Maximum Likelihood Estimation Logic And Practice Quantitative Applications In The Social Sciences

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Parameter Estimation for Animal Populations
Springer Science & Business Media
This book constitutes the refereed proceedings of the 4th Mexican International Conference on Artificial Intelligence, MICAI 2005, held in Monterrey, Mexico, in November 2005. The 120 revised full papers presented were carefully reviewed and selected from 423 submissions. The papers are organized in topical sections on knowledge representation and management, logic and constraint programming, uncertainty reasoning, multiagent systems and distributed AI, computer vision and pattern recognition, machine learning and data mining, evolutionary computation and genetic algorithms, neural networks, natural language processing, intelligent interfaces and speech processing, bioinformatics and medical applications, robotics, modeling and intelligent control, and intelligent tutoring systems.
Paleodemography
Springer Science & Business Media
Researchers across the natural and social sciences find themselves navigating tremendous amounts of new data. Making sense of this flood of information requires more than the rote application of formulaic statistical methods. The premise of Statistical Thinking from Scratch is that students who want to become confident data

analysts are better served by a deep introduction to a single statistical method than by a cursory overview of many methods. In particular, this book focuses on simple linear regression-a method with close connections to the most important tools in applied statistics-using it as a detailed case study for teaching resampling-based, likelihood-based, and Bayesian approaches to statistical inference. Considering simple linear regression in depth imparts an idea of how statistical procedures are designed, a flavour for the philosophical positions one assumes when applying statistics, and tools to probe the strengths of one's statistical approach. Key to the book's novel approach is its mathematical level, which is gentler than most texts for statisticians but more rigorous than most introductory texts for non-statisticians. Statistical Thinking from Scratch is suitable for senior undergraduate and beginning graduate students, professional researchers, and practitioners seeking to improve their understanding of statistical methods across the natural and social sciences, medicine, psychology, public health, business, and other fields. *Age Distributions from Skeletal Samples* Springer Item response theory (IRT) has moved beyond the confines of educational measurement into assessment domains such as personality, psychopathology, and patient-reported outcomes. Classic and emerging IRT methods and applications that are revolutionizing psychological measurement, particularly for health assessments used to demonstrate treatment effectiveness, are reviewed in this new volume. World renowned contributors present the latest research and methodologies about these models along with their applications and related challenges. Examples using real data, some from NIH-PROMIS, show how to apply these models in actual research situations. Chapters review fundamental issues of IRT, modern estimation methods, testing assumptions, evaluating fit, item banking, scoring in multidimensional models, and advanced IRT methods. New multidimensional models are provided along with suggestions for deciding among the family of IRT models available. Each chapter provides an introduction, describes state-of-the art research methods, demonstrates an application, and provides a summary. The book addresses the most critical IRT conceptual and statistical issues confronting researchers and advanced students in psychology, education, and medicine today. Although the chapters highlight health outcomes data the issues addressed are relevant to any content domain. The book addresses: IRT models applied to non-educational data especially patient reported outcomes Differences between cognitive and non-cognitive constructs and the challenges these bring to modeling. The application of multidimensional IRT models designed to capture typical performance data. Cutting-edge methods for deriving a single latent dimension from multidimensional data A new model designed for the measurement of constructs that are defined on one end of a continuum such as

substance abuse Scoring individuals under different multidimensional IRT models and item banking for patient-reported health outcomes How to evaluate measurement invariance, diagnose problems with response categories, and assess growth and change. Part 1 reviews fundamental topics such as assumption testing, parameter estimation, and the assessment of model and person fit. New, emerging, and classic IRT models including modeling multidimensional data and the use of new IRT models in typical performance measurement contexts are examined in Part 2. Part 3 reviews the major applications of IRT models such as scoring, item banking for patient-reported health outcomes, evaluating measurement invariance, linking scales to a common metric, and measuring growth and change. The book concludes with a look at future IRT applications in health outcomes measurement. The book summarizes the latest advances and critiques foundational topics such a multidimensionality, assessment of fit, handling non-normality, as well as applied topics such as differential item functioning and multidimensional linking. Intended for researchers, advanced students, and practitioners in psychology, education, and medicine interested in applying IRT methods, this book also serves as a text in advanced graduate courses on IRT or measurement. Familiarity with factor analysis, latent variables, IRT, and basic measurement theory is assumed.

High-Level Data Fusion Lulu.com

Provides an introduction to modern statistical theory for social and health scientists while invoking minimal modeling assumptions.

A Primer SAGE

This is a short introduction to Maximum Likelihood (ML) Estimation. It provides a general modeling framework that utilizes the tools of ML methods to outline a flexible modeling strategy that accommodates cases from the simplest linear models (such as the normal error regression model) to the most complex nonlinear models linking endogenous and exogenous variables with non-normal distributions. Using examples to illustrate the techniques of finding ML estimators and estimates, the author discusses what properties are desirable in an estimator, basic techniques for finding maximum likelihood solutions, the general form of the covariance matrix for ML estimates, the sampling distribution of ML estimators; the use of ML in the normal as well as other distributions, and some useful illustrations of likelihoods.

Logic and Practice Stata Press

While the prediction of observations is a forward problem, the use of actual observations to infer the properties of a model is an inverse problem. Inverse problems are difficult because they may not have a unique solution. The description of uncertainties plays a central role in the theory, which is based on probability theory. This book proposes a general approach that is valid for linear as well as for nonlinear problems. The philosophy is essentially probabilistic and allows the reader to understand the basic difficulties appearing in the resolution of inverse problems. The book attempts to explain how a method of acquisition of information can be applied to actual real-

world problems, and many of the arguments are heuristic.
Advances in Fuzzy Logic and Technology 2017 CRC Press
"This book covers the basics of traditional educational testing, measurement, and evaluation theory and methodology, as well as sociopolitical issues and trends influencing the future of that research and practice"--Publisher's description.
Societal Agents in Law Oxford University Press, USA
What is the probability that something will occur, and how is that probability altered by a change in an independent variable? To answer these questions, Tim Futing Liao introduces a systematic way of interpreting commonly used probability models. Since much of what social scientists study is measured in noncontinuous ways and, therefore, cannot be analyzed using a classical regression model, it becomes necessary to model the likelihood that an event will occur. This book explores these models first by reviewing each probability model and then by presenting a systematic way for interpreting the results from each.
Logit, Probit, and Other Generalized Linear Models CRC Press
This book provides an introduction to probabilistic inductive logic programming. It places emphasis on the methods based on logic programming principles and covers formalisms and systems, implementations and applications, as well as theory.
Probabilistic Inductive Logic Programming CQ Press
Walking readers step by step through complex concepts, this book translates missing data techniques into something that applied researchers and graduate students can understand and utilize in their own research. Enders explains the rationale and procedural details for maximum likelihood estimation, Bayesian estimation, multiple imputation, and models for handling missing not at random (MNAR) data. Easy-to-follow examples and small simulated data sets illustrate the techniques and clarify the underlying principles. The companion website (www.appliedmissingdata.com) includes data files and syntax for the examples in the book as well as up-to-date information on software. The book is accessible to substantive researchers while providing a level of detail that will satisfy quantitative specialists.
Applications in R SAGE
Understand the “how” and the “why” behind research in political science. Political Science Research Methods by Janet Buttolph Johnson, H. T. Reynolds, and Jason D. Mycoff helps you to understand the logic behind research design by guiding you through a step-by-step process that explains when and why a researcher would pursue different kinds of methods. The highly anticipated Ninth Edition of this trusted resource provides more international examples, an increased focus on the role ethics play in the research process, increased attention to qualitative research methods, and expanded coverage on the role of the internet in research and analysis.
Interpreting Probability Models Springer
Paleodemography is the field of enquiry that attempts to identify demographic parameters

from past populations (usually skeletal samples) derived from archaeological contexts, and then to make interpretations regarding the health and well-being of those populations. However, paleodemographic theory relies on several assumptions that cannot easily be validated by the researcher, and if incorrect, can lead to large errors or biases. In this book, physical anthropologists, mathematical demographers and statisticians tackle these methodological issues for reconstructing demographic structure for skeletal samples. Topics discussed include how skeletal morphology is linked to chronological age, assessment of age from the skeleton, demographic models of mortality and their interpretation, and biostatistical approaches to age structure estimation from archaeological samples. This work will be of immense importance to anyone interested in paleodemography, including biological and physical anthropologists, demographers, geographers, evolutionary biologists and statisticians.

Applications of Research Methodology

SAGE

This book is a simple introduction to the logic behind analyses and sampling design for mark-recapture and survey efforts. With a focus on the early user and beginner, the book explains the complicated formulas and statistics that can be effectively used around the world in support of conservation efforts.

Bayesian Methods

University of Michigan Press

In this revised second edition, Baggio and Klobas build upon the work of their previous volume, offering a presentation of quantitative research methods for tourism researchers. This accessible and rigorous guide goes beyond the approaches usually covered in introductory textbooks on quantitative methods to consider useful techniques for statistical inquiry into tourism matters of all but the most econometrically complex kind. The first part of the book concerns common issues in statistical analysis of data and the most widely-used techniques, while the second part describes and discusses several newer and less common approaches to data analysis that are valuable for tourism researchers and analysts. Updates to the second edition include: • a new chapter on “Big Data” • consideration of data screening and cleaning • the use of similarity and diversity indexes for comparing samples • observations about the partial least squares (PLS) approach to path modelling • a new section on multi-group structural equation modelling • a new section on common method variance and its treatment • revised and updated section on software • fully updated references and examples

Strategies for Analysis

SAGE Publications, Incorporated

Probability is the bedrock of machine learning. You cannot develop a deep understanding and application of machine learning without it. Cut through the equations, Greek letters, and confusion, and discover the topics in probability that you need to know. Using clear explanations, standard Python libraries, and step-by-step tutorial lessons, you will discover the importance of probability to machine

learning, Bayesian probability, entropy, density estimation, maximum likelihood, and much more.

Political Science Research Methods SIAM
An Update of the Most Popular Graduate-Level Introductions to Bayesian Statistics for Social Scientists Now that Bayesian modeling has become standard, MCMC is well understood and trusted, and computing power continues to increase, Bayesian Methods: A Social and Behavioral Sciences Approach, Third Edition focuses more on implementation details of the procedures and less on justifying procedures. The expanded examples reflect this updated approach. New to the Third Edition A chapter on Bayesian decision theory, covering Bayesian and frequentist decision theory as well as the connection of empirical Bayes with James–Stein estimation A chapter on the practical implementation of MCMC methods using the BUGS software Greatly expanded chapter on hierarchical models that shows how this area is well suited to the Bayesian paradigm Many new applications from a variety of social science disciplines Double the number of exercises, with 20 now in each chapter Updated BaM package in R, including new datasets, code, and procedures for calling BUGS packages from R This bestselling, highly praised text continues to be suitable for a range of courses, including an introductory course or a computing-centered course. It shows students in the social and behavioral sciences how to use Bayesian methods in practice, preparing them for sophisticated, real-world work in the field.

Structural Equation Modeling with LISREL Maximum Likelihood EstimationLogic and Practice
Maximum Likelihood EstimationLogic and PracticeSAGE

Linear Regression Models Springer
Trying to determine when to use a logistic regression and how to interpret the coefficients? Frustrated by the technical writing in other books on the topic? Pampel's book offers readers the first "nuts and bolts" approach to doing logist

An Inductive Logic Programming Approach to Statistical Relational Learning SAGE Publications
A complete discussion of fundamental and advanced topics in Item Response Theory written by pioneers in the field In Item Response Theory, accomplished psychometricians Darrell Bock and Robert Gibbons deliver a comprehensive and up-to-date exploration of the theoretical foundations and applications of Item Response Theory (IRT). Covering both unidimensional and multidimensional IRT, as well as related adaptive test administration of previously calibrated item banks, the book addresses the growing need for understanding of this topic as the use of IRT spreads to other fields. The first book on the topic that offers a complete and unified treatment of its subject, Item Response Theory prepares researchers and students to understand and apply IRT and multidimensional IRT to fields like education, mental health and marketing. Accessible to first year-graduate students with a foundation in the behavioral or social sciences, basic statistics, and generalized linear models, the book walks

readers through everything from the logic of IRT to cutting edge applications of the technique. Readers will also benefit from the inclusion of: • A thorough introduction to the foundations of Item Response Theory, including its logic and origins, model-based measurement, psychological scaling, and classical test theory • An exploration of selected mathematical and statistical results, including points, point sets, and set operations, probability, sampling, and joint, conditional, and marginal probability • Discussions of unidimensional and multidimensional IRT models, including item parameter estimation with binary and polytomous data • Analysis of dimensionality, differential item functioning, and multiple group IRT Perfect for graduate students and researchers studying and working with psychometrics in psychology, quantitative psychology, educational measurement, marketing, and statistics, Item Response Theory will also benefit researchers interested in patient reported outcomes in health research.

Cambridge University Press

After showing why ordinary regression analysis is not appropriate for investigating dichotomous or otherwise 'limited' dependent variables, this volume examines three techniques which are well suited for such data. It reviews the linear probability model and discusses alternative specifications of non-linear models.