

Multiple Comparisons By Jason Hsu

Governance is a word that is increasingly heard and read in modern times, be it corporate governance, global governance, or investment governance. Investment governance, the central concern of this modest volume, refers to the effective employment of resources—people, policies, processes, and systems—by an individual or governing body (the fiduciary or agent) seeking to fulfil their fiduciary duty to a principal (or beneficiary) in addressing an underlying investment challenge. Effective investment governance is an enabler of good stewardship, and for this reason it should, in our view, be of interest to all fiduciaries, no matter the size of the pool of assets or the nature of the beneficiaries. To emphasize the importance of effective investment governance and to demonstrate its flexibility across organization type, we consider our investment governance process within three contexts: defined contribution (DC) plans, defined benefit (DB) plans, and endowments and foundations (E&Fs). Since the financial crisis of 2007–2008, the financial sector’s place in the economy and its methods and ethics have (rightly, in many cases) been under scrutiny. Coupled with this theme, the task of investment governance is of increasing importance due to the sheer weight of money, the retirement savings gap, demographic trends, regulation and activism, and rising standards of behavior based on higher expectations from those fiduciaries serve. These trends are at the same time related and self-reinforcing. Having explored the why of investment governance, we dedicate the remainder of the book to the question of how to bring it to bear as an essential component of good fiduciary practice. At this point, the reader might expect investment professionals to launch into a discussion about an investment process focused on the best way to capture returns. We resist this temptation. Instead, we contend that achieving outcomes on behalf of beneficiaries is as much about managing risks as it is about capturing returns—and we mean “risks” broadly construed, not just fluctuations in asset values. SOON TO BE A MAJOR MOTION PICTURE starring Jennifer Lawrence, Joel Edgerton and Jeremy Irons. Dominika Egorov, former prima ballerina, is sucked into the heart of Putin's Russia, the country she loved, as the twists and turns of a betrayal and counter-betrayal unravel. American Nate Nash, idealistic and ambitious, handles the double agent, codenamed MARBLE, considered one of CIA's biggest assets. He needs to keep his identity secret for as long as the mole can keep supplying golden information. Will Dominika be able to unmask MARBLE, or will the mission see her faith destroyed in the country she has always passionately defended? 'A great and dangerous spy-game is being played today between Russian intelligence and the CIA. Very few people know about it, including many of our politicians in Washington. But Jason Matthews does, and his thrilling Red Sparrow takes us deep inside this treacherous world. He's an insider's insider. He knows the secrets. And he is also a masterful story-teller. I loved this book and could not put it down. Neither will you' Vince Flynn 'Not since the good old days of the Cold War has a classic spy thriller like Red Sparrow come along. Jason Matthews is not making it up; he has lived this life and this story, and it shows on every page. High-level espionage, pulse-pounding danger, sex, double agents and double crosses. What more can any reader want?' Nelson DeMille

Statistical concepts provide scientific framework in experimental studies, including randomized controlled trials. In order to design, monitor, analyze and draw conclusions scientifically from such clinical trials, clinical investigators and statisticians should have a firm grasp of the requisite statistical concepts. The Handbook of Statistical Methods for Randomized Controlled Trials presents these statistical concepts in a logical sequence from beginning to end and can be used as a textbook in a course or as a reference on statistical methods for randomized controlled trials. Part I provides a brief historical background on modern randomized controlled trials and introduces statistical concepts central to planning, monitoring and analysis of randomized controlled trials. Part II describes statistical methods for analysis of different types of outcomes and the associated statistical distributions used in testing the statistical hypotheses regarding the clinical questions. Part III describes some of the most used experimental designs for randomized controlled trials including the sample size estimation necessary in planning. Part IV describe statistical methods used in interim analysis for monitoring of efficacy and safety data. Part V describe important issues in statistical analyses such as multiple testing, subgroup analysis, competing risks and joint models for longitudinal markers and clinical outcomes. Part VI addresses selected miscellaneous topics in design and analysis including multiple assignment randomization trials, analysis of safety outcomes, non-inferiority trials, incorporating historical data, and validation of surrogate outcomes.

Multiple Comparisons and Multiple Tests Using SAS, Second Edition

Multiple Testing Problems in Pharmaceutical Statistics

Journal of the American Statistical Association

5th European Conference, EvoBIO 2007, Valencia, Spain, April 11-13, 2007, Proceedings

Red Sparrow

The Lasso and Generalizations

"Written by experts that include originators of some key ideas, chapters in the Handbook of Multiple Testing cover multiple comparison problems big and small, with guidance toward error rate control and insights on how principles developed earlier can be applied to current and emerging problems. Some highlights of the coverages are as follows. Error rate control is useful for controlling the incorrect decision rate. Chapter 1 introduces Tukey's original multiple comparison error rates and point to how they have been applied and adapted to modern multiple comparison problems as discussed in the later chapters. Principles endure. While the closed testing principle is more familiar, Chapter 4 shows the partitioning principle can derive confidence sets for multiple tests, which may become important as the profession goes beyond making decisions based on p-values. Multiple comparisons of treatment efficacy often involve multiple doses and endpoints. Chapter 12 on multiple endpoints explains how different choices of endpoint types lead to different multiplicity adjustment strategies, while Chapter 11 on the MCP-Mod approach is particularly useful for dose-finding. To assess efficacy in clinical trials with multiple doses and multiple endpoints, the reader can see the traditional approach in Chapter 2, the Graphical approach in Chapter 5, and the multivariate approach in Chapter 3. Personalized/precision medicine based on targeted therapies, already a reality, naturally leads to analysis of efficacy in subgroups. Chapter 13 draws attention to subtle logical issues in inferences on subgroups and their mixtures, with a principled solution that resolves these issues. This chapter has implication toward meeting the ICH E9 R1 Estimands requirement. Besides the mere multiple testing methodology itself, the handbook also covers related topics like the statistical task of model selection in Chapter 7 or the estimation of the proportion of true null hypotheses (or, in other words, the signal prevalence) in Chapter 8. It also contains decision-theoretic considerations regarding the admissibility of multiple tests in Chapter 6. The issue of selected inference is addressed in Chapter 9. Comparison of responses can involve millions of voxels in medical imaging or SNPs in genome-wide association studies (GWAS). Chapter 14 and Chapter 15 provide state of the art methods for large scale simultaneous inference in these settings"--

New and extensively updated for SAS 9 and later, this work provides cutting-edge methods, specialized macros, and proven best bet procedures. The book also discusses the pitfalls and advantages of various methods, thereby helping readers to decide which is the most appropriate for their purposes. 644 pp. Pub. 7/11.

Although portfolio management didn't change much during the 40 years after the seminal works of Markowitz and Sharpe, the development of risk budgeting techniques marked an important milestone in the deepening of the relationship between risk and asset management. Risk parity then became a popular financial model of investment after the global financial crisis in 2008. Today, pension funds and institutional investors are using this approach in the development of smart indexing and the redefinition of long-term investment policies. Written by a well-known expert of asset management and risk parity, Introduction to Risk Parity and Budgeting provides an up-to-date treatment of this alternative method to Markowitz optimization. It builds financial exposure to equities and commodities, considers credit risk in the management of bond portfolios, and designs long-term investment policy. The first part of the book gives a theoretical account of portfolio optimization and risk parity. The author discusses modern portfolio theory and offers a comprehensive guide to risk budgeting. Each chapter in the second part presents an application of risk parity to a specific asset class. The text covers risk-based equity indexation (also called smart beta) and shows how to use risk budgeting techniques to manage bond portfolios. It also explores alternative investments, such as commodities and hedge funds, and applies risk parity techniques to multi-asset classes. The book's first appendix provides technical materials on optimization problems, copula functions, and dynamic asset allocation. The second appendix contains 30 tutorial exercises. Solutions to the exercises, slides for instructors, and Gauss computer programs to reproduce the book's examples, tables, and figures are available on the author's website.

A Path Forward

Seeing Like a State

Statistical Learning with Sparsity

Journal of Statistical Planning and Inference

The Frontiers of Modern Statistical Inference Procedures

ASA Short Course

The Current Index to Statistics (CIS) is a bibliographic index of publications in statistics, probability, and related fields.

2008 American Publishers Awards for Professional and Scholarly Excellence (The PROSE Awards) Finalist/Honorable mention, Business, Finance & Management. The Fundamental Index examines a new approach to indexing that can overcome the structural return drag created by traditional capitalization-based indexing strategies, and in so doing, enhance the performance of your portfolio. Throughout this book, Robert Arnott and his colleagues outline this breakthrough strategy and explain how it can be used to improve investment returns, typically at lower risk and lower cost than most conventional investments.

"One of the most profound and illuminating studies of this century to have been published in recent decades."—John Gray, New York Times Book Review Hailed as “a magisterial critique of top-down social planning” by the New York Times, this essential work analyzes disasters from Russia to Tanzania to uncover why states so often fail—sometimes catastrophically—in grand efforts to engineer their society or their environment, and uncovers the conditions common to all such planning disasters. “Beautifully written, this book calls into sharp relief the nature of the world we now inhabit.”—New Yorker “A tour de force.”— Charles Tilly, Columbia University

Investment Governance for Fiduciaries

A Foundation for Analysis in the Health Sciences

Recent Developments in Multiple Comparison Procedures

How Certain Schemes to Improve the Human Condition Have Failed

The Singapore Healthcare Story : how to Create and Manage Sustainable Healthcare Systems

August 9–10, 1996, Biometrics Unit, Cornell University

Here you'll find more than 500 entries from the world's leading experts in the field on the basic concepts, methodologies, and applications in clinical trials. The range of topics includes: basic statistical concepts, design and analysis of clinical trials, ethics, regulatory issues, and methodologies for clinical data management and analysis

Multiple Comparisons introduces simultaneous statistical inference and covers the theory and techniques for all-pairwise comparisons, multiple comparisons with the best, and multiple comparisons with a control.

The author describes confidence intervals methods and stepwise exposes abuses and misconceptions, and guides readers to the correct method for each problem. Discussions also include the connections with bioequivalence, drug stability, and toxicity studies Real data sets analyzed by computer software packages illustrate the applications presented.

Behavioral finance presented in this book is the second-generation of behavioral finance. The first generation, starting in the early 1980s, largely accepted standard finance's notion of people's wants as "rational" wants—restricted to the utilitarian benefits of high returns and low risk. That first generation commonly described people as "irrational"—succumbing to cognitive and emotional errors and misled on their way to their rational wants. The second generation describes people as normal. It begins by acknowledging the full range of people's normal wants and their benefits—utilitarian, expressive, and emotional—distinguishes normal wants from errors, and offers guidance on using shortcuts and avoiding errors on the way to satisfying normal wants. People's normal wants include financial security, nurturing children and families, gaining high social status, and staying true to values. People's normal wants, even more than their cognitive and emotional shortcuts and errors, underlie answers to important questions of finance, including saving and spending, portfolio construction, asset pricing, and market efficiency.

Wiley Encyclopedia of Clinical Trials

Journal of Computational and Graphical Statistics

Behavioral Finance: The Second Generation

Introduction to Risk Parity and Budgeting

Work, Love, and Life when Robots Rule the Earth

Risk-Based and Factor Investing

"Spufford cunningly maps out a literary genre of his own . . . Freewheeling and fabulous." —The Times (London) Strange as it may seem, the gray, oppressive USSR was founded on a fairy tale. It was built on the twentieth-century magic called "the planned economy," which was going to gush forth an abundance of good things that the lands of capitalism could never match. And just for a little while, in the heady years of the late 1950s, the magic seemed to be working. Red Plenty is about that moment in history, and how it came, and how it went away; about the brief era when, under the rash leadership of Khrushchev, the Soviet Union looked forward to a future of rich communists and envious capitalists, when Moscow would out-glitter Manhattan and every Lada would be better engineered than a Porsche. It's about the scientists who did their genuinely brilliant best to make the dream come true, to give the tyranny its happy ending. Red Plenty is history, it's fiction, it's as ambitious as Sputnik, as uncompromising as an Aeroflot flight attendant, and as different from what you were expecting as a glass of Soviet champagne.

This book constitutes the refereed proceedings of the 5th European Conference on Evolutionary Computation, Machine Learning and Data Mining in Bioinformatics, EvoBIO 2007, held in Valencia, Spain, April 2007. Coverage brings together experts in computer science with experts in bioinformatics and the biological sciences. It presents contributions on fundamental and theoretical issues along with papers dealing with different applications areas.

Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exonerated. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.

Current Index to Statistics, Applications, Methods and Theory

Strengthening Forensic Science in the United States

Evolutionary Computation, Machine Learning and Data Mining in Bioinformatics

Design and Analysis of Clinical Trials

Handbook of Statistical Methods for Randomized Controlled Trials

Multiple Comparisons

Robots may one day rule the world, but what is a robot-ruled Earth like? Many think the first truly smart robots will be brain emulations or ems. Scan a human brain, then run a model with the same connections on a fast computer, and you have a robot brain, but recognizably human. Train an em to do some job and copy it a million times: an army of workers is at your disposal. When they can be made cheaply, within perhaps a century, ems will displace humans in most jobs. In this new economic era, the world economy may double in size every few weeks. Some say we can't know the future, especially following such a disruptive new technology, but Professor Robin Hanson sets out to prove them wrong. Applying decades of expertise in physics, computer science, and economics, he uses standard theories to paint a detailed picture of a world dominated by ems. While human lives don't change greatly in the em era, em lives are as different from ours as our lives are from those of our farmer and forager ancestors. Ems make us question common assumptions of moral progress, because they reject many of the values we hold dear. Read about em mind speeds, body sizes, job training and career paths, energy use and cooling infrastructure, virtual reality, aging and retirement, death and immortality, security, wealth inequality, religion, teleportation, identity, cities, politics, law, war, status, friendship and love. This book shows you just how strange your descendants may be, though ems are no stranger than we would appear to our ancestors. To most ems, it seems good to be an em.

Stressing intuitive understanding of principles rather than learning by mathematical proof, this ninth edition provides broad coverage of statistical procedures used in all the health science disciplines. Nearly all the examples and exercises make use of real data from actual research projects.

This book is a compilation of recent articles written by leading academics and practitioners in the area of risk-based and factor investing (RBFi). The articles are intended to introduce readers to some of the latest, cutting edge research encountered by academics and professionals dealing with RBFi solutions. Together the authors detail both alternative non-return based portfolio construction techniques and investing style risk premia strategies. Each chapter deals with new methods of building strategic and tactical risk-based portfolios, constructing and combining systematic factor strategies and assessing the related rules-based investment performances. This book can assist portfolio managers, asset owners, consultants, academics and students who wish to further their understanding of the science and art of risk-based and factor investing. Contains up-to-date research from the areas of RBFi Features contributions from leading academics and practitioners in this field Features discussions of new methods of building strategic and tactical risk-based portfolios for practitioners, academics and students

Proceedings of the Conference in Honor of Shayle R. Searle

The Fundamental Index

Robust Multiple Comparison Procedures

A Joint Publication of American Statistical Association, Institute of Mathematical Statistics, Interface Foundation of North America

On Multiple Comparisons for Complex Experimental Designs

Red Plenty

"Today Singapore ranks sixth in the world in healthcare outcomes well ahead of many developed countries, including the United States. The results are all the more significant as Singapore spends less on healthcare than any other high-income country, both as measured by fraction of the Gross Domestic Product spent on health and by costs per person. Singapore achieves these results at less than one-fourth the cost of healthcare in the United States and about half that of Western European countries. Government leaders, presidents and prime ministers, finance ministers and ministers of health, policymakers in congress and parliament, public health officials responsible for healthcare systems planning, finance and operations, as well as those working on healthcare issues in universities and think-tanks should know how this system works to achieve affordable excellence."--Publisher's website.

Useful Statistical Approaches for Addressing Multiplicity IssuesIncludes practical examples from recent trials Bringing together leading statisticians, scientists, and clinicians from the pharmaceutical industry, academia, and regulatory agencies, Multiple Testing Problems in Pharmaceutical Statistics explores the rapidly growing area of multiple c

Adopting a unifying theme based on maximum statistics, Multiple Comparisons Using R describes the common underlying theory of multiple comparison procedures through numerous examples. It also presents a detailed description of available software implementations in R. The R packages and source code for the analyses are available at http://CRAN.R-project.org After giving examples of multiplicity problems, the book covers general concepts and basic multiple comparisons procedures, including the Bonferroni method and Simes' test. It then shows how to perform parametric multiple comparisons in standard linear models and general parametric models. It also introduces the multcomp package in R, which offers a convenient interface to perform multiple comparisons in a general context. Following this theoretical framework, the book explores applications involving the Dunnett test, Tukey's all pairwise comparisons, and general multiple contrast tests for standard regression models, mixed-effects models, and parametric survival models. The last chapter reviews other multiple comparison procedures, such as resampling-based procedures, methods for group sequential or adaptive designs, and the combination of multiple comparison procedures with modeling techniques. Controlling multiplicity in experiments ensures better decision making and safeguards

against false claims. A self-contained introduction to multiple comparison procedures, this book offers strategies for constructing the procedures and illustrates the framework for multiple hypotheses testing in general parametric models. It is suitable for readers with R experience but limited knowledge of multiple comparison procedures and vice versa. See Dr. Bretz discuss the book.

Bulletin

Quality Control and Applied Statistics

Multiple Comparisons with the Best for Inference in Stochastic Frontier Models and Submodel Estimation for Counterfactual Policy Analysis'[Paper, Microfiche]nton Horrace

Options for Repair

Handbook of Multiple Comparisons

Multiple Comparisons Using R

Discover New Methods for Dealing with High-Dimensional Data A sparse statistical model has only a small number of nonzero parameters or weights; therefore, it is much easier to estimate and interpret than a dense model. Statistical Learning with Sparsity: The Lasso and Generalizations presents methods that exploit sparsity to help recover the underlying signal in a set of data. Top experts in this rapidly evolving field, the authors describe the lasso for linear regression and a simple coordinate descent algorithm for its computation. They discuss the application of l1 penalties to generalized linear models and support vector machines, cover generalized penalties such as the elastic net and group lasso, and review numerical methods for optimization. They also present statistical inference methods for fitted (lasso) models, including the bootstrap, Bayesian methods, and recently developed approaches. In addition, the book examines matrix decomposition, sparse multivariate analysis, graphical models, and compressed sensing. It concludes with a survey of theoretical results for the lasso. In this age of big data, the number of features measured on a person or object can be large and might be larger than the number of observations. This book shows how the sparsity assumption allows us to tackle these problems and extract useful and reproducible patterns from big datasets. Data analysts, computer scientists, and theorists will appreciate this thorough and up-to-date treatment of sparse statistical modeling.

-Compares the 4 main techniques for repair of primary retinal detachment -Written by leading experts in the field -A "hands-on" guide for the retina and vitreous surgeon -Contains instructive, color computer drawings and tables

Written by experts that include originators of some key ideas, chapters in the Handbook of Multiple Testing cover multiple comparison problems big and small, with guidance toward error rate control and insights on how principles developed earlier can be applied to current and emerging problems. Some highlights of the coverages are as follows. Error rate control is useful for controlling the incorrect decision rate. Chapter 1 introduces Tukey's original multiple comparison error rates and point to how they have been applied and adapted to modern multiple comparison problems as discussed in the later chapters. Principles endure. While the closed testing principle is more familiar, Chapter 4 shows the partitioning principle can derive confidence sets for multiple tests, which may become important as the profession goes beyond making decisions based on p-values. Multiple comparisons of treatment efficacy often involve multiple doses and endpoints. Chapter 12 on multiple endpoints explains how different choices of endpoint types lead to different multiplicity adjustment strategies, while Chapter 11 on the MCP-Mod approach is particularly useful for dose-finding. To assess efficacy in clinical trials with multiple doses and multiple endpoints, the reader can see the traditional approach in Chapter 2, the Graphical approach in Chapter 5, and the multivariate approach in Chapter 3. Personalized/precision medicine based on targeted therapies, already a reality, naturally leads to analysis of efficacy in subgroups. Chapter 13 draws attention to subtle logical issues in inferences on subgroups and their mixtures, with a principled solution that resolves these issues. This chapter has implication toward meeting the ICH E9 R1 Estimands requirement. Besides the mere multiple testing methodology itself, the handbook also covers related topics like the statistical task of model selection in Chapter 7 or the estimation of the proportion of true null hypotheses (or, in other words, the signal prevalence) in Chapter 8. It also contains decision-theoretic considerations regarding the admissibility of multiple tests in Chapter 6. The issue of selected inference is addressed in Chapter 9. Comparison of responses can involve millions of voxels in medical imaging or SNPs in genome-wide association studies (GWAS). Chapter 14 and Chapter 15 provide state of the art methods for large scale simultaneous inference in these settings.

Primary Retinal Detachment

A Better Way to Invest

The Age of Em

AMSTAT News

Affordable Excellence

Encyclopedia of Statistical Sciences: Mi-Ny

A unique, unifying treatment for statistics and science in clinical trials What sets this volume apart from the many books dealing with clinical trials is its integration of statistical and clinical disciplines. Stressing communication between biostatisticians and clinical scientists, this work clearly relates statistical interpretation to clinical issues arising in different stages of pharmaceutical research and development. Plus, the principles presented here are universal enough to be easily adapted in non-biopharmaceutical settings. Design and Analysis of Clinical Trials tackles concepts and methodologies. It not only covers statistical basics such as uncertainty and bias, design considerations such as patient selection, randomization, and the different types of clinical trials but also deals with various methods of data analysis, group sequential procedures for interim analysis, efficacy data evaluation, analysis of safety data, and more. Throughout, the book: * Surveys current and emerging clinical issues and newly developed statistical methods * Presents a critical review of statistical methodologies in various therapeutic areas * Features case studies from actual clinical trials * Minimizes the mathematics involved, making the material widely accessible * Offers each chapter as a self-contained entity * Includes illustrations to highlight the text This monumental reference on all facets of clinical trials is important reading for physicians, clinical and medical researchers, pharmaceutical scientists, clinical programmers, biostatisticians, and anyone involved in this burgeoning area of clinical research. It can also be used as a textbook in graduate-level courses in the field.

Biostatistics

Theory and Methods

Multiple Comparison Procedures

Proceedings of the ... Winter Simulation Conference

Concept and Methodologies