

Categorical Data Analysis Wiley Agresti

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Categorical Data Analysis for the Behavioral and Social Sciences

A unified treatment of the most useful models for categorical and limited dependent variables (CLDVs) is provided in this book. Throughout, the links among the models are made explicit, and common methods of derivation, interpretation and testing are applied. In addition, the author explains how models relate to linear regression models whenever possible.

International Encyclopedia of Statistical Science

This is the first book in longitudinal categorical data analysis with parametric correlation models developed based on dynamic relationships among repeated categorical responses. This book is a natural generalization of the longitudinal binary data analysis to the multinomial data setup with more than two categories. Thus, unlike the existing books on cross-sectional categorical data analysis using log linear models, this book uses multinomial probability models both in cross-sectional and longitudinal setups. A theoretical foundation is provided for the analysis of univariate multinomial responses, by developing models systematically for the cases with no covariates as well as categorical covariates, both in cross-sectional and longitudinal setups. In the longitudinal setup, both stationary and non-stationary covariates are considered. These models have also been extended to the bivariate multinomial setup along with suitable covariates. For the inferences, the book uses the generalized quasi-likelihood as well as the exact likelihood approaches. The book is technically rigorous, and, it also presents illustrations of the statistical analysis of various real life data involving univariate

multinomial responses both in cross-sectional and longitudinal setups. This book is written mainly for the graduate students and researchers in statistics and social sciences, among other applied statistics research areas. However, the rest of the book, specifically the chapters from 1 to 3, may also be used for a senior undergraduate course in statistics.

Statistical Methods for Categorical Data Analysis

The book offers a selection of papers presented at the international symposium Intelligent Information Systems X held in Zakopane, Poland. The papers report on progress in theory and applications of broadly understood artificial intelligence, including machine learning, knowledge discovery, knowledge based systems and reasoning, intelligent statistical analysis and soft computing (i.e. fuzzy and rough sets, neural networks, evolutionary algorithms and artificial immune systems). Interesting new theoretical results are presented and their practical applicability demonstrated. The volume also suggests challenging new research issues.

Sea Otters

The goal of this book is multidimensional: a) to help reviving Statistics education in many parts in the world where it is in crisis. For the first time authors from many developing countries have an opportunity to write together with the most prominent world authorities. The editor has spent several years searching for the most reputable statisticians all over the world. International contributors are either presidents of the local statistical societies, or head of the Statistics department at the main university, or the most distinguished statisticians in their countries. b) to enable any non-statistician to obtain quick and yet comprehensive and highly understandable view on certain statistical term, method or application c) to enable all the researchers, managers and practitioners to refresh their knowledge in Statistics, especially in certain controversial fields. d) to revive interest in statistics among students, since they will see its usefulness and relevance in almost all branches of Science.

Categorical Data Analysis

Longitudinal Categorical Data Analysis

Encyclopedia of Epidemiology

The book presents an introduction to statistical methods for students majoring in social science disciplines. No previous knowledge of statistics is assumed, and mathematical background is assumed to be minimal (lowest-level high-school algebra). The book contains sufficient material for a two-semester sequence of courses. Such sequences are commonly required of social science graduate students in sociology, political science, and psychology. Students in geography, anthropology, journalism, and speech also are sometimes required to take at least one statistics course. Datasets and other resources (where applicable) for this book

are available here.

An Introduction to Categorical Data Analysis

Statistical science as organized in formal academic departments is relatively new. With a few exceptions, most Statistics and Biostatistics departments have been created within the past 60 years. This book consists of a set of memoirs, one for each department in the U.S. created by the mid-1960s. The memoirs describe key aspects of the department's history -- its founding, its growth, key people in its development, success stories (such as major research accomplishments) and the occasional failure story, PhD graduates who have had a significant impact, its impact on statistical education, and a summary of where the department stands today and its vision for the future. Read here all about how departments such as at Berkeley, Chicago, Harvard, and Stanford started and how they got to where they are today. The book should also be of interests to scholars in the field of disciplinary history.

Modeling Ordered Choices

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.

Visualizing Categorical Data

Amstat News asked three review editors to rate their top five favorite books in the September 2003 issue. Categorical Data Analysis was among those chosen. A valuable new edition of a standard reference "A 'must-have' book for anyone expecting to do research and/or applications in categorical data analysis."

-Statistics in Medicine on Categorical Data Analysis, First Edition The use of statistical methods for categorical data has increased dramatically, particularly for applications in the biomedical and social sciences. Responding to new developments in the field as well as to the needs of a new generation of professionals and students, this new edition of the classic Categorical Data Analysis offers a comprehensive introduction to the most important methods for categorical data analysis. Designed for statisticians and biostatisticians as well as scientists and graduate students practicing statistics, Categorical Data Analysis, Second Edition summarizes the latest methods for univariate and correlated multivariate categorical responses. Readers will find a unified generalized linear models approach that connects logistic regression and Poisson and negative binomial regression for discrete data with normal regression for continuous data. Adding to the value in the new edition is coverage of: Three new chapters on methods for repeated measurement and other forms of clustered categorical data, including marginal models and associated generalized estimating equations (GEE) methods, and mixed models with random effects Stronger emphasis on logistic regression modeling of binary and multicategory data An appendix showing the use of SAS for conducting nearly all analyses in the book Prescriptions for how ordinal variables should be treated differently than nominal variables Discussion of exact small-sample procedures More than 100 analyses of real data sets to illustrate application of the methods, and more than 600 exercises An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Vector Generalized Linear and Additive Models

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.

Machine Learning for Text

Categorical Data Analysis by Example

It is increasingly common for analysts to seek out the opinions of individuals and organizations using attitudinal scales such as degree of satisfaction or importance attached to an issue. Examples include levels of obesity, seriousness of a health condition, attitudes towards service levels, opinions on products, voting intentions, and the degree of clarity of contracts. Ordered choice models provide a relevant methodology for capturing the sources of influence that explain the choice made amongst a set of ordered alternatives. The methods have evolved to a level of sophistication that can allow for heterogeneity in the threshold parameters, in the explanatory variables (through random parameters), and in the decomposition of the residual variance. This book brings together contributions in ordered choice modeling from a number of disciplines, synthesizing developments over the last fifty years, and suggests useful extensions to account for the wide range of sources of influence on choice.

Analyzing Categorical Data

Introduces the key concepts in the analysis of categorical data with illustrative examples and accompanying R code This book is aimed at all those who wish to discover how to analyze categorical data without getting immersed in complicated mathematics and without needing to wade through a large amount of prose. It is aimed at researchers with their own data ready to be analyzed and at students who would like an approachable alternative view of the subject. Each new topic in categorical data analysis is illustrated with an example that readers can apply to their own sets of data. In many cases, R code is given and excerpts from the resulting output are presented. In the context of log-linear models for cross-tabulations, two specialties of the house have been included: the use of cobweb diagrams to get visual information concerning significant interactions, and a procedure for detecting outlier category combinations. The R code used for these is available and may be freely adapted. In addition, this book: Uses an example to illustrate each new topic in categorical data Provides a clear explanation of an important subject Is understandable to most readers with minimal statistical and mathematical backgrounds Contains examples that are accompanied by R code and resulting output Includes starred sections that provide more background details for interested readers Categorical Data Analysis by Example is a reference for students in statistics and researchers in other disciplines, especially the social sciences, who use categorical data. This book is also a reference for practitioners in market research, medicine, and other fields.

Intelligent Information Systems 2001

Provides information about these playful mammals, including their aquatic habitats, diet, physical characteristics, and behaviors.

Strength in Numbers: The Rising of Academic Statistics Departments in the U. S.

Encyclopedic in breadth, yet practical and concise, *Medical Biostatistics, Fourth Edition* focuses on the statistical aspects of medicine with a medical perspective, showing the utility of biostatistics as a tool to manage many medical uncertainties. This edition includes more topics in order to fill gaps in the previous edition. Various topics have been enlarged and modified as per the new understanding of the subject.

Handbook of Structural Equation Modeling

This book introduces basic and advanced concepts of categorical regression with a focus on the structuring constituents of regression, including regularization techniques to structure predictors. In addition to standard methods such as the logit and probit model and extensions to multivariate settings, the author presents more recent developments in flexible and high-dimensional regression, which allow weakening of assumptions on the structuring of the predictor and yield fits that are closer to the data. A generalized linear model is used as a unifying framework whenever possible in particular parametric models that are treated within this framework. Many topics not normally included in books on categorical data analysis are treated here, such as nonparametric regression; selection of predictors by regularized estimation procedures; ternative models like the hurdle model and zero-inflated regression models for count data; and non-standard tree-based ensemble methods. The book is accompanied by an R package that contains data sets and code for all the examples.

Analysis of Categorical Data with R

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://webpace.utexas.edu/dpowers/www/>

Medical Biostatistics, Fourth Edition

Statisticians and researchers will find *Categorical Data Analysis Using SAS, Third Edition*, by Maura Stokes, Charles Davis, and Gary Koch, to be a useful discussion of categorical data analysis techniques as well as an invaluable aid in applying these methods with SAS. Practical examples from a broad range of applications illustrate the use of the FREQ, LOGISTIC, GENMOD, NPAR1WAY, and CATMOD procedures in a variety of analyses. Topics discussed include assessing association in contingency tables and sets of tables, logistic regression and conditional logistic regression, weighted least squares modeling, repeated measurements analyses, loglinear models, generalized estimating equations, and bioassay analysis. The third edition updates the use of SAS/STAT software to SAS/STAT 12.1 and incorporates ODS Graphics. Many additional SAS statements and options are employed, and graphs such as effect plots, odds ratio plots, regression diagnostic plots, and agreement plots are discussed. The material has also been revised and reorganized to reflect the evolution of categorical data analysis strategies. Additional techniques include such topics as exact Poisson regression, partial proportional odds models, Newcombe confidence intervals, incidence density ratios, and so on. This book is part of the SAS Press program.

A Course in Categorical Data Analysis

Categorical data arise often in many fields, including biometrics, economics, management, manufacturing, marketing, psychology, and sociology. This book provides an introduction to the analysis of such data. The coverage is broad, using the loglinear Poisson regression model and logistic binomial regression models as the primary engines for methodology. Topics covered include count regression models, such as Poisson, negative binomial, zero-inflated, and zero-truncated models; loglinear models for two-dimensional and multidimensional contingency tables, including for square tables and tables with ordered categories; and regression models for two-category (binary) and multiple-category target variables, such as logistic and proportional odds models. All methods are illustrated with analyses of real data examples, many from recent subject area journal articles. These analyses are highlighted in the text, and are more detailed than is typical, providing discussion of the context and background of the problem, model checking, and scientific implications. More than 200 exercises are provided, many also based on recent subject area literature. Data sets and computer code are available at a web site devoted to the text. Adopters of this book may request a solutions manual from: textbook@springer-ny.com. From the reviews: "Jeff Simonoff's book is at the top of the heap of categorical data analysis textbooks. The examples are superb. Student reactions in a class I taught from this text were uniformly positive, particularly because of the examples and exercises. Additional materials related to the book, particularly code for S-Plus, SAS, and R, useful for analysis of examples, can be found at the author's Web site at New York University. I liked this book for this reason, and recommend it to you for pedagogical purposes." (Stanley Wasserman, *The American Statistician*, August 2006, Vol. 60, No. 3) "The book has various noteworthy features. The examples used are from a variety of topics, including medicine, economics, sports, mining, weather, as well as social aspects like needle-exchange programs. The examples motivate the theory and also illustrate nuances of data analytical procedures. The book also incorporates several newer methods for analyzing categorical data, including zero-inflated Poisson models, robust analysis of binomial and poisson models, sandwich estimators, multinomial smoothing, ordinal agreement table. This is definitely a good reference book for any researcher working with categorical data." *Technometrics*, May 2004 "This guide provides a practical approach to the appropriate analysis of categorical data and would be a suitable purchase for individuals with varying levels of statistical understanding." *Paediatric and Perinatal Epidemiology*, 2004, 18 "This book gives a fresh approach to the topic of categorical data analysis. The presentation of the statistical methods exploits the connection to regression modeling with a focus on practical features rather than formal theory. There is much to learn from this book. Aside from the ordinary materials such as association diagrams, Mantel-Haenszel estimators, or overdispersion, the reader will also find some less-often presented but interesting and stimulating topics. [T]his is an excellent book, giving an up-to-date introduction to the wide field of analyzing categorical data." *Biometrics*, September 2004 "It is of great help to data analysts, practitioners and researchers who deal with categorical data and need to get a necessary insight into the methods of analysis as well as practical guidelines for solving problems." *International Journal of General Systems*, August 2004 "The author has succeeded in writing a useful and readable textbook combining most of general theory and practice of count data."

Kwantitatieve Methoden "The book especially stresses how to analyze and interpret data. In fact, the highly detailed multi-page descriptions of analysis and interpretation make the book stand out." *Mathematical Geology*, February 2005 "Overall, this is a competent and detailed text that I would recommend to anyone dealing with the analysis of categorical data." *Journal of the Royal Statistical Society* "This important work allows for clear analogies between the well-known linear models for Gaussian data and categorical data problems. Jeffrey Simonoff's *Analyzing Categorical Data* provides an introduction to many of the important ideas and methods for understanding counted data and tables of counts. Some readers will find Simonoff's style very much to their liking due to reliance on extended real data examples to illuminate ideas. I think the extensive examples will appeal to most students." (Sanford Weisberg, *SIAM Review*, Vol. 47 (4), 2005) "It is clear that the focus of Simonoff's book is different from other books on categorical data analysis. As an introductory textbook, the book is comprehensive enough since all basic topics in categorical data analysis are discussed. I think Simonoff's book is a valuable addition to the literature because it discusses important models for counts ." (Jeroen K. Vermunt, *Statistics in Medicine*, Vol. 24, 2005) "The author based this book on his notes for a class with a very diverse pool of students. The material is presented in such a way that a very heterogeneous group of students could grasp it. All methods are illustrated with analyses of real data examples. The author provides a detailed discussion of the context and background of the problem. The book is very interesting and can be warmly recommended to people working with categorical data." (EMS - European Mathematical Society Newsletter, December, 2004) "Categorical data arise often in many fields . This book provides an introduction to the analysis of such data. All methods are illustrated with analyses of real data examples, many from recent subject-area journal articles. These analyses are highlighted in the text and are more detailed than is typical . More than 200 exercises are provided, including many based on recent subject-area literature. Data sets and computer code are available at a Web site devoted to this text." (T. Postelnicu, *Zentralblatt MATH*, Vol. 1028, 2003) "This book grew out of notes prepared by the author for classes in categorical data analysis. The presentation is fresh and compelling to read. Regression ideas are used to motivate the modelling presented. The book focuses on applying methods to real problems; many of these will be novel to readers of statistics texts . All chapters end with a section providing references to books or articles for the inquiring reader." (C.M. O'Brien, *Short Book Reviews*, Vol. 23 (3), 2003)

Categorical Data Analysis Using SAS, Third Edition

Featuring a practical approach with numerous examples, this book focuses on helping the reader develop a conceptual, rather than technical, understanding of categorical methods, making it a much more accessible text than others on the market. The authors cover common categorical analyses and emphasize specific research questions that can be addressed by each analytic procedure so that readers are able to address the research questions they wish to answer. To achieve this goal, the authors: Review the theoretical implications and assumptions underlying each of the procedures Present each concept in general terms and illustrate each with a practical example Demonstrate the analyses using SPSS and SAS and show the interpretation of the results provided by these

programs. A "Look Ahead" section at the beginning of each chapter provides an overview of the material covered so that the reader knows what to expect. This is followed by one or more research questions that can be addressed using the procedure(s) covered in the chapter. A theoretical presentation of the material is provided and illustrated using realistic examples from the behavioral and social sciences. To further enhance accessibility, the new procedures introduced in the book are explicitly related to analytic procedures covered in earlier statistics courses, such as ANOVA and linear regression. Throughout each chapter the authors use practical examples to demonstrate how to obtain and interpret statistical output in both SPSS and SAS. Their emphasis on the relationship between the initial research question, the use of the software to carry out the analysis, and the interpretation of the output as it relates to the initial research question, allows readers to easily apply the material to their own research. The data sets for executing chapter examples using SAS Version 9.1.3 and/or IBM SPSS Version 18 are available on a book specific web site. These data sets and syntax allow readers to quickly run the programs and obtain the appropriate output. The book also includes both conceptual and analytic end-of-chapter exercises to assist instructors and students in evaluating the understanding of the material covered in each chapter. This book covers the most commonly used categorical data analysis procedures. It is written for those without an extensive mathematical background, and is ideal for graduate courses in categorical data analysis or cross-classified data analysis taught in departments of psychology, human development & family studies, sociology, education, and business. Researchers in these disciplines interested in applying these procedures to their own research will appreciate this book's accessible approach.

Modern Regression Techniques Using R

The first comprehensive structural equation modeling (SEM) handbook, this accessible volume presents both the mechanics of SEM and specific SEM strategies and applications. The editor, contributors, and editorial advisory board are leading methodologists who have organized the book to move from simpler material to more statistically complex modeling approaches. Sections cover the foundations of SEM; statistical underpinnings, from assumptions to model modifications; steps in implementation, from data preparation through writing the SEM report; and basic and advanced applications, including new and emerging topics in SEM. Each chapter provides conceptually oriented descriptions, fully explicated analyses, and engaging examples that reveal modeling possibilities for use with readers' data. Many of the chapters also include access to data and syntax files at the companion website, allowing readers to try their hands at reproducing the authors' results.

Statistical Methods for Biostatistics and Related Fields

The Encyclopedia of Epidemiology presents state-of-the-art information from the field of epidemiology in a less technical and accessible style and format. With more than 600 entries, no single reference provides as comprehensive a resource in as focused and appropriate manner. The entries cover every major facet of epidemiology, from risk ratios to case-control studies to mediating and moderating variables, and much more. Relevant topics from related fields such as biostatistics and health economics are also included.

Introduction to Linear Regression Analysis

Graphical methods for quantitative data are well developed and widely used. However, until now with this comprehensive treatment, few graphical methods existed for categorical data. In this innovative book, the author presents many aspects of the relationships among variables, the adequacy of a fitted model, and possibly unusual features of the data that can best be seen and appreciated in an informative graphical display.

Categorical Data Analysis

Text analytics is a field that lies on the interface of information retrieval, machine learning, and natural language processing, and this textbook carefully covers a coherently organized framework drawn from these intersecting topics. The chapters of this textbook is organized into three categories: - Basic algorithms: Chapters 1 through 7 discuss the classical algorithms for machine learning from text such as preprocessing, similarity computation, topic modeling, matrix factorization, clustering, classification, regression, and ensemble analysis. - Domain-sensitive mining: Chapters 8 and 9 discuss the learning methods from text when combined with different domains such as multimedia and the Web. The problem of information retrieval and Web search is also discussed in the context of its relationship with ranking and machine learning methods. - Sequence-centric mining: Chapters 10 through 14 discuss various sequence-centric and natural language applications, such as feature engineering, neural language models, deep learning, text summarization, information extraction, opinion mining, text segmentation, and event detection. This textbook covers machine learning topics for text in detail. Since the coverage is extensive, multiple courses can be offered from the same book, depending on course level. Even though the presentation is text-centric, Chapters 3 to 7 cover machine learning algorithms that are often used in domains beyond text data. Therefore, the book can be used to offer courses not just in text analytics but also from the broader perspective of machine learning (with text as a backdrop). This textbook targets graduate students in computer science, as well as researchers, professors, and industrial practitioners working in these related fields. This textbook is accompanied with a solution manual for classroom teaching.

Applied Linear Regression

The Fourth Edition of Genetics of Populations is the most current, comprehensive, and accessible introduction to the field for advanced undergraduate and graduate students, and researchers in genetics, evolution, conservation, and related fields. In the past several years, interest in the application of population genetics principles to new molecular data has increased greatly, and Dr. Hedrick's new edition exemplifies his commitment to keeping pace with this dynamic area of study. Reorganized to allow students to focus more sharply on key material, the Fourth Edition integrates coverage of theoretical issues with a clear presentation of experimental population genetics and empirical data. Drawing examples from both recent and classic studies, and using a variety of organisms to illustrate the vast developments of population genetics, this text provides students and researchers

with the most comprehensive resource in the field.

Statistics

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.

Statistical Methods for Rates and Proportions

Statistics is the language of modern empirical social and behavioural science and the varieties of regression form the basis of this language. Statistical and computing advances have led to new and exciting regressions that have become the necessary tools for any researcher in these fields. In a way that is refreshingly engaging and readable, Wright and London describe the most useful of these techniques and provide step-by-step instructions, using the freeware R, to analyze datasets that can be located on the books' webpage:

www.sagepub.co.uk/wrightandlondon. Techniques covered in this book include multilevel modeling, ANOVA and ANCOVA, path analysis, mediation and moderation, logistic regression (generalized linear models), generalized additive models, and robust methods. These are all tested out using a range of real research examples conducted by the authors in every chapter. Given the wide coverage of techniques, this book will be essential reading for any advanced undergraduate and graduate student (particularly in psychology) and for more experienced researchers wanting to learn how to apply some of the more recent statistical techniques to their datasets. The Authors are donating all royalties from the book to the American Partnership for Eosinophilic Disorders.

Foundations of Linear and Generalized Linear Models

Categorical data-comprising counts of individuals, objects, or entities in different categories-emerge frequently from many areas of study, including medicine, sociology, geology, and education. They provide important statistical information that can lead to real-life conclusions and the discovery of fresh knowledge. Therefore, the ability to manipulate, understand, and interpret categorical data becomes of interest-if not essential-to professionals and students in a broad range of disciplines. Although t-tests, linear regression, and analysis of variance are useful, valid methods for analysis of measurement data, categorical data requires a different methodology and techniques typically not encountered in introductory statistics courses. Developed from long experience in teaching categorical analysis to a multidisciplinary mix of undergraduate and graduate students, *A Course in Categorical Data Analysis* presents the easiest, most straightforward ways of

extracting real-life conclusions from contingency tables. The author uses a Fisherian approach to categorical data analysis and incorporates numerous examples and real data sets. Although he offers S-PLUS routines through the Internet, readers do not need full knowledge of a statistical software package. In this unique text, the author chooses methods and an approach that nurtures intuitive thinking. He trains his readers to focus not on finding a model that fits the data, but on using different models that may lead to meaningful conclusions. The book offers some simple, innovative techniques not highlighted in other texts that help make the book accessible to a broad, interdisciplinary audience. *A Course in Categorical Data Analysis* enables readers to quickly use its offering of tools for drawing scientific, medical, or real-life conclusions from categorical data sets.

Practical Biostatistical Methods

Featuring a practical approach with numerous examples, this book focuses on helping the reader develop a conceptual, rather than technical, understanding of categorical methods, making it a much more accessible text than others on the market. The authors cover common categorical analyses and emphasize specific research questions that can be addressed by each analytic procedure so that readers are able to address the research questions they wish to answer. To achieve this goal, the authors:

- Review the theoretical implications and assumptions underlying each of the procedures
- Present each concept in general terms and illustrate each with a practical example
- Demonstrate the analyses using SPSS and SAS and show the interpretation of the results provided by these programs.

A "Look Ahead" section at the beginning of each chapter provides an overview of the material covered so that the reader knows what to expect. This is followed by one or more research questions that can be addressed using the procedure(s) covered in the chapter. A theoretical presentation of the material is provided and illustrated using realistic examples from the behavioral and social sciences. To further enhance accessibility, the new procedures introduced in the book are explicitly related to analytic procedures covered in earlier statistics courses, such as ANOVA and linear regression. Throughout each chapter the authors use practical examples to demonstrate how to obtain and interpret statistical output in both SPSS and SAS. Their emphasis on the relationship between the initial research question, the use of the software to carry out the analysis, and the interpretation of the output as it relates to the initial research question, allows readers to easily apply the material to their own research. The data sets for executing chapter examples using SAS Version 9.1.3 and/or IBM SPSS Version 18 are available on a book specific web site. These data sets and syntax allow readers to quickly run the programs and obtain the appropriate output. The book also includes both conceptual and analytic end-of-chapter exercises to assist instructors and students in evaluating the understanding of the material covered in each chapter. This book covers the most commonly used categorical data analysis procedures. It is written for those without an extensive mathematical background, and is ideal for graduate courses in categorical data analysis or cross-classified data analysis taught in departments of psychology, human development & family studies, sociology, education, and business. Researchers in these disciplines interested in applying these procedures to their own research will appreciate this book's accessible approach.

Categorical Data Analysis

The past quarter-century has seen an explosion in the development of methods for analyzing categorical data. These methods have influenced—and been influenced by—the increasing availability of multivariate data sets with categorical responses in the social, behavioral, and biomedical sciences, as well as in public health, ecology, education, marketing, food science, and industrial quality control. Categorical Data Analysis describes the most important new methods, offering a unified presentation of modeling using generalized linear models and emphasizing loglinear and logit modeling techniques. Contributions of noted statisticians (Pearson, Yule, Fisher, Neyman, Cochran), whose pioneering efforts set the pace for the evolution of modern methods, are examined as well. Special features of the book include: Coverage of methods for repeated measurement data, which have become increasingly important in biomedical applications Prescriptions for how ordinal variables should be treated differently than nominal variables Derivations of basic asymptotic and fixed-sample-size inferential methods Discussion of exact small sample procedures More than 40 examples of analyses of "real" data sets, including: aspirin use and heart disease; job satisfaction and income; seat belt use and injuries in auto accidents; and predicting outcomes of baseball games More than 400 exercises to facilitate interpretation and application of methods Categorical Data Analysis also contains an appendix that describes the use of computer software currently available for performing the analyses presented in the book. A comprehensive bibliography and notes at the end of each chapter round out the work, making it a complete, invaluable reference for statisticians, biostatisticians, and professional researchers.

Statistical Methods for the Social Sciences: Pearson New International Edition

This book covers a wide range of recent statistical methods that are of interest to scientists in biostatistics as well as in other related fields such as chemometrics, environmetrics and geophysics. The contributed papers, from internationally recognized researchers, present various statistical methodologies together with a selected scope of their main mathematical properties and their application in a real case study.

Learning Statistics with R

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.

Categorical Data Analysis for the Behavioral and Social Sciences

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.

Genetics of Populations

An introduction to applied probability; Assessing significance in a fourfold table; Determining sample sizes needed to detect a difference between two proportions; How to randomize; Sampling method; The analysis of data from matched samples; The comparison of proportions from several independent samples; Combining evidence from fourfold tables; The effects of misclassification errors; The control of misclassification error; The measurement of interrater agreement; The

standardization of rates.

Discrete Data Analysis with R

An Applied Treatment of Modern Graphical Methods for Analyzing Categorical Data
Discrete 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

Regression Models for Categorical and Limited Dependent Variables

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 linear statistical models. The book presents a broad, in-depth overview of the most commonly used statistical models by discussing the theory underlying the models, R software applications, and examples with crafted models to elucidate key ideas and promote practical model building. 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 of Linear 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

This text covers intermediate statistical methods in a practical and mathematically intuitive (no calculus) mode. It focuses on the following analysis methods useful to the researcher: linear regression, discriminant analysis, contingency tables, survival analysis, covariance, principal components, logistic regression and Poisson regression. Nonparametric methods are incorporated as needed.

Analysis of Ordinal Categorical Data

This book presents a greatly enlarged statistical framework compared to generalized linear models (GLMs) with which to approach regression modelling. Comprising of about half-a-dozen major classes of statistical models, and fortified with necessary infrastructure to make the models more fully operable, the framework allows analyses based on many semi-traditional applied statistics models to be performed as a coherent whole. Since their advent in 1972, GLMs have unified important distributions under a single umbrella with enormous implications. However, GLMs are not flexible enough to cope with the demands of practical data analysis. And data-driven GLMs, in the form of generalized additive models (GAMs), are also largely confined to the exponential family. The methodology here and accompanying software (the extensive VGAM R package) are directed at these limitations and are described comprehensively for the first time in one volume. This book treats distributions and classical models as generalized regression models, and the result is a much broader application base for GLMs and GAMs. The book can be used in senior undergraduate or first-year postgraduate courses on GLMs or categorical data analysis and as a methodology resource for VGAM users. In the second part of the book, the R package VGAM allows readers to grasp immediately applications of the methodology. R code is integrated in the text, and datasets are used throughout. Potential applications include ecology, finance, biostatistics, and social sciences. The methodological contribution of this book stands alone and does not require use of the VGAM package.

Regression for Categorical Data

Praise for the Second Edition "A must-have book for anyone expecting to do research and/or applications 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 an essential desktop reference." —Technometrics

The use of statistical methods for analyzing categorical data has increased dramatically, particularly in the biomedical, social sciences, and financial industries. Responding to new developments, this book offers a comprehensive treatment of the most important methods for categorical data analysis. Categorical Data Analysis, Third Edition summarizes the latest methods for univariate and correlated multivariate categorical responses. Readers will find a unified generalized linear models approach that connects logistic regression and Poisson and negative binomial loglinear models for discrete data with normal regression for continuous data. This edition also features: An emphasis on logistic and probit regression methods for binary, ordinal, and nominal responses for independent observations and for clustered data with marginal models and random effects models Two new chapters on alternative methods for binary response data, including smoothing and regularization methods, classification methods such as linear discriminant analysis and classification trees, and cluster analysis New sections introducing the Bayesian approach for methods in that chapter More than 100 analyses of data sets and over 600 exercises Notes at the end of each chapter that provide references to recent research and topics not covered in the text, linked to a bibliography of more than 1,200 sources A supplementary website showing how to use R and SAS; for all examples in the text, with information also about

SPSS and Stata and with exercise solutions Categorical Data Analysis, Third Edition is an invaluable tool for statisticians and methodologists, such as biostatisticians and researchers in the social and behavioral sciences, medicine and public health, marketing, education, finance, biological and agricultural sciences, and industrial quality control.

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