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Multilevel Modeling in Plain Language - Karen Robson 2015-11-10
With a real focus on the practical, this book provides students with a step-by-step approach, plenty of real-life examples, and downloadable data and exercises on the accompanying study website to help take the fear and intimidation out of multilevel modeling
Multilevel Analysis - Tom A B Snijders 2011-12-06
The Second Edition of this classic text introduces the main methods, techniques, and issues involved in carrying out multilevel modeling and analysis. Snijders and Boskers' book is an applied, authoritative, and accessible introduction to the topic, providing readers with a clear conceptual and practical understanding of all the main issues involved in designing multilevel studies and conducting multilevel analysis. This book has been comprehensively revised and updated since the last edition, and now includes guides to modeling using HLM, MLwiN, SAS, Stata including GLLAMM, R, SPSS, Mplus, WinBugs, Latent Gold, and Mix.
Introduction to Modern Modelling Methods - D. Betsy McCoach 2022-03-01
Using simple and direct language, this concise text provides practical guidance on a wide range of modeling methods and techniques for use with quantitative data. It covers: · 2-level Multilevel Models · Structural Equation Modeling (SEM) · Longitudinal Modeling using

multilevel and SEM techniques · Combining organizational and longitudinal models Part of The SAGE Quantitative Research Kit, this book will give you the know-how and confidence needed to succeed on your quantitative research journey.

Doing Meta-Analysis with R - Mathias Harrer 2021-09-15

Doing Meta-Analysis with R: A Hands-On Guide serves as an accessible introduction on how meta-analyses can be conducted in R. Essential steps for meta-analysis are covered, including calculation and pooling of outcome measures, forest plots, heterogeneity diagnostics, subgroup analyses, meta-regression, methods to control for publication bias, risk of bias assessments and plotting tools. Advanced but highly relevant topics such as network meta-analysis, multi-three-level meta-analyses, Bayesian meta-analysis approaches and SEM meta-analysis are also covered. A companion R package, dmetar, is introduced at the beginning of the guide. It contains data sets and several helper functions for the meta and metafor package used in the guide. The programming and statistical background covered in the book are kept at a non-expert level, making the book widely accessible. Features • Contains two introductory chapters on how to set up an R environment and do basic imports/manipulations of meta-analysis data, including exercises • Describes statistical concepts clearly and concisely before applying them in R • Includes step-by-step guidance through the coding required to perform meta-analyses, and a companion R package for the book

Beyond Multiple Linear Regression - Paul Roback 2021-01-14

Beyond Multiple Linear Regression: Applied Generalized Linear Models and Multilevel Models in R is designed for undergraduate students who have successfully completed a multiple linear regression course, helping them develop an expanded modeling toolkit that

includes non-normal responses and correlated structure. Even though there is no mathematical prerequisite, the authors still introduce fairly sophisticated topics such as likelihood theory, zero-inflated Poisson, and parametric bootstrapping in an intuitive and applied manner. The case studies and exercises feature real data and real research questions; thus, most of the data in the textbook comes from collaborative research conducted by the authors and their students, or from student projects. Every chapter features a variety of conceptual exercises, guided exercises, and open-ended exercises using real data. After working through this material, students will develop an expanded toolkit and a greater appreciation for the wider world of data and statistical modeling. A solutions manual for all exercises is available to qualified instructors at the book's website at www.routledge.com, and data sets and Rmd files for all case studies and exercises are available at the authors' GitHub repo (https://github.com/proback/BeyondMLR)

Introduction to Modern Modelling Methods - D. Betsy McCoach 2022-03

Using concise and direct language, Betsy McCoach's book imparts a wide range of modeling techniques for use with quantitative data, including: From 2-level multilevel models to longitudinal modeling using multilevel and stuctural equation modeling (SEM) techniques. Part of The SAGE Quantitative Research Kit, this book offers the know-how and confidence needed to succeed on your quantitative research journey.

Hierarchical Linear Models - Stephen W. Raudenbush 2002

New edition of a text in which Raudenbush (U. of Michigan) and Bryk (sociology, U. of Chicago) provide examples, explanations, and illustrations of the theory and use of hierarchical linear models (HLM). New material in Part I (Logic) includes information on multivariate growth models and other topics.

The SAGE Encyclopedia of Research Design - Bruce B. Frey 2022-01-18

The SAGE Encyclopedia of Research Design maps out how one makes decisions about research design, interprets data, and draws valid inferences, undertakes research projects in an ethical manner, and evaluates experimental design strategies and results. From A-to-Z, this four-volume work covers the spectrum of research design strategies and topics including, among other things: fundamental research design principles, ethics in the research process, quantitative versus qualitative and mixed-method designs, completely randomized designs, multiple comparison tests, diagnosing agreement between data and models, fundamental assumptions in analysis of variance, factorial treatment designs, complete and incomplete block designs, Latin square and related designs, hierarchical designs, response surface designs, split-plot designs, repeated measures designs, crossover designs, analysis of covariance, statistical software packages, and much more. Research design, with its statistical underpinnings, can be especially daunting for students and novice researchers. At its heart, research design might be described simply as a formalized approach toward problem solving, thinking, and acquiring knowledge, the success of which depends upon clearly defined objectives and appropriate choice of statistical design and analysis to meet those objectives. The SAGE Encyclopedia of Research Design will assist students and researchers with their work while providing vital information on research strategies.

The SAGE Handbook of Multilevel Modeling - Marc A. Scott 2013-08-31

In this important new Handbook, the editors have gathered together a range of leading contributors to introduce the theory and practice of multilevel modeling. The Handbook establishes the connections in multilevel modeling, bringing together leading experts

from around the world to provide a roadmap for applied researchers linking theory and practice, as well as a unique arsenal of state-of-the-art tools. It forges vital connections that cross traditional disciplinary divides and introduces best practice in the field. Part I establishes the framework for estimation and inference, including chapters dedicated to notation, model selection, fixed and random effects, and causal inference. Part II develops variations and extensions, such as nonlinear, semiparametric and latent class models. Part III includes discussion of missing data and robust methods, assessment of fit and software. Part IV consists of exemplary modeling and data analyses written by methodologists working in specific disciplines. Combining practical pieces with overviews of the field, this Handbook is essential reading for any student or researcher looking to apply multilevel techniques in their own research.

An Introduction to Multilevel Modeling Techniques - Ronald H. Heck 1999-11

Multilevel modelling is a data analysis method that is frequently used to investigate hierarchal data structures in educational, behavioural, health, and social sciences disciplines. Multilevel data analysis exploits data structures that cannot be adequately investigated using single-level analytic methods such as multiple regression, path analysis, and structural modelling. This text offers a comprehensive treatment of multilevel models for univariate and multivariate outcomes. It explores their similarities and differences and demonstrates why one model may be more appropriate than another, given the research objectives. -- Provided by Publisher.

Handbook of Multilevel Analysis - Jan Deleeuw 2007-12-26

This book presents the state of the art in multilevel analysis, with an emphasis on more advanced topics. These topics are discussed conceptually, analyzed mathematically, and

illustrated by empirical examples. Multilevel analysis is the statistical analysis of hierarchically and non-hierarchically nested data. The simplest example is clustered data, such as a sample of students clustered within schools. Multilevel data are especially prevalent in the social and behavioral sciences and in the biomedical sciences. The chapter authors are all leading experts in the field. Given the omnipresence of multilevel data in the social, behavioral, and biomedical sciences, this book is essential for empirical researchers in these fields.

Multilevel Modeling Techniques and Applications in Institutional Research - Joe L. Lott 2013-02-22

Multilevel modeling is an increasingly popular multivariate technique that is widely applied in the social sciences. Increasingly, practitioners are making instructional decisions based on results from their multivariate analyses, which often come from nested data that lend themselves to multilevel modeling techniques. As data-driven decision making becomes more critical to colleges and universities, multilevel modeling is a tool that will lead to more efficient estimates and enhance understanding of complex relationships. This volume illustrates both the theoretical underpinnings and practical applications of multilevel modeling in IR. It introduces the fundamental concepts of multilevel modeling techniques in a conceptual and technical manner. Providing a range of examples of nested models that are based on linear and categorical outcomes, it then offers important suggestions about presenting results of multilevel models through charts and graphs. This is the 154th volume of this Jossey-Bass quarterly report series. Always timely and comprehensive, New Directions for Institutional Research provides planners and administrators in all types of academic institutions with guidelines in such areas as resource coordination, information analysis, program

evaluation, and institutional management.

Multilevel Analysis for Applied Research - Robert Bickel 2007-03-19

This book provides a uniquely accessible introduction to multilevel modeling, a powerful tool for analyzing relationships between an individual-level dependent variable, such as student reading achievement, and individual-level and contextual explanatory factors, such as gender and neighborhood quality. Helping readers build on the statistical techniques they already know, Robert Bickel emphasizes the parallels with more familiar regression models, shows how to do multilevel modeling using SPSS, and demonstrates how to interpret the results. He discusses the strengths and limitations of multilevel analysis and explains specific circumstances in which it offers (or does not offer) methodological advantages over more traditional techniques. Over 300 dataset examples from research on educational achievement, income attainment, voting behavior, and other timely issues are presented in numbered procedural steps.

Multilevel and Longitudinal Modeling with IBM SPSS - Ronald H. Heck 2022-04-12

Multilevel and Longitudinal Modeling with IBM SPSS, Third Edition, demonstrates how to use the multilevel and longitudinal modeling techniques available in IBM SPSS Versions 25-27. Annotated screenshots with all relevant output provide readers with a step-by-step understanding of each technique as they are shown how to navigate the program. Throughout, diagnostic tools, data management issues, and related graphics are introduced. SPSS commands show the flow of the menu structure and how to facilitate model building, while annotated syntax is also available for those who prefer this approach. Extended examples illustrating the logic of model development and evaluation are included throughout the book, demonstrating the context and rationale of the research questions and the steps around which

the analyses are structured. The book opens with the conceptual and methodological issues associated with multilevel and longitudinal modeling, followed by a discussion of SPSS data management techniques that facilitate working with multilevel, longitudinal, or cross-classified data sets. The next few chapters introduce the basics of multilevel modeling, developing a multilevel model, extensions of the basic two-level model (e.g., three-level models, models for binary and ordinal outcomes), and troubleshooting techniques for everyday-use programming and modeling problems along with potential solutions. Models for investigating individual and organizational change are next developed, followed by models with multivariate outcomes and, finally, models with cross-classified and multiple membership data structures. The book concludes with thoughts about ways to expand on the various multilevel and longitudinal modeling techniques introduced and issues (e.g., missing data, sample weights) to keep in mind in conducting multilevel analyses. Key features of the third edition: Thoroughly updated throughout to reflect IBM SPSS Versions 26-27. Introduction to fixed-effects regression for examining change over time where random-effects modeling may not be an optimal choice. Additional treatment of key topics specifically aligned with multilevel modeling (e.g., models with binary and ordinal outcomes). Expanded coverage of models with cross-classified and multiple membership data structures. Added discussion on model checking for improvement (e.g., examining residuals, locating outliers). Further discussion of alternatives for dealing with missing data and the use of sample weights within multilevel data structures. Supported by online data sets, the book's practical approach makes it an essential text for graduate-level courses on multilevel, longitudinal, latent variable modeling, multivariate statistics, or advanced quantitative techniques taught in departments of business,

education, health, psychology, and sociology. The book will also prove appealing to researchers in these fields. The book is designed to provide an excellent supplement to Heck and Thomas's An Introduction to Multilevel Modeling Techniques, Fourth Edition; however, it can also be used with any multilevel or longitudinal modeling book or as a stand-alone text.

Multilevel Structural Equation Modeling - Bruno Castanho Silva 2019-02-28

Multilevel Structural Equation Modeling by Bruno Castanho Silva, Constantin Manuel Bosancianu, and Levente Littvay serves as a minimally technical overview of multilevel structural equation modeling (MSEM) for applied researchers and advanced graduate students in the social sciences. As the first book of its kind, this title is an accessible, hands-on introduction for beginners of the topic. The authors predict a growth in this area, fueled by both data availability and also the availability of new and improved software to run these models. The applied approach, combined with a graphical presentation style and minimal reliance on complex matrix algebra guarantee that this volume will be useful to social science graduate students wanting to utilize such models.

Multilevel Analysis - Joop J. Hox 2017-09-14

Applauded for its clarity, this accessible introduction helps readers apply multilevel techniques to their research. The book also includes advanced extensions, making it useful as both an introduction for students and as a reference for researchers. Basic models and examples are discussed in nontechnical terms with an emphasis on understanding the methodological and statistical issues involved in using these models. The estimation and interpretation of multilevel models is demonstrated using realistic examples from various disciplines including psychology, education, public health, and sociology. Readers are introduced to a general framework on

multilevel modeling which covers both observed and latent variables in the same model, while most other books focus on observed variables. In addition, Bayesian estimation is introduced and applied using accessible software.

An Introduction to Multilevel Modeling Techniques - Ronald H. Heck 2015-01-30

Univariate and multivariate multilevel models are used to understand how to design studies and analyze data in this comprehensive text distinguished by its variety of applications from the educational, behavioral, and social sciences. Basic and advanced models are developed from the multilevel regression (MLM) and latent variable (SEM) traditions within one unified analytic framework for investigating hierarchical data. The authors provide examples using each modeling approach and also explore situations where alternative approaches may be more appropriate, given the research goals. Numerous examples and exercises allow readers to test their understanding of the techniques presented. Changes to the new edition include: -The use of Mplus 7.2 for running the analyses including the input and data files at www.routledge.com/9781848725522. -Expanded discussion of MLM and SEM model-building that outlines the steps taken in the process, the relevant Mplus syntax, and tips on how to evaluate the models. -Expanded pedagogical program now with chapter objectives, boldfaced key terms, a glossary, and more tables and graphs to help students better understand key concepts and techniques. -Numerous, varied examples developed throughout which make this book appropriate for use in education, psychology, business, sociology, and the health sciences. -Expanded coverage of missing data problems in MLM using ML estimation and multiple imputation to provide currently-accepted solutions (Ch. 10). -New chapter on three-level univariate and multilevel multivariate MLM models provides greater options for investigating more complex theoretical

relationships(Ch.4). -New chapter on MLM and SEM models with categorical outcomes facilitates the specification of multilevel models with observed and latent outcomes (Ch.8). -New chapter on multilevel and longitudinal mixture models provides readers with options for identifying emergent groups in hierarchical data (Ch.9). -New chapter on the utilization of sample weights, power analysis, and missing data provides guidance on technical issues of increasing concern for research publication (Ch.10). Ideal as a text for graduate courses on multilevel, longitudinal, latent variable modeling, multivariate statistics, or advanced quantitative techniques taught in psychology, business, education, health, and sociology, this book's practical approach also appeals to researchers. Recommended prerequisites are introductory univariate and multivariate statistics.

Multilevel Structural Equation Modeling - Bruno Castanho Silva 2019-02-28

Multilevel Structural Equation Modeling serves as a minimally technical overview of multilevel structural equation modeling (MSEM) for applied researchers and advanced graduate students in the social sciences. As the first book of its kind, this title is an accessible, hands-on introduction for beginners of the topic. The authors predict a growth in this area, fueled by both data availability and also the availability of new and improved software to run these models. The applied approach, combined with a graphical presentation style and minimal reliance on complex matrix algebra guarantee that this volume will be useful to social science graduate students wanting to utilize such models.

The Emerald Handbook of Group and Team Communication Research - Stephenson J. Beck 2021-11-05

This volume considers the current research of group communication scholars, provides an overview of major foci in the discipline, and

points toward possible trajectories for future scholarship. It establishes group communication's central role within research on human behaviour and fosters an identity for group communication researchers.

Data Analysis Using Regression and Multilevel/Hierarchical Models - Andrew Gelman 2007

This book, first published in 2007, is for the applied researcher performing data analysis using linear and nonlinear regression and multilevel models.

Multilevel Modeling Using R - W. Holmes Finch 2019-05-15

"This book presents the theory and practice of major multilevel modeling techniques in a variety of contexts using R as the software tool. It describes the applications and extensions of multilevel modeling with special emphasis on the use of R to conduct the analyses and interpret the resulting output. The book is designed for researchers, data analysts, and upper-level undergraduate and graduate students taking a course on multilevel modeling or statistical modeling."--

Applying the Rasch Model in Social Sciences Using R - Iasonas Lamprianou 2019-12-12

This unique text provides a step-by-step beginner's guide to applying the Rasch model in R, a probabilistic model used by researchers across the social sciences to measure unobservable ("latent") variables. Each chapter is devoted to one popular Rasch model, ranging from the least to the most complex. Through a freely available and user-friendly package, BlueSky Statistics, Lamprianou offers a range of options for presenting results, critically examines the strengths and weaknesses of applying the Rasch model in each instance, and suggests more effective methodologies where applicable. With a focus on simple software code which does not assume extensive mathematical knowledge, the reader is initially introduced to the so-called simple Rasch Model to construct a

"political activism" variable out of a group of dichotomously scored questions. In subsequent chapters, the book covers everything from the Rating Scale to the Many-facets Rasch model. The final chapter even showcases a complete mock manuscript, demonstrating how a Rasch-based paper on the identification of online hate speech should look like. Combining theoretical rigor and real-world examples with empirical datasets from published papers, this book is essential reading for students and researchers alike who aspire to use Rasch models in their research.

Multilevel and Longitudinal Modeling with IBM SPSS - Ronald H. Heck 2013-08-22

This book demonstrates how to use multilevel and longitudinal modeling techniques available in the IBM SPSS mixed-effects program (MIXED). Annotated screen shots provide readers with a step-by-step understanding of each technique and navigating the program. Readers learn how to set up, run, and interpret a variety of models. Diagnostic tools, data management issues, and related graphics are introduced throughout. Annotated syntax is also available for those who prefer this approach. Extended examples illustrate the logic of model development to show readers the rationale of the research questions and the steps around which the analyses are structured. The data used in the text and syntax examples are available at www.routledge.com/9780415817110. Highlights of the new edition include: Updated throughout to reflect IBM SPSS Version 21. Further coverage of growth trajectories, coding time-related variables, covariance structures, individual change and longitudinal experimental designs (Ch.5). Extended discussion of other types of research designs for examining change (e.g., regression discontinuity, quasi-experimental) over time (Ch.6). New examples specifying multiple latent constructs and parallel growth processes (Ch. 7). Discussion of

alternatives for dealing with missing data and the use of sample weights within multilevel data structures (Ch.1). The book opens with the conceptual and methodological issues associated with multilevel and longitudinal modeling, followed by a discussion of SPSS data management techniques which facilitate working with multilevel, longitudinal, and cross-classified data sets. Chapters 3 and 4 introduce the basics of multilevel modeling: developing a multilevel model, interpreting output, and trouble-shooting common programming and modeling problems. Models for investigating individual and organizational change are presented in chapters 5 and 6, followed by models with multivariate outcomes in chapter 7. Chapter 8 provides an illustration of multilevel models with cross-classified data structures. The book concludes with ways to expand on the various multilevel and longitudinal modeling techniques and issues when conducting multilevel analyses. It's ideal for courses on multilevel and longitudinal modeling, multivariate statistics, and research design taught in education, psychology, business, and sociology.

Handbook of Advanced Multilevel Analysis - Joop Hox 2011-01-11

This new handbook is the definitive resource on advanced topics related to multilevel analysis. The editors assembled the top minds in the field to address the latest applications of multilevel modeling as well as the specific difficulties and methodological problems that are becoming more common as more complicated models are developed. Each chapter features examples that use actual datasets. These datasets, as well as the code to run the models, are available on the book’s website http://www.hlm-online.com . Each chapter includes an introduction that sets the stage for the material to come and a conclusion. Divided into five sections, the first provides a broad introduction to the field that serves as a framework for understanding the

latter chapters. Part 2 focuses on multilevel latent variable modeling including item response theory and mixture modeling. Section 3 addresses models used for longitudinal data including growth curve and structural equation modeling. Special estimation problems are examined in section 4 including the difficulties involved in estimating survival analysis, Bayesian estimation, bootstrapping, multiple imputation, and complicated models, including generalized linear models, optimal design in multilevel models, and more. The book's concluding section focuses on statistical design issues encountered when doing multilevel modeling including nested designs, analyzing cross-classified models, and dyadic data analysis. Intended for methodologists, statisticians, and researchers in a variety of fields including psychology, education, and the social and health sciences, this handbook also serves as an excellent text for graduate and PhD level courses in multilevel modeling. A basic knowledge of multilevel modeling is assumed.

Multiple Regression and Beyond - Timothy Z. Keith 2019-01-14

Companion Website materials: https://tzkeith.com/ Multiple Regression and Beyond offers a conceptually-oriented introduction to multiple regression (MR) analysis and structural equation modeling (SEM), along with analyses that flow naturally from those methods. By focusing on the concepts and purposes of MR and related methods, rather than the derivation and calculation of formulae, this book introduces material to students more clearly, and in a less threatening way. In addition to illuminating content necessary for coursework, the accessibility of this approach means students are more likely to be able to conduct research using MR or SEM--and more likely to use the methods wisely. This book: • Covers both MR and SEM, while explaining their relevance to one another • Includes path analysis, confirmatory factor analysis, and latent

growth modeling • Makes extensive use of real-world research examples in the chapters and in the end-of-chapter exercises • Extensive use of figures and tables providing examples and illustrating key concepts and techniques New to this edition: • New chapter on mediation, moderation, and common cause • New chapter on the analysis of interactions with latent variables and multilevel SEM • Expanded coverage of advanced SEM techniques in chapters 18 through 22 • International case studies and examples • Updated instructor and student online resources

Multilevel Modeling Using Mplus - Holmes Finch 2017-02-03

This book is designed primarily for upper level undergraduate and graduate level students taking a course in multilevel modelling and/or statistical modelling with a large multilevel modelling component. The focus is on presenting the theory and practice of major multilevel modelling techniques in a variety of contexts, using Mplus as the software tool, and demonstrating the various functions available for these analyses in Mplus, which is widely used by researchers in various fields, including most of the social sciences. In particular, Mplus offers users a wide array of tools for latent variable modelling, including for multilevel data.

Categorical Data Analysis and Multilevel Modeling Using R - Xing Liu 2022-02-24

Categorical Data Analysis and Multilevel Modeling Using R provides a practical guide to regression techniques for analyzing binary, ordinal, nominal, and count response variables using the R software. Author Xing Liu offers a unified framework for both single-level and multilevel modeling of categorical and count response variables with both frequentist and Bayesian approaches. Each chapter demonstrates how to conduct the analysis using R, how to interpret the models, and how to present the results for publication. A companion website for this book contains datasets and R

commands used in the book for students, and solutions for the end-of-chapter exercises on the instructor site.

An Introduction to Multilevel Modeling Techniques - Ronald H. Heck 2020-04-09

Multilevel modelling is a data analysis method that is frequently used to investigate hierarchal data structures in educational, behavioural, health, and social sciences disciplines. Multilevel data analysis exploits data structures that cannot be adequately investigated using single-level analytic methods such as multiple regression, path analysis, and structural modelling. This text offers a comprehensive treatment of multilevel models for univariate and multivariate outcomes. It explores their similarities and differences and demonstrates why one model may be more appropriate than another, given the research objectives. New to this edition: An expanded focus on the nature of different types of multilevel data structures (e.g., cross-sectional, longitudinal, cross-classified, etc.) for addressing specific research goals; Varied modelling methods for examining longitudinal data including random-effect and fixed-effect approaches; Expanded coverage illustrating different model-building sequences and how to use results to identify possible model improvements; An expanded set of applied examples used throughout the text; Use of four different software packages (i.e., Mplus, R, SPSS, Stata), with selected examples of model-building input files included in the chapter appendices and a more complete set of files available online. This is an ideal text for graduate courses on multilevel, longitudinal, latent variable modelling, multivariate statistics, or advanced quantitative techniques taught in psychology, business, education, health, and sociology. Recommended prerequisites are introductory univariate and multivariate statistics.

An Introduction to Multilevel Modeling Techniques - Ronald H. Heck 2020-03-24

Multilevel modelling is a data analysis method that is frequently used to investigate hierarchal data structures in educational, behavioural, health, and social sciences disciplines. Multilevel data analysis exploits data structures that cannot be adequately investigated using single-level analytic methods such as multiple regression, path analysis, and structural modelling. This text offers a comprehensive treatment of multilevel models for univariate and multivariate outcomes. It explores their similarities and differences and demonstrates why one model may be more appropriate than another, given the research objectives. New to this edition: An expanded focus on the nature of different types of multilevel data structures (e.g., cross-sectional, longitudinal, cross-classified, etc.) for addressing specific research goals; Varied modelling methods for examining longitudinal data including random-effect and fixed-effect approaches; Expanded coverage illustrating different model-building sequences and how to use results to identify possible model improvements; An expanded set of applied examples used throughout the text; Use of four different software packages (i.e., Mplus, R, SPSS, Stata), with selected examples of model-building input files included in the chapter appendices and a more complete set of files available online. This is an ideal text for graduate courses on multilevel, longitudinal, latent variable modelling, multivariate statistics, or advanced quantitative techniques taught in psychology, business, education, health, and sociology. Recommended prerequisites are introductory univariate and multivariate statistics.

Multilevel Analysis - Joop J. Hox 2010-09-13

This practical introduction helps readers apply multilevel techniques to their research. Noted as an accessible introduction, the book also includes advanced extensions, making it useful as both an introduction and as a reference to students, researchers, and methodologists. Basic

models and examples are discussed in non-technical terms with an emphasis on understanding the methodological and statistical issues involved in using these models. The estimation and interpretation of multilevel models is demonstrated using realistic examples from various disciplines. For example, readers will find data sets on stress in hospitals, GPA scores, survey responses, street safety, epilepsy, divorce, and sociometric scores, to name a few. The data sets are available on the website in SPSS, HLM, MLwiN, LISREL and/or Mplus files. Readers are introduced to both the multilevel regression model and multilevel structural models. Highlights of the second edition include: Two new chapters—one on multilevel models for ordinal and count data (Ch. 7) and another on multilevel survival analysis (Ch. 8). Thoroughly updated chapters on multilevel structural equation modeling that reflect the enormous technical progress of the last few years. The addition of some simpler examples to help the novice, whilst the more complex examples that combine more than one problem have been retained. A new section on multivariate meta-analysis (Ch. 11). Expanded discussions of covariance structures across time and analyzing longitudinal data where no trend is expected. Expanded chapter on the logistic model for dichotomous data and proportions with new estimation methods. An updated website at http://www.joophox.net/ with data sets for all the text examples and up-to-date screen shots and PowerPoint slides for instructors. Ideal for introductory courses on multilevel modeling and/or ones that introduce this topic in some detail taught in a variety of disciplines including: psychology, education, sociology, the health sciences, and business. The advanced extensions also make this a favorite resource for researchers and methodologists in these disciplines. A basic understanding of ANOVA and multiple regression is assumed. The section on multilevel structural equation models

assumes a basic understanding of SEM.

Multilevel Analysis - Tom A. B. Snijders 1999

Multilevel analysis covers all the main methods, techniques and issues for carrying out multilevel modeling and analysis. The approach is applied, and less mathematical than many other textbooks.

Multilevel Modeling Using R - W. Holmes Finch 2019-07-16

Like its bestselling predecessor, Multilevel Modeling Using R, Second Edition provides the reader with a helpful guide to conducting multilevel data modeling using the R software environment. After reviewing standard linear models, the authors present the basics of multilevel models and explain how to fit these models using R. They then show how to employ multilevel modeling with longitudinal data and demonstrate the valuable graphical options in R. The book also describes models for categorical dependent variables in both single level and multilevel data. New in the Second Edition: Features the use of lmer (instead of lme) and including the most up to date approaches for obtaining confidence intervals for the model parameters. Discusses measures of R2 (the squared multiple correlation coefficient) and overall model fit. Adds a chapter on nonparametric and robust approaches to estimating multilevel models, including rank based, heavy tailed distributions, and the multilevel lasso. Includes a new chapter on multivariate multilevel models. Presents new sections on micro-macro models and multilevel generalized additive models. This thoroughly updated revision gives the reader state-of-the-art tools to launch their own investigations in multilevel modeling and gain insight into their research. About the Authors: W. Holmes Finch is the George and Frances Ball Distinguished Professor of Educational Psychology at Ball State University. Jocelyn E. Bolin is a Professor in the Department of Educational Psychology at Ball State University. Ken Kelley is the Edward

F. Sorin Society Professor of IT, Analytics and Operations and the Associate Dean for Faculty and Research for the Mendoza College of Business at the University of Notre Dame.

Multilevel Modeling in Plain Language - Karen Robson 2015-11-02

Have you been told you need to do multilevel modeling, but you can't get past the forest of equations? Do you need the techniques explained with words and practical examples so they make sense? Help is here! This book unpacks these statistical techniques in easy-to-understand language with fully annotated examples using the statistical software Stata. The techniques are explained without reliance on equations and algebra so that new users will understand when to use these approaches and how they are really just special applications of ordinary regression. Using real life data, the authors show you how to model random intercept models and random coefficient models for cross-sectional data in a way that makes sense and can be retained and repeated. This book is the perfect answer for anyone who needs a clear, accessible introduction to multilevel modeling.

Multilevel Modeling of Categorical Outcomes Using IBM SPSS - Ronald H Heck 2013-05-07

This is the first workbook that introduces the multilevel approach to modeling with categorical outcomes using IBM SPSS Version 20. Readers learn how to develop, estimate, and interpret multilevel models with categorical outcomes. The authors walk readers through data management, diagnostic tools, model conceptualization, and model specification issues related to single-level and multilevel models with categorical outcomes. Screen shots clearly demonstrate techniques and navigation of the program. Modeling syntax is provided in the appendix. Examples of various types of categorical outcomes demonstrate how to set up each model and interpret the output. Extended

examples illustrate the logic of model development, interpretation of output, the context of the research questions, and the steps around which the analyses are structured. Readers can replicate examples in each chapter by using the corresponding data and syntax files available at www.psypress.com/9781848729568. The book opens with a review of multilevel with categorical outcomes, followed by a chapter on IBM SPSS data management techniques to facilitate working with multilevel and longitudinal data sets. Chapters 3 and 4 detail the basics of the single-level and multilevel generalized linear model for various types of categorical outcomes. These chapters review underlying concepts to assist with trouble-shooting common programming and modeling problems. Next population-average and unit-specific longitudinal models for investigating individual or organizational developmental processes are developed. Chapter 6 focuses on single- and multilevel models using multinomial and ordinal data followed by a chapter on models for count data. The book concludes with additional trouble shooting techniques and tips for expanding on the modeling techniques introduced. Ideal as a supplement for graduate level courses and/or professional workshops on multilevel, longitudinal, latent variable modeling, multivariate statistics, and/or advanced quantitative techniques taught in psychology, business, education, health, and sociology, this practical workbook also appeals to researchers in these fields. An excellent follow up to the authors' highly successful Multilevel and Longitudinal Modeling with IBM SPSS and Introduction to Multilevel Modeling Techniques, 2nd Edition, this book can also be used with any multilevel and/or longitudinal book or as a stand-alone text introducing multilevel modeling with categorical outcomes.

Multilevel Modeling Methods with Introductory and Advanced Applications - Ann A. O'Connell 2022-03-01

Multilevel Modeling Methods with Introductory and Advanced Applications provides a cogent and comprehensive introduction to the area of multilevel modeling for methodological and applied researchers as well as advanced graduate students. The book is designed to be able to serve as a textbook for a one or two semester course in multilevel modeling. The topics of the seventeen chapters range from basic to advanced, yet each chapter is designed to be able to stand alone as an instructional unit on its respective topic, with an emphasis on application and interpretation. In addition to covering foundational topics on the use of multilevel models for organizational and longitudinal research, the book includes chapters on more advanced extensions and applications, such as cross-classified random effects models, non-linear growth models, mixed effects location scale models, logistic, ordinal, and Poisson models, and multilevel mediation. In addition, the volume includes chapters addressing some of the most important design and analytic issues including missing data, power analyses, causal inference, model fit, and measurement issues. Finally, the volume includes chapters addressing special topics such as using large-scale complex sample datasets, and reporting the results of multilevel designs. Each chapter contains a section called Try This!, which poses a structured data problem for the reader. We have linked our book to a website (http://modeling.uconn.edu) containing data for the Try This! section, creating an opportunity for readers to learn by doing. The inclusion of the Try This! problems, data, and sample code eases the burden for instructors, who must continually search for class examples and homework problems. In addition, each chapter provides recommendations for additional methodological and applied readings.

Structural Equation Modeling - Jichuan Wang 2019-09-17

Presents a useful guide for applications of SEM

whilst systematically demonstrating various SEM models using Mplus Focusing on the conceptual and practical aspects of Structural Equation Modeling (SEM), this book demonstrates basic concepts and examples of various SEM models, along with updates on many advanced methods, including confirmatory factor analysis (CFA) with categorical items, bifactor model, Bayesian CFA model, item response theory (IRT) model, graded response model (GRM), multiple imputation (MI) of missing values, plausible values of latent variables, moderated mediation model, Bayesian SEM, latent growth modeling (LGM) with individually varying times of observations, dynamic structural equation modeling (DSEM), residual dynamic structural equation modeling (RDSEM), testing measurement invariance of instrument with categorical variables, longitudinal latent class analysis (LLCA), latent transition analysis (LTA), growth mixture modeling (GMM) with covariates and distal outcome, manual implementation of the BCH method and the three-step method for mixture modeling, Monte Carlo simulation power analysis for various SEM models, and estimate sample size for latent class analysis (LCA) model. The statistical modeling program Mplus Version 8.2 is featured with all models updated. It provides researchers with a flexible tool that allows them to analyze data with an easy-to-use interface and graphical displays of data and analysis results. Intended as both a teaching resource and a reference guide, and written in non-mathematical terms, Structural Equation Modeling: Applications Using Mplus, 2nd edition provides step-by-step instructions of model specification, estimation, evaluation, and modification. Chapters cover: Confirmatory Factor Analysis (CFA); Structural Equation Models (SEM); SEM for Longitudinal Data; Multi-Group Models; Mixture Models; and Power Analysis and Sample Size Estimate for SEM. Presents a useful reference guide for

applications of SEM while systematically demonstrating various advanced SEM models Discusses and demonstrates various SEM models using both cross-sectional and longitudinal data with both continuous and categorical outcomes Provides step-by-step instructions of model specification and estimation, as well as detailed interpretation of Mplus results using real data sets Introduces different methods for sample size estimate and statistical power analysis for SEM Structural Equation Modeling is an excellent book for researchers and graduate students of SEM who want to understand the theory and learn how to build their own SEM models using Mplus.

International Handbook of Comparative Large-Scale Studies in Education - Trude Nilsen 2022-09-21

This handbook is the first of its kind to provide a general and comprehensive overview of virtually every aspect of International Large Scale Assessment (ILSA). It includes historical, economic, and policy perspectives, theoretical foundations, methodology, and reviews of findings from analyses of ILSA data. After decades, during which ILSAs have generated knowledge within central areas of education research and gained increased and substantial impact on educational policy, practice and research, such a broad overview for a wide-ranging audience is much needed. With contributions from authors and editors from all continents, this handbook appeals to an international audience and keeps a neutral perspective, not favoring one ILSA over another. The handbook is suitable to be read by politicians, researchers and stakeholders who are seeking an overview of ILSAs, their history and development, and both potential benefits and limitations with regard to policy implications. The reviews of findings from studies analyzing ILSA data will be of interest to stakeholders, teachers, researchers, and policymakers. Considering that the reviews

extend to all fields pertaining to educational research, the book will be valuable to all researchers interested in education. Students may use the book to learn about ILSAs in the context of policy, theoretical underpinnings, or research. Moreover, the methodology section is written in a manner that is understandable and accessible for students, stakeholders, or researchers not familiar with these data. This methodology part, however, is also a valuable resource for researchers who are familiar with ILSA data, as it provides overviews of the design and sampling procedures of several ILSAs, and includes advice on methods of analysis.Even the owners of the ILSAs may find the book valuable, as it contains overviews and insights into a number of ILSAs, provides information how the data is used by the research community, and includes recommendations for future instruments.

Introducing Multilevel Modeling - Ita G G Kreft 1998-04-07

This is the first accessible and practical guide to using multilevel models in social research. Multilevel approaches are becoming increasingly important in social, behavioural, and educational research and it is clear from recent developments that such models are seen as being more realistic, and potentially more revealing, than ordinary regression models. While other books describe these multilevel models in considerable detail none focuses on the practical issues and potential problems of doing multilevel analyses that are covered in Introducing Multilevel Modeling. The authors' approach is user-oriented and the formal mathematics and statistics are kept to a minimum. Other key features include the use of worked examples using real data sets, analyzed using the leading computer package for multilevel modeling - "MLn." Discussion site at: http: \\www.stat.ucla.edu\phplib\w-agora\w-agora.phtml?bn=Sagebook Data files mentioned in the

book are available from: http: \\www.stat.ucla.edu\ deleeuw\sagebook

Multilevel Modeling for Social and Personality Psychology - John B Nezlek 2011-03-04

Psychophysiology methods have become very important in the past decade or so with the increase in the understanding of the relationship between human physiology and behavior. As social behavior research has ventured further into biological waters, more detailed understanding of these methods has become necessary. This volume meets this need in a very accessible way for the advanced level student upwards. Written by a team of well recognized and well-published social psychophysiologists, it leads the reader through some complex but essential areas of understanding for anyone needing to investigate the human biological system and social behavior including the autonomic nervous system, endocrine measures and electromyography. This text will be perfect for all advanced students and researchers in social and personality psychology using social psychophysiological methods as part of their studies or research.

Multilevel Modelling for Public Health and Health Services Research - Alastair H. Leyland 2020-01-01

This open access book is a practical introduction to multilevel modelling or multilevel analysis (MLA) - a statistical technique being increasingly used in public health and health services research. The authors begin with a compelling argument for the importance of researchers in these fields having an understanding of MLA to be able to judge not only the growing body of research that uses it, but also to recognise the limitations of research that did not use it. The volume also guides the analysis of real-life data sets by introducing and discussing the use of the multilevel modelling software MLwiN, the statistical package that is used with the example data sets. Importantly, the book also makes the training material accessible for download - not

only the datasets analysed within the book, but also a freeware version of MLwiN to allow readers to work with these datasets. The book's practical review of MLA comprises: Theoretical, conceptual, and methodological background Statistical background The modelling process and presentation of research Tutorials with example datasets Multilevel Modelling for Public Health and Health Services Research: Health in Context is a practical and timely resource for public health and health services researchers, statisticians interested in the relationships between contexts and behaviour, graduate students across these disciplines, and anyone interested in utilising multilevel modelling or multilevel analysis. "Leyland and Groenewegen's wealth of teaching experience makes this book and its accompanying tutorials especially useful for a practical introduction to multilevel analysis."– Juan Merlo, Professor of Social Epidemiology, Lund University "Comprehensive and insightful. A must for anyone interested in the applications of multilevel modelling to population health"– S. (Subu) V. Subramanian, Professor of Population Health and Geography, Harvard University.