for solving real-life problems. There are more than 442 examples in the book: basically every probability or statistics concept is illustrated with an example accompanied with an R code. Many examples, such as Who said π? What team is better? The fall of the Roman empire, James Bond chase problem, Black Friday shopping, Free fall equation: Aristotle or Galilei, and many others are intriguing. These examples cover biostatistics, finance, physics and engineering, text and image analysis, epidemiology, spatial statistics, sociology, etc. Advanced Statistics with Applications in R teaches students to use theory for solving real-life problems through computations: there are about 500 R codes and 100 datasets. These data can be freely downloaded from the author's website dartmouth.edu/~eugened. This book is suitable as a text for senior undergraduate students with major in statistics or data science or graduate students. Many researchers who apply statistics on the regular basis find explanation of many fundamental concepts from the theoretical perspective illustrated by concrete real-world applications.*