Evidence based medicine is at the core of modern medicine. It involves the integration of individual clinical expertise with the best available clinical evidence from systematic research and patient's values and expectations. Systematic reviews offer a summary of the best available evidence. They are the most reliable and comprehensive statement about what works. Written by clinical academics from Australia, UK, USA, and Switzerland, this contributed volume introduces the readers to the principles and practice of systematic reviews and meta-analysis. It covers the various steps involved in systematic reviews including development of a focused question and the strategy for conducting a comprehensive literature search, identifying studies addressing the underlying question, assessment of heterogeneity and the risk of bias in the included studies, data extraction, and the approach to meta-analysis. Crucial issues such as selecting the model for meta-analysis, generating and interpreting forest plots, assessing the risk of publication bias, cautions in the interpretation of subgroup and sensitivity analyses, rating certainty of the evidence using GRADE guideline, and standardized reporting of meta-analysis (PRISMA) are covered in detail. Every attempt is made to keep the narrative simple and clear. Mathematical formulae are avoided as much as possible. While the focus of this book is on systematic reviews and meta-analyses of randomised controlled trials (RCTs), the gold standard of clinical research, the essentials of systematic reviews of non-RCTs, diagnostic test accuracy studies, animal studies, individual participant data meta-analysis, and network meta-analysis are also covered. Readers from all faculties of medicine will enjoy this comprehensive and reader friendly book to understand the principles and practice of systematic reviews and meta-analysis for guiding their clinical practice and research.

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

Multivariate statistics and mathematical models provide flexible and powerful tools essential in most disciplines. Nevertheless, many practicing researchers lack an adequate knowledge of these techniques, or did once know the techniques, but have not been able to keep abreast of new developments. The Handbook of Applied Multivariate Statistics and Mathematical Modeling explains the appropriate uses of multivariate procedures and mathematical modeling techniques, and prescribe practices that enable applied researchers to use these procedures effectively without needing to concern themselves with the mathematical basis. The Handbook emphasizes using models and statistics as tools. The objective of the book is to inform readers about which tool to use to accomplish which task. Each chapter begins with a
discussion of what kinds of questions a particular technique can and cannot answer. As multivariate statistics and modeling techniques are useful across disciplines, these examples include issues of concern in biological and social sciences as well as the humanities. This book provides a comprehensive introduction to performing meta-analysis using the statistical software R. It is intended for quantitative researchers and students in the medical and social sciences who wish to learn how to perform meta-analysis with R. As such, the book introduces the key concepts and models used in meta-analysis. It also includes chapters on the following advanced topics: publication bias and small study effects; missing data; multivariate meta-analysis, network meta-analysis; and meta-analysis of diagnostic studies. Meta-analysis is the application of statistics to combine results from multiple studies and draw appropriate inferences. Its use and importance have exploded over the last 25 years as the need for a robust evidence base has become clear in many scientific areas, including medicine and health, social sciences, education, psychology, ecology, and economics. Recent years have seen an explosion of methods for handling complexities in meta-analysis, including explained and unexplained heterogeneity between studies, publication bias, and sparse data. At the same time, meta-analysis has been extended beyond simple two-group comparisons of continuous and binary outcomes to comparing and ranking the outcomes from multiple groups, to complex observational studies, to assessing heterogeneity of effects, and to survival and multivariate outcomes. Many of these methods are statistically complex and are tailored to specific types of data. Key features Rigorous coverage of the full range of current statistical methodology used in meta-analysis Comprehensive, coherent, and unified overview of the statistical foundations behind meta-analysis Detailed description of the primary methods for both univariate and multivariate data Computer code to reproduce examples in chapters Thorough review of the literature with thousands of references Applications to specific types of biomedical and social science data This book is for a broad audience of graduate students, researchers, and practitioners interested in the theory and application of statistical methods for meta-analysis. It is written at the level of graduate courses in statistics, but will be of interest to and readable for quantitative scientists from a range of disciplines. The book can be used as a graduate level textbook, as a general reference for methods, or as an introduction to specialized topics using state-of-the-art methods. The Fifth Edition of Harris Cooper's bestselling text offers practical advice on how to conduct a synthesis of research in the social, behavioral, and health sciences. The book is written in plain language with four running examples drawn from psychology, education, and health science. With ample coverage of literature searching and the technical aspects of meta-analysis, this one-of-a-kind book applies the basic principles of sound data gathering to the task of producing a comprehensive assessment of existing research. Available with Perusall—an eBook that makes it easier to prepare for class Perusall is an award-winning eBook platform featuring social annotation tools that allow students and instructors to collaboratively mark up and discuss their SAGE textbook. Backed by research and supported by technological innovations developed at Harvard University, this process of learning through collaborative annotation keeps your students engaged and makes teaching easier and more effective. Learn more. This is the first book to demonstrate the application of power analysis to the newer more advanced statistical techniques that are increasingly used in the social and behavioral sciences. Both basic and advanced designs are covered. Readers are shown how to apply power analysis to techniques such as hierarchical linear modeling, meta-analysis, and structural equation modeling. Each chapter opens with a review of the statistical procedure and then proceeds to derive the power functions. This is followed by examples that demonstrate how to produce power tables and charts. The book clearly shows how to calculate power by providing open code for every design and procedure in R, SAS, and SPSS. Readers can verify the power computation using the computer programs on the book's website. There is a growing requirement to
include power analysis to justify sample sizes in grant proposals. Most chapters are self-standing and can be read in any order without much disruption. This book will help readers do just that. Sample computer code in R, SPSS, and SAS at www.routledge.com/9781848729810 are written to tabulate power values and produce power curves that can be included in a grant proposal. Organized according to various techniques, chapters 1 – 3 introduce the basics of statistical power and sample size issues including the historical origin, hypothesis testing, and the use of statistical power in t tests and confidence intervals. Chapters 4 - 6 cover common statistical procedures -- analysis of variance, linear regression (both simple regression and multiple regression), correlation, analysis of covariance, and multivariate analysis. Chapters 7 - 11 review the new statistical procedures -- multi-level models, meta-analysis, structural equation models, and longitudinal studies. The appendixes contain a tutorial about R and show the statistical theory of power analysis. Intended as a supplement for graduate courses on quantitative methods, multivariate statistics, hierarchical linear modeling (HLM) and/or multilevel modeling and SEM taught in psychology, education, human development, nursing, and social and life sciences, this is the first text on statistical power for advanced procedures. Researchers and practitioners in these fields also appreciate the book's unique coverage of the use of statistical power analysis to determine sample size in planning a study. A prerequisite of basic through multivariate statistics is assumed.

Review of the First Edition: The authors strive to reduce theory to a minimum, which makes it a self-learning text that is comprehensible for biologists, physicians, etc. who lack an advanced mathematics background. Unlike in many other textbooks, R is not introduced with meaningless toy examples; instead the reader is taken by the hand and shown around some analyses, graphics, and simulations directly relating to meta-analysis... A useful hands-on guide for practitioners who want to familiarize themselves with the fundamentals of meta-analysis and get started without having to plough through theorems and proofs. —Journal of Applied Statistics

Statistical Meta-Analysis with R and Stata, Second Edition provides a thorough presentation of statistical meta-analyses (MA) with step-by-step implementations using R/Stata. The authors develop analysis step by step using appropriate R/Stata functions, which enables readers to gain an understanding of meta-analysis methods and R/Stata implementation so that they can use these two popular software packages to analyze their own meta-data. Each chapter gives examples of real studies compiled from the literature. After presenting the data and necessary background for understanding the applications, various methods for analyzing meta-data are introduced. The authors then develop analysis code using the appropriate R/Stata packages and functions. What's New in the Second Edition: Adds Stata programs along with the R programs for meta-analysis Updates all the statistical meta-analyses with R/Stata programs Covers fixed-effects and random-effects MA, meta-regression, MA with rare-event, and MA-IPD vs MA-SS Adds five new chapters on multivariate MA, publication bias, missing data in MA, MA in evaluating diagnostic accuracy, and network MA Suitable as a graduate-level text for a meta-data analysis course, the book is also a valuable reference for practitioners and biostatisticians (even those with little or no experience in using R or Stata) in public health, medical research, governmental agencies, and the pharmaceutical industry.

Scientific progress often begins with the difficult task of preparing informed, conclusive reviews of existing research. Since the 1970s, the traditional "subjective" approach to research reviewing in the social sciences has been challenged by a statistical alternative known as meta-analysis. Meta-analysis provides a principled method of distilling reliable generalizations from previous studies on a single topic, thereby providing a quantitative and objective background for future research. The Future of Meta-Analysis brings together expert researchers for an in-depth examination of this new methodology—not to promote a consensus view but rather to explore from several perspectives the theories, tensions, and concerns of meta-analysis, and to illustrate through concrete examples the rationale behind meta-analytic decisions. In a meta-
analysis prepared especially for this volume, a statistician and a psychologist review the existing literature on aphasia treatment. In a second study, experts analyze six still-unpublished meta-analyses sponsored by the National Institute of Education to investigate the effects of school desegregation on the academic achievement of black children. This unique case study approach provides valuable discussion of the process of meta-analysis and of the current implications of meta-analysis for policy assessment. Prepared under the auspices of the National Research Council, The Future of Meta-Analysis presents a forum for leaders in this rapidly evolving field to discuss salient conceptual and technical issues and to offer a new theoretical framework, further methodological guidance, and statistical innovations that anticipate a future in which meta-analysis will play an even more effective and valuable role in social science research.

Research synthesis is the practice of systematically distilling and integrating data from many studies in order to draw more reliable conclusions about a given research issue. When the first edition of The Handbook of Research Synthesis and Meta-Analysis was published in 1994, it quickly became the definitive reference for conducting meta-analyses in both the social and behavioral sciences. In the third edition, editors Harris Cooper, Larry Hedges, and Jeff Valentine present updated versions of classic chapters and add new sections that evaluate cutting-edge developments in the field. The Handbook of Research Synthesis and Meta-Analysis draws upon groundbreaking advances that have transformed research synthesis from a narrative craft into an important scientific process in its own right. The editors and leading scholars guide the reader through every stage of the research synthesis process—problem formulation, literature search and evaluation, statistical integration, and report preparation. The Handbook incorporates state-of-the-art techniques from all quantitative synthesis traditions and distills a vast literature to explain the most effective solutions to the problems of quantitative data integration. Among the statistical issues addressed are the synthesis of non-independent data sets, fixed and random effects methods, the performance of sensitivity analyses and model assessments, the development of machine-based abstract screening, the increased use of meta-regression and the problems of missing data. The Handbook also addresses the non-statistical aspects of research synthesis, including searching the literature and developing schemes for gathering information from study reports. Those engaged in research synthesis will find useful advice on how tables, graphs, and narration can foster communication of the results of research syntheses. The third edition of the Handbook provides comprehensive instruction in the skills necessary to conduct research syntheses and represents the premier text on research synthesis. Praise for the first edition: "The Handbook is a comprehensive treatment of literature synthesis and provides practical advice for anyone deep in the throes of, just teetering on the brink of, or attempting to decipher a meta-analysis. Given the expanding application and importance of literature synthesis, understanding both its strengths and weaknesses is essential for its practitioners and consumers. This volume is a good beginning for those who wish to gain that understanding." —Chance "Meta-analysis, as the statistical analysis of a large collection of results from individual studies is called, has now achieved a status of respectability in medicine. This respectability, when combined with the slight hint of mystique that sometimes surrounds meta-analysis, ensures that results of studies that use it are treated with the respect they deserve....The Handbook of Research Synthesis is one of the most important publications in this subject both as a definitive reference book and a practical manual."—British Medical Journal When the first edition of The Handbook of Research Synthesis was published in 1994, it quickly became the definitive reference for researchers conducting meta-analyses of existing research in both the social and biological sciences. In this fully revised second edition, editors Harris Cooper, Larry Hedges, and Jeff Valentine present updated versions of the Handbook's classic chapters, as well as entirely new sections reporting on the most recent, cutting-edge developments in the field. Research synthesis is the practice of systematically distilling and integrating data from a variety of sources in order to draw more reliable
conclusions about a given question or topic. The Handbook of Research Synthesis and Meta-Analysis draws upon years of groundbreaking advances that have transformed research synthesis from a narrative craft into an important scientific process in its own right. Cooper, Hedges, and Valentine have assembled leading authorities in the field to guide the reader through every stage of the research synthesis process—problem formulation, literature search and evaluation, statistical integration, and report preparation. The Handbook of Research Synthesis and Meta-Analysis incorporates state-of-the-art techniques from all quantitative synthesis traditions. Distilling a vast technical literature and many informal sources, the Handbook provides a portfolio of the most effective solutions to the problems of quantitative data integration. Among the statistical issues addressed by the authors are the synthesis of non-independent data sets, fixed and random effects methods, the performance of sensitivity analyses and model assessments, and the problem of missing data. The Handbook of Research Synthesis and Meta-Analysis also provides a rich treatment of the non-statistical aspects of research synthesis. Topics include searching the literature, and developing schemes for gathering information from study reports. Those engaged in research synthesis will also find useful advice on how tables, graphs, and narration can be used to provide the most meaningful communication of the results of research synthesis. In addition, the editors address the potentials and limitations of research synthesis, and its future directions. The past decade has been a period of enormous growth in the field of research synthesis. The second edition Handbook thoroughly revises original chapters to assure that the volume remains the most authoritative source of information for researchers undertaking meta-analysis today. In response to the increasing use of research synthesis in the formation of public policy, the second edition includes a new chapter on both the strengths and limitations of research synthesis in policy debates

In this handbook social science researchers who focus on sustainability present and discuss their findings, including empirical work, case studies, teaching and learning innovations, and applied projects. As such, the book offers a basis for the dissemination of information, ideas and experiences acquired in the execution of research projects, especially initiatives which have influenced behavior, decision-making, or policy. Furthermore, it introduces methodological approaches and projects which aim to offer a better understanding of sustainability across society and economic sectors. This multidisciplinary overview presents the work of researchers from across the spectrum of the social sciences. It stimulates innovative thinking on how social sciences influence sustainable development and vice-versa.

This book describes multivariate analyses for several indices commonly used in meta-analysis, outlines how to do power analysis for meta-analysis, and examines issues around research quality and research design and their roles in synthesis.

The SAGE Handbook of Applied Social Research Methods, Second Edition provides students and researchers with the most comprehensive resource covering core methods, research designs, and data collection, management, and analysis issues. This thoroughly revised edition continues to place critical emphasis on finding the tools that best fit the research question given the constraints of deadlines, budget, and available staff. Each chapter offers key guidance on how to make intelligent and conscious tradeoffs so that one can refine and hone the research question as new knowledge is gained, unanticipated obstacles are encountered, or contextual shifts take place - all key elements in the iterative nature of applied research. Each chapter has been enhanced pedagogically to include more step-by-step procedures, specific, rich yet practical examples from various settings to illustrate the method, parameters to define when the method is most appropriate and when it is not appropriate, and greater use of visual aids (graphs, models, tip boxes) to provide teaching and learning tools. - twenty core chapters written by research experts that cover major methods and data analysis issues across the social and behavioral sciences, education, and management; - emphasis on applying research techniques, particularly in "real-world" settings in which there are various data,
money, time, and political constraints; - new chapters on mixed methods, qualitative comparative analysis, concept mapping, and internet data collection; - a newly developed section that serves as a guide for students who are navigating through the book and attempting to translate the chapters into action; - a new Instructor's Resources CD, with relevant journal articles, test questions, and exercises to aid the instructor in developing appropriate course materials.

When used in tandem, systematic reviews and meta-analysis—two distinct but highly compatible approaches to research synthesis—form a powerful, scientific approach to analyzing previous studies. But to see their full potential, a social work researcher must be versed in the foundational processes underlying them. This pocket guide to Systematic Reviews and Meta-Analysis illuminates precisely that practical groundwork. In clear, step-by-step terms, the authors explain how to format topics, locate and screen studies, extract and assess data, pool effect sizes, determine bias, and interpret the results, showing readers how to combine reviewing and meta-analysis correctly and effectively. Each chapter contains vivid social work examples and concludes with a concise summary and notes on further reading, while the book's glossary and handy checklists and sample search and data extraction forms maximize the book's usefulness. Highlighting the concepts necessary to understand, critique, and conduct research synthesis, this brief and highly readable introduction is a terrific resource for students and researchers alike.

This book explains how to use combined statistical tests and measures of effect size to synthesize the results of independent studies of a common research question.

This book focuses on performing hands-on meta-analysis using MetaXL, a free add-on to MS Excel. The illustrative examples are taken mainly from medical and health sciences studies, but the generic methods can be used to perform meta-analysis on data from any other discipline. The book adopts a step-by-step approach to perform meta-analyses and interpret the results. Stata codes for meta-analyses are also provided. All popularly used meta-analytic methods and models—such as the fixed effect model, random effects model, inverse variance heterogeneity model, and quality effect model—are used to find the confidence interval for the effect size measure of independent primary studies and the pooled study. In addition to the commonly used meta-analytic methods for various effect size measures, the book includes special topics such as meta-regression, dose-response meta-analysis, and publication bias. The main attraction for readers is the book's simplicity and straightforwardness in conducting actual meta-analysis using MetaXL. Researchers would easily find everything on meta-analysis of any particular effect size in one specific chapter once they could determine the underlying effect measure. Readers will be able to see the results under different models and also will be able to select the correct model to obtain accurate results.

The main purpose of this book is to address the statistical issues for integrating independent studies. There exist a number of papers and books that discuss the mechanics of collecting, coding, and preparing data for a meta-analysis, and we do not deal with these. Because this book concerns methodology, the content necessarily is statistical, and at times mathematical. In order to make the material accessible to a wider audience, we have not provided proofs in the text. Where proofs are given, they are placed as commentary at the end of a chapter. These can be omitted at the discretion of the reader. Throughout the book we describe computational procedures whenever required. Many computations can be completed on a hand calculator, whereas some require the use of a standard statistical package such as SAS, SPSS, or BMD. Readers with experience using a statistical package or who conduct analyses such as multiple regression or analysis of variance should be able to carry out the analyses described with the aid of a statistical package.

Offering pragmatic guidance for planning and conducting a meta-analytic review, this book is written in an engaging, nontechnical style that
makes it ideal for graduate course use or self-study. The author shows how to identify questions that can be answered using meta-analysis, retrieve both published and unpublished studies, create a coding manual, use traditional and unique effect size indices, and write a meta-analytic review. An ongoing example illustrates meta-analytic techniques. In addition to the fundamentals, the book discusses more advanced topics, such as artifact correction, random- and mixed-effects models, structural equation representations, and multivariate procedures. User-friendly features include annotated equations; discussions of alternative approaches; and "Practical Matters" sections that give advice on topics not often discussed in other books, such as linking meta-analytic results with theory and the utility of meta-analysis software programs.

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How is a social scientist to cope with the cornucopia of already existing studies in his or her area? How to draw useable conclusions from a body of work that might run to 5000 items? Traditional narrative integration fails to usefully portray such accumulated knowledge. Meta-analysis is an approach that systematically analyzes and synthesizes research. This book is its first full explanation. Meta-analysis treats a field of research as a complex set of data to be accumulated and integrated. As such it has much in common with survey research -- though, as causal relationships may have already been established by the studies being surveyed meta-analysis need not suffer from the limitations of survey research as a tool for establishing causes. Besides showing how to derive generalizations from very large and divergent bodies of research, the authors also provide ways for enhancing the findings of few or small research studies, and techniques for evaluating the findings of individual experiments by contrasting them with the combined weight of findings from other studies. Their approach does not enforce uniformity on different research.

"This book offers readers the best of both worlds: technical sophistication coupled with user-friendly, practical information for doing meta-analysis." -- Page 4 of cover.

This title provides step-by-step directions for how to conduct a meta-study, as well as recommendations for tools and standards for the application of this approach.

Researchers often have difficulties collecting enough data to test their hypotheses, either because target groups are small or hard to access, or because data collection entails prohibitive costs. Such obstacles may result in data sets that are too small for the complexity of the statistical model needed to answer the research question. This unique book provides guidelines and tools for implementing solutions to issues that arise in small sample research. Each chapter illustrates statistical methods that allow researchers to apply the optimal statistical model for their research question when the sample is too small. This essential book will enable social and behavioral science researchers to test their hypotheses even when the statistical model required for answering their research question is too complex for the sample sizes they can collect. The statistical models in the book range from the estimation of a population mean to models with latent variables and nested
observations, and solutions include both classical and Bayesian methods. All proposed solutions are described in steps researchers can implement with their own data and are accompanied with annotated syntax in R. The methods described in this book will be useful for researchers across the social and behavioral sciences, ranging from medical sciences and epidemiology to psychology, marketing, and economics.

This book provides a clear and thorough introduction to meta-analysis, the process of synthesizing data from a series of separate studies. Meta-analysis has become a critically important tool in fields as diverse as medicine, pharmacology, epidemiology, education, psychology, business, and ecology. Introduction to Meta-Analysis: Outlines the role of meta-analysis in the research process Shows how to compute effects sizes and treatment effects Explains the fixed-effect and random-effects models for synthesizing data Demonstrates how to assess and interpret variation in effect size across studies Clarifies concepts using text and figures, followed by formulas and examples Explains how to avoid common mistakes in meta-analysis Discusses controversies in meta-analysis Features a web site with additional material and exercises A superb combination of lucid prose and informative graphics, written by four of the world’s leading experts on all aspects of meta-analysis. Borenstein, Hedges, Higgins, and Rothstein provide a refreshing departure from cookbook approaches with their clear explanations of the what and why of meta-analysis. The book is ideal as a course textbook or for self-study. My students, who used pre-publication versions of some of the chapters, raved about the clarity of the explanations and examples. David Rindskopf, Distinguished Professor of Educational Psychology, City University of New York, Graduate School and University Center, & Editor of the Journal of Educational and Behavioral Statistics. The approach taken by Introduction to Meta-analysis is intended to be primarily conceptual, and it is amazingly successful at achieving that goal. The reader can comfortably skip the formulas and still understand their application and underlying motivation. For the more statistically sophisticated reader, the relevant formulas and worked examples provide a superb practical guide to performing a meta-analysis. The book provides an eclectic mix of examples from education, social science, biomedical studies, and even ecology. For anyone considering leading a course in meta-analysis, or pursuing self-directed study, Introduction to Meta-analysis would be a clear first choice. Jesse A. Berlin, ScD Introduction to Meta-Analysis is an excellent resource for novices and experts alike. The book provides a clear and comprehensive presentation of all basic and most advanced approaches to meta-analysis. This book will be referenced for decades. Michael A. McDaniel, Professor of Human Resources and Organizational Behavior, Virginia Commonwealth University Communication research is evolving and changing in a world of online journals, open-access, and new ways of obtaining data and conducting experiments via the Internet. Although there are generic encyclopedias describing basic social science research methodologies in general, until now there has been no comprehensive A-to-Z reference work exploring methods specific to communication and media studies. Our entries, authored by key figures in the field, focus on special considerations when applied specifically to communication research, accompanied by engaging examples from the literature of communication, journalism, and media studies. Entries cover every step of the research process, from the creative development of research topics and questions to literature reviews, selection of best methods (whether quantitative, qualitative, or mixed) for analyzing research results and publishing research findings, whether in traditional media or via new media outlets. In addition to expected entries covering the basics of theories and methods traditionally used in communication research, other entries discuss important trends influencing the future of that research, including contemporary practical issues students will face in communication professions, the influences of globalization on research, use of new recording technologies in fieldwork, and the challenges and opportunities related to studying online multi-media environments. Email, texting, cellphone video, and blogging are shown not only as
topics of research but also as means of collecting and analyzing data. Still other entries delve into considerations of accountability, copyright, confidentiality, data ownership and security, privacy, and other aspects of conducting an ethical research program. Features: 652 signed entries are contained in an authoritative work spanning four volumes available in choice of electronic or print formats. Although organized A-to-Z, front matter includes a Reader’s Guide grouping entries thematically to help students interested in a specific aspect of communication research to more easily locate directly related entries. Back matter includes a Chronology of the development of the field of communication research; a Resource Guide to classic books, journals, and associations; a Glossary introducing the terminology of the field; and a detailed Index. Entries conclude with References/Further Readings and Cross-References to related entries to guide students further in their research journeys. The Index, Reader’s Guide themes, and Cross-References combine to provide robust search-and-browse in the e-version. Praise for Meta-Analysis for Public Management and Policy "In his usual rigorous but readable style, Evan Ringquist and co-author Mary Anderson have produced a tour-de-force on the topic of meta-analysis in public policy and management research. Meta-analysis is badly needed in the all-too-common situation when researchers have low confidence in summarizing the overall results of dozens of studies on the effectiveness of some policy. This book has a nice combination of conceptual overview, methodological details, and applications that will make it possible for researchers to conduct their own meta-analysis. It is tempting to require all graduate students to write a meta-analysis as a chapter in their dissertation, or include meta-analysis as a standard offering in the research methods curriculum of social science graduate programs. The more people that adopt Ringquist and Anderson’s approach, the less resources will be wasted on conducting studies that do not contribute to cumulative scientific knowledge. " —Mark Lubell Department of Environmental Science and Policy Director, Center for Environmental Policy and Behavior University of California-Davis “Ringquist and his colleagues deliver value and add to the canon of public management methods by delivering an analytical framework that makes the case for systematic research using the tools of meta-analysis. This book will be a must read for all committed to strengthening evidence-based research that improves public policy and management decision making.” —David M. Van Slyke The Maxwell School of Citizenship and Public Affairs Syracuse University “In Meta-Analysis for Public Management and Policy Evan Ringquist and his colleagues provide a lucid and practical roadmap for policy and public management scholars who use meta-analysis in their research. But this is more than a “how to” volume; it provides background on why meta-analysis is a potent means for accumulating and synthesizing empirical research findings, and shows how its use has evolved in recent decades. Specific applications of meta-analysis to long-standing policy and management debates are given, essentially providing an array of developed “templates” through which scholars and practitioners can assess how to approach different kinds of analytical problems using meta-analysis. Particularly valuable tome is the careful development and presentation of the necessary stages of meta-analysis, from conceptualization through data coding and bias assessment to advanced modeling. All of the statistical analyses can be conducted in Stata, utilizing readily available ado modules. I will use this book, both in research and in the classroom. Overall it is one of the most useful and methodological contributions I’ve seen in sometime.” —Hank Jenkins-Smith Department of Political Science Director, Center for Applied Social Research University of Oklahoma “Meta-Analysis for Public Management and Policy conveys the considerable untapped potential of meta-analysis to strengthen and advance bodies of knowledge and evidence in public management and policy. This book takes students and researchers deep into the methods of meta-analysis and details of their empirical application, without losing sight of the important policy questions and the implications of choices that researchers make in their empirical work for the production of evidence for public managers and policymakers. This book will serve as an excellent practical guide for those conducting their first meta-analysis, while at the same time supporting critically-
focused consumption of existing meta-analyses and discussion of where the field can gainfully take this approach to enhance our research and knowledge bases. It draws in a range of valuable and important examples of applications of meta-analysis techniques throughout the book and rounds off with four full-fledged applications of the method. Although the book reaches out to an audience of public management and policy researchers and consumers of this research, it should be of interest to a broad range of applied social science researchers and students as well.” —Carolyn Heinrich Sid Richardson Professor of Public Affairs, Center for Health and Social Policy LBJ School of Public Affairs University of Texas – Austin “Even for incredibly specialized techniques, public management and policy scholars have a multiplicity of methods text from which to choose. Yet it is truly surprising that a strong guide to applied meta-analysis — a rigorous framework for the organization of empirical findings — has not been available. Ringquist and Anderson provided just that with an accessible guide to sophisticated techniques. Marrying an instructive text to a set of exemplary standalone studies, Meta-Analysis for Public Management and Policy offers unparalleled guidance for instructors and students and more than a little wisdom for seasoned scholars. It is destined to become the standard reference for our field.” —Anthony Michael Bertelli CC Crawford Chair in Management and Performance USC Price School of Public Policy USC Gould School of Law University of Southern California “This comprehensive treatment of meta-analysis is an excellent guide for scholars and students in public management and public policy. The carefully done exposition demonstrates why meta-analysis should have greater use in the profession.” —Kenneth J. Meier Charles H. Gregory Chair in Liberal Arts Department of Political Science Texas A&M University “This remarkable book reviews the history of the use of meta-analysis in the social sciences, argues forcefully for its importance, value, and relevance for public managers, and provides one-stop-shopping for those who want to learn how to do it or understand how others have done it. The detailed coverage of each step in the process allows a student to learn the technique completely while fully understanding the logic and intellectual goals of the enterprise. Most importantly, the authors review techniques from a range of disciplines, drawing most of their positive suggestions from the field of medical statistics rather than the social sciences. The examples and applications, on the other hand, stem from the world of government and public policy. Four chapters provide new syntheses of research on individual policies using the techniques and practices introduced in the earlier chapters. The result is original research, a strong argument for the value of meta-analysis in a field (political science and public administration) that uses it little, and a complete tool kit for those who would want to apply these powerful ideas on their own. A very impressive and useful text.” —Frank R. Baumgartner Richard J. Richardson Distinguished Professor Department of Political Science University of North Carolina at Chapel Hill “Meta-analysis is a valuable tool for accumulating knowledge about how management matters from across a range of policy areas and disciplines. It is also an underused tool, in large part because of the lack of a comprehensive and useable guide on the topic. Ringquist remedies this problem by offering clear instruction on how to apply the technique wisely, as well as highly useful empirical demonstrations. The field of public management needs this excellent book.” —Donald Moynihan Professor of Public Affairs University of Wisconsin-Madison “Professors and students frequently face decisions about how deeply to invest in a statistical procedure, a new technology, a new theory, or some other development in their discipline. The authors of Meta-Analysis for Public Management and Policy support such a decision about meta-analysis by making a convincing case for its value and increasing utilization, including such steps as a careful consideration of criticisms of the method. Evan Ringquist then provides clearly, engagingly written chapters on the major concepts, procedures, and issues in the techniques of meta-analysis. His coauthors then provide effectively-presented examples of meta-analytic studies about such topics as school voucher effectiveness, public service motivation and performance, and public sector performance management. The accessible and reader-friendly explanations, coupled with
the illustrative examples that walk the reader through how to do it, make this a distinctively effective methodological text. In so doing, it offers a distinctively valuable resource for those of us who want to learn more about this important statistical method.” — Hal Rainey Alumni Foundation Distinguished Professor Department of Public Administration and Policy University of Georgia “James Heckman’s Nobel lecture described the combined influence of micro surveys, advances in computers and software, and the development and dissemination of multivariate statistical methods on applied economic research. His comments apply equally well to empirical research throughout the social sciences. These forces have created a “flood of numbers” and advances in technology since he wrote about them have assured that the process is accelerating. We need to transform the ways we learn from empirical analyses and create a science for the analysis of the secondary data from applied statistical and econometric models. This science would include methods for summarizing what has been learned from estimates and tests. It would provide methods for diagnostic screening of results to gauge the importance of modeling assumptions and the types of primary data for the findings being reported. Finally, it may well lead to the development of meta-models — integrating findings intended to describe a single system but viewed thru distinctive empiricallenses. Meta-analysis is a method that takes an important step indeveloping this science. It is a collection of methods that is a product of the transformation in applied research in the past half century. Initially much of this research was the domain of social scientists working on the evaluation of educational interventions. In these applications the primary data from different studies were routinely available, but the outcome and control variables differed across studies. As a result, the focus for these meta-analyses was on data combination with multiple, distinctive measures for asset of latent variables associated with the hypothesized underlying process. The texts describing meta-analysis focused on these situations. As applications of meta-analysis expanded to economics, political science, and sociology, the data structures changed. The new data came from empirical models — as estimated parameters or summaries of test results. The challenges posed in developing these types of data and understanding what they reveal were distinctly different. A text developed by scholars who appreciate how these types of summaries are different was missing until Ringquist and Anderson’s Meta Analysis for Public Management and Policy. Explaining a process that blends the best of qualitative and quantitative research is a challenge. This book has met this challenge and delivered researchers a great platform for teaching these methods to their students and for updating their own skills. At least four features distinguish this book: 1. The authors display a clear understanding of the strengths and the weaknesses of meta-analysis. Their treatment describes how care in data construction, variable coding, relevant statistical methods and, especially, careful attention to interpreting the findings from a meta-analysis can reinforce the strengths and mitigate the weaknesses. 2. There are real examples presented throughout the book along with a genuine understanding of the importance of the details in developing meta-analyses. 3. The coverage of relevant statistical methods is comprehensive and clear. And 4. The Appendices offer the detail researchers need to see in order to genuinely learn how to use meta analytic methods. It should be in the library of every serious teacher or practitioner” — V. Kerry Smith Regents Professor and W.P. Carey Professor Department of Economics Arizona State University “There are several texts for meta-analysis available, most notably “The Handbook of Research Synthesis and Meta-Analysis” by Cooper, Hedges and Valentine, but none specifically directed to public administration and policy scholars. In fact the points of emphasis and examples make the existing texts both difficult and poorly suited for the applied social sciences. Ringquist’s book is a spectacular success in filling this lacuna. Ringquist provides a clearer encapsulation of “the basics” in its opening section, and the “basics” are tailored to “problem-oriented” policy sciences (noting for instance, that meta-analyses in public management and policy will almost always use random-effects over fixed-effects). The empirical examples woven throughout as well as the actual analyses on PSM and school vouchers are exceptionally
useful in identifying the stages of the process. At the same time, the book doesn’t spare the gritty details of confronting commonly required procedures, like bootstrapping and dealing with clustered robust SE, hierarchical modeling, etc. For readers with no exposure to meta-analysis, the text eases the transition by offering a refresher on how statistical techniques are used in original research, then how they differ when used in meta-analysis. Ringquist offers guidelines for syntheses, formulating problems, data evaluation, turning studies into data, techniques in meta-analysis, “the language of meta-analysis”, coding strategies and publication bias. The author also notes that the context and even techniques of meta-analysis are different for public management and public policy compared with medicine and psychology, and education. Public administration and policy analysis provide great opportunities for meta-analysis, but these fields also present considerable challenge. Great care is needed in synthesizing differently designed studies, which are observational and quasi-experimental or correlational designs, because the statistics of meta-analysis were originally developed to synthesize results from experiment design. Measurement issues are tricky because authentic scales are used less frequently than in psychology or medical research. In addition PA and policies fields of scholarship are diverse and eclectic in research design which makes comparison of parameter estimates exceedingly difficult. Ringquist adroitly compiles an approach to meta-analysis adapted to reflect this context. While Section 1 consists of seven chapters, which discuss techniques of meta-analysis, Section 2 including Chapters 8, 9, 10 and 11 illustrates actual studies using meta-analysis conducted in public management and policy research: evaluating the effectiveness of educational vouchers, performance management in the public sector, the effects of federal poverty deconcentration efforts on economic self-sufficiency and problematic behaviors, and the relationship between public service motivation and performance. The book is an easier read than other texts in that it guides from project inception through literature review and analysis in a manner tailored to policy and management, and it actually provides a much more accessible and thorough coverage of many of the basic building blocks, random effects, r-based effect sizes, and bootstrapping, making it far more indispensable for any PA meta-analysis. The check-lists for coding articles are especially useful. Provision of Stata commands and practical data management suggestions (creating a command file for data set transformations, for instance) is a great advantage for this text. Adding an addendum with R programming options, in the next edition might be helpful too. The conclusion both compelling and concise but I would like to have seen some of the arguments presented here at the beginning of the book, reserving the conclusion for a fuller encapsulation of what the overall strategy of the book accomplishes in stages – rebutting criticisms that meta-analysis in social science is a waste of time because study estimates are non-comparable and effect sizes non-independent with careful examination of research design and models. This book is essential reading for any scholar in public administration and policy considering undertaking meta-analysis. I expect it will gain many readers in other social science disciplines as well. For serious users of meta-analysis Ringquist’s book will not be the only one on the shelf, but it is a valuable addition.” —Richard Feiock Augustus B. Turnbull Professor Askew School of Public Administration and Policy Florida State University

Individual Participant Data Meta-Analysis: A Handbook for Healthcare Research provides a comprehensive introduction to the fundamental principles and methods that healthcare researchers need when considering, conducting or using individual participant data (IPD) meta-analysis projects. Written and edited by researchers with substantial experience in the field, the book details key concepts and practical guidance for each stage of an IPD meta-analysis project, alongside illustrated examples and summary learning points. Split into five parts, the book chapters take the reader through the journey from initiating and planning IPD projects to obtaining, checking, and meta-analysing IPD, and appraising and reporting findings. The book initially focuses on the synthesis of IPD from randomised trials to evaluate treatment effects, including the evaluation of participant-level effect modifiers (treatment-covariate interactions). Detailed extension is then made to specialist
topics such as diagnostic test accuracy, prognostic factors, risk prediction models, and advanced statistical topics such as multivariate and network meta-analysis, power calculations, and missing data. Intended for a broad audience, the book will enable the reader to: Understand the advantages of the IPD approach and decide when it is needed over a conventional systematic review Recognise the scope, resources and challenges of IPD meta-analysis projects Appreciate the importance of a multi-disciplinary project team and close collaboration with the original study investigators Understand how to obtain, check, manage and harmonise IPD from multiple studies Examine risk of bias (quality) of IPD and minimise potential biases throughout the project Understand fundamental statistical methods for IPD meta-analysis, including two-stage and one-stage approaches (and their differences), and statistical software to implement them Clearly report and disseminate IPD meta-analyses to inform policy, practice and future research Critically appraise existing IPD meta-analysis projects Address specialist topics such as effect modification, multiple correlated outcomes, multiple treatment comparisons, non-linear relationships, test accuracy at multiple thresholds, multiple imputation, and developing and validating clinical prediction models Detailed examples and case studies are provided throughout.

Presents a novel approach to conducting meta–analysis using structural equation modeling. Structural equation modeling (SEM) and meta–analysis are two powerful statistical methods in the educational, social, behavioral, and medical sciences. They are often treated as two unrelated topics in the literature. This book presents a unified framework on analyzing meta–analytic data within the SEM framework, and illustrates how to conduct meta–analysis using the metaSEM package in the R statistical environment. Meta–Analysis: A Structural Equation Modeling Approach begins by introducing the importance of SEM and meta–analysis in answering research questions. Key ideas in meta–analysis and SEM are briefly reviewed, and various meta–analytic models are then introduced and linked to the SEM framework. Fixed–, random–, and mixed–effects models in univariate and multivariate meta–analyses, three–level meta–analysis, and meta–analytic structural equation modeling, are introduced. Advanced topics, such as using restricted maximum likelihood estimation method and handling missing covariates, are also covered. Readers will learn a single framework to apply both meta–analysis and SEM. Examples in R and in Mplus are included. This book will be a valuable resource for statistical and academic researchers and graduate students carrying out meta–analyses, and will also be useful to researchers and statisticians using SEM in biostatistics. Basic knowledge of either SEM or meta–analysis will be helpful in understanding the materials in this book.

Providing researchers with a practical and accessible advice, the Fourth Edition of the lauded Research Synthesis and Meta-Analysis offers thoroughly updated information. Author Harris M. Cooper draws on more than 30 years of experience to show readers how to conduct a comprehensive synthesis of past research.

Over the last twenty years there has been a dramatic upsurge in the application of meta-analysis to medical research. This has mainly been due to greater emphasis on evidence-based medicine and the need for reliable summaries of the vast and expanding volume of clinical research. At the same time there have been great strides in the development and refinement of the associated statistical methodology. This book describes the planning, conduct and reporting of a meta-analysis as applied to a series of randomized controlled clinical trials. * The various approaches are presented within a general unified framework. * Meta-analysis techniques are described in detail, from their theoretical development through to practical implementation. * Each topic discussed is supported by detailed worked examples. * A comparison of fixed and random effects approaches is included, as well as a discussion of Bayesian methods and cumulative meta-analysis. * Fully documented programs using standard statistical procedures in SAS are available on the Web. Ideally suited for practising statisticians.
and statistically-minded medical professionals, the book will also be of use to graduate students of medical statistics. The book is a self-contained and comprehensive account of the subject and an essential purchase for anyone involved in clinical trials. Covering the most important developments in meta-analysis from 1990 to 2004, this text presents new patterns in research findings as well as updated information on existing topics.

Providing reliable information on an intervention effect, meta-analysis is a powerful statistical tool for analyzing and combining results from individual studies. Meta-Analysis of Binary Data Using Profile Likelihood focuses on the analysis and modeling of a meta-analysis with individually pooled data (MAIPD). It presents a unifying approach to modeling a treatment effect in a meta-analysis of clinical trials with binary outcomes. After illustrating the meta-analytic situation of an MAIPD with several examples, the authors introduce the profile likelihood model and extend it to cope with unobserved heterogeneity. They describe elements of log-linear modeling, ways for finding the profile maximum likelihood estimator, and alternative approaches to the profile likelihood method. The authors also discuss how to model covariate information and unobserved heterogeneity simultaneously and use the profile likelihood method to estimate odds ratios. The final chapters look at quantifying heterogeneity in an MAIPD and show how meta-analysis can be applied to the surveillance of scrapie. Containing new developments not available in the current literature, along with easy-to-follow inferences and algorithms, this book enables clinicians to efficiently analyze MAIPDs.

An accessible introduction to performing meta-analysis across various areas of research The practice of meta-analysis allows researchers to obtain findings from various studies and compile them to verify and form one overall conclusion. Statistical Meta-Analysis with Applications presents the necessary statistical methodologies that allow readers to tackle the four main stages of meta-analysis: problem formulation, data collection, data evaluation, and data analysis and interpretation. Combining the authors' expertise on the topic with a wealth of up-to-date information, this book successfully introduces the essential statistical practices for making thorough and accurate discoveries across a wide array of diverse fields, such as business, public health, biostatistics, and environmental studies. Two main types of statistical analysis serve as the foundation of the methods and techniques: combining tests of effect size and combining estimates of effect size. Additional topics covered include: Meta-analysis regression procedures Multiple-endpoint and multiple-treatment studies The Bayesian approach to meta-analysis Publication bias Vote counting procedures Methods for combining individual tests and combining individual estimates Using meta-analysis to analyze binary and ordinal categorical data Numerous worked-out examples in each chapter provide the reader with a step-by-step understanding of the presented methods. All exercises can be computed using the R and SAS software packages, which are both available via the book's related Web site. Extensive references are also included, outlining additional sources for further study.

Requiring only a working knowledge of statistics, Statistical Meta-Analysis with Applications is a valuable supplement for courses in biostatistics, business, public health, and social research at the upper-undergraduate and graduate levels. It is also an excellent reference for applied statisticians working in industry, academia, and government.
In biostatistical research and courses, practitioners and students often lack a thorough understanding of how to apply statistical methods to synthesize biomedical and clinical trial data. Filling this knowledge gap, Applied Meta-Analysis with R shows how to implement statistical meta-analysis methods to real data using R. Drawing on their extensive research and teaching experiences, the authors provide detailed, step-by-step explanations of the implementation of meta-analysis methods using R. Each chapter gives examples of real studies compiled from the literature. After presenting the data and necessary background for understanding the applications, various methods for analyzing meta-data are introduced. The authors then develop analysis code using the appropriate R packages and functions. This systematic approach helps readers thoroughly understand the analysis methods and R implementation, enabling them to use R and the methods to analyze their own meta-data. Suitable as a graduate-level text for a meta-data analysis course, the book is also a valuable reference for practitioners and biostatisticians (even those with little or no experience in using R) in public health, medical research, governmental agencies, and the pharmaceutical industry.

Policymakers, medical practitioners, and the public alike face an increasingly bewildering flood of new and often contradictory scientific studies on almost every topic. Whether the issue is the the best treatment for breast cancer, the need for prenatal food programs to improve the health of poor infants and mothers, or the ability of women to succeed in scientific professions, the healthy growth of modern science has at times done more to stir up controversy than to establish reliable knowledge. But now scientists in several fields have developed a sophisticated new methodology called meta-analysis to address this problem. By numerically combining diverse research findings on a single question, meta-analysis can be used to identify their central tendency and reach conclusions far more reliable than those of any single investigation. How Science Takes Stock vividly tells the story of meta-analysis through the eyes of its architects and champions, and chronicles its history, techniques, achievements, and controversies. Noted science author Morton Hunt visits key practitioners and recounts their use of meta-analysis to resolve important scientific puzzles and longstanding debates. Does psychotherapy work, and if so what form works best? Does spending federal money on education really improve student performance? Can a single enzyme significantly decrease the risk of heart attack? Do boot camps reduce juvenile delinquency? With each account, Hunt illustrates the major components of the meta-analytic method, reveals strategies for resolving practical and theoretical problems, and discusses the impact of meta-analysis on the science and policy communities. In many cases, he demonstrates how meta-analysts have gone a step further to determine the causes of earlier discrepancies. In this way they not only identify successful approaches to the question at hand, but also clarify the conditions under which they will work best. Hunt also portrays the important but frequently controversial business of doing meta-analysis for legislators and government agencies, particularly in sensitive areas of
social policy. How Science Takes Stock demonstrates how the statistical techniques of meta-analysis produce more accurate data than the standard literature review or the old-fashioned process of tallying up the results of each scientific study as if they were votes in an election to decide the truth. Hunt also addresses issues of quality control in each phase of the meta-analytic process, and answers skeptics who claim that the dissimilarities between studies are often too significant for meta-analysis to be any more than an apples and oranges approach. This volume conveys the power of meta-analysis to help social policymakers and health professionals resolve their most pressing problems. How Science Takes Stock concludes with a discussion of the future of meta-analysis that examines its potential for further refinements, its growth in the scientific literature, and exciting new possibilities for its future use. An appendix by meta-analysis expert Harris Cooper offers some finer points on the mechanics of conducting a meta-analytic investigation.

Praised in the first edition for the clarity of his general framework for conceptualizing meta-analysis, Rosenthal's revised edition covers the latest techniques in the field, such as a new effect size indicator for one size data, a new coefficient of robustness of replication, new procedures for combining and comparing effect sizes for multiple dependent variables, and new data on the magnitude of the problem of incomplete retrieval (the file drawer problem).

This book explains how to employ MASEM, the combination of meta-analysis (MA) and structural equation modelling (SEM). It shows how by using MASEM, a single model can be tested to explain the relationships between a set of variables in several studies. This book gives an introduction to MASEM, with a focus on the state of the art approach: the two stage approach of Cheung and Cheung & Chan. Both, the fixed and the random approach to MASEM are illustrated with two applications to real data. All steps that have to be taken to perform the analyses are discussed extensively. All data and syntax files are available online, so that readers can imitate all analyses. By using SEM for meta-analysis, this book shows how to benefit from all available information from all available studies, even if few or none of the studies report about all relationships that feature in the full model of interest.

Conducting Meta-Analysis Using SAS reviews the meta-analysis statistical procedure and shows the reader how to conduct one using SAS. It presents and illustrates the use of the PROC MEANS procedure in SAS to perform the data computations called for by the two most commonly used meta-analytic procedures, the Hunter & Schmidt and Glassian approaches. This book serves as both an operational guide and user's manual by describing and explaining the meta-analysis procedures and then presenting the appropriate SAS program code for computing the pertinent statistics. The practical, step-by-step instructions quickly prepare the reader to conduct a meta-analysis. Sample programs available on the Web further aid the reader in understanding the material. Intended for researchers, students, instructors, and practitioners interested in conducting a meta-analysis, the presentation of both formulas and their associated SAS
program code keeps the reader and user in touch with technical aspects of the meta-analysis process. The book is also appropriate for advanced courses in meta-analysis psychology, education, management, and other applied social and health sciences departments.

Applied Meta-Analysis for Social Science Research

Guilford Publications

Meta-analysis is a powerful statistical methodology for synthesizing research evidence across independent studies. This is the first comprehensive handbook of meta-analysis written specifically for ecologists and evolutionary biologists, and it provides an invaluable introduction for beginners as well as an up-to-date guide for experienced meta-analysts. The chapters, written by renowned experts, walk readers through every step of meta-analysis, from problem formulation to the presentation of the results. The handbook identifies both the advantages of using meta-analysis for research synthesis and the potential pitfalls and limitations of meta-analysis (including when it should not be used). Different approaches to carrying out a meta-analysis are described, and include moment and least-square, maximum likelihood, and Bayesian approaches, all illustrated using worked examples based on real biological datasets. This one-of-a-kind resource is uniquely tailored to the biological sciences, and will provide an invaluable text for practitioners from graduate students and senior scientists to policymakers in conservation and environmental management. Walks you through every step of carrying out a meta-analysis in ecology and evolutionary biology, from problem formulation to result presentation.

Brings together experts from a broad range of fields

Shows how to avoid, minimize, or resolve pitfalls such as missing data, publication bias, varying data quality, nonindependence of observations, and phylogenetic dependencies among species

Helps you choose the right software

Draws on numerous examples based on real biological datasets

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