Two Way Sensitivity Analysis

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Multiple Criteria Decision Analysis for Industrial Engineering SEEd
Randomized clinical trials are the primary tool for evaluating new medical interventions. Randomization provides for a fair comparison between treatment and control groups, balancing out, on average, distributions of known and unknown factors among the participants. Unfortunately, these studies often lack a substantial percentage of data. This missing data reduces the benefit provided by the randomization and introduces potential biases in the comparison of the treatment groups. Missing data can arise for a variety of reasons, including the inability or unwillingness of participants to meet appointments for evaluation. And in some studies, some or all of data collection ceases when participants discontinue study treatment. Existing guidelines for the design and conduct of clinical trials, and the analysis of the resulting data, provide only limited advice on how to handle missing data. Thus, approaches to the analysis of data with an appreciable amount of missing values tend to be ad hoc and variable. The Prevention and Treatment of Missing Data in Clinical Trials concludes that a more principled approach to design and analysis in the presence of missing data is both needed and possible. Such an approach needs to focus on two critical elements: (1) careful design and conduct to limit the amount and impact of missing data and (2) analysis that makes full use of information on all randomized participants and is based on careful attention to the assumptions about the nature of the missing data underlying estimates of treatment effects. In addition to the highest priority recommendations, the book offers more detailed recommendations on the conduct of clinical trials and techniques for analysis of trial data.
Diagnosis and Treatment of Swallowing Disorders (dysphagia) in Acute-care Stroke Patients Springer Science & Business Media
Evidence Synthesis in Healthcare – a Practical Handbook for Clinicians is the first book to reveal the field of Evidence Synthesis, by combining multiple sources of quantitative/qualitative data to derive the best evidence for use in healthcare. Through the use of clearly explained examples and practical explanations, Evidence Synthesis in Healthcare – a Practical Handbook for Clinicians describes the practical tools, techniques, uses and policy considerations of evidence synthesis techniques in modern healthcare practice.
Professional Judgment Springer Science & Business Media
The Handbook of Health Economics provide an up-to-date survey of the burgeoning literature in health economics. As a relatively recent subdiscipline of economics, health economics has been remarkably successful. It has made or stimulated numerous contributions to various areas of the main discipline: the theory of human capital; the economics of insurance; principal-agent theory; asymmetric information; econometrics; the theory of incomplete markets; and the foundations of welfare economics, among others. Perhaps it has had an even greater effect outside the field of economics, introducing terms such as opportunity cost, elasticity, the margin, and the production function into medical parlance. Indeed, health economists are likely to be as heavily cited in the clinical as in the economics literature. Partly because of the large share of public resources that health care commands in almost every developed country, health policy is often a contentious and visible issue; elections have sometimes turned on issues of health policy. Showing the versatility of economic theory, health economics and health economists have usually been part of policy debates, despite the vast differences in medical care institutions across countries. The publication of the first Handbook of Health Economics marks another step in the evolution of health economics.
Value-Added Decision Making for Managers Oxford University Press
The purpose of this study is to evaluate response surface methodology as a sensitivity analysis tool in the area of decision analysis. The advent of low-cost personal computer software, such as DPLTM, has created an accessible tool with the ability to frame and solve influence diagrams for decision problems. This study provides a comparison of current sensitivity analysis techniques vs those made possible through response surface methodology (RSM). Sensitivity analysis alternatives are demonstrated on a decision problem concerning the evaluation of force structure options for the Department of Defense. Sensitivity analysis is performed on both one-way and two-way perturbations of input variables. The most significant contribution of this thesis is the effectiveness of RSM techniques for the sensitivity analysis of a decision problem. RSM is proven to be an effective and highly efficient approach. The combination of two analysis tools, the influence diagram solver and the RSM sensitivity analysis, has effectively saved the decision-maker valuable resources and increased the information made available. This capability will enhance the analysis of uncertainty in decision problems.
Elsevier
Cancer is a major healthcare burden across the world and impacts not only the people diagnosed with various cancers but also their families, carers, and healthcare systems. With advances in the diagnosis and treatment, more people are diagnosed early and receive treatments for a disease where few treatments options were previously available. As a result, the survival of patients with cancer has steadily improved and, in most cases, patients who are not cured may receive multiple lines of treatment, often with financial consequences for the patients, insurers and healthcare systems. Although many books exist that address economic evaluation, Economic Evaluation of Cancer Drugs using Clinical Trial and Real World Data is the first unified text that specifically addresses the economic evaluation of cancer drugs. The authors discuss how to perform cost-effectiveness analyses while emphasising the strategic importance of designing cost-effectiveness into cancer trials and building robust economic evaluation models that have a higher chance of reimbursement if truly cost-effective. They cover the use of real-world data using cancer registries and discuss how such data can support or complement clinical trials with limited follow up. Lessons learned from failed reimbursement attempts, factors predictive of successful reimbursement and the different payer requirements across major countries including US, Australia, Canada, UK, Germany, France and Italy are also discussed. The book includes many detailed practical examples, case studies and thought-provoking exercises for use in classroom and seminar discussions. Iftekhar Khan is a medical statistician and health economist and a lead statistician at Oxford Unviersity’s Center for Statistics in Medicine. Professor Khan is also a Senior Research Fellow in Health Economics at University of Warwick and is a Senior Statistical Assessor within the Licensing Division of the UK Medicine and Health Regulation Agency. Ralph Crott is a former professor in Pharmacoeconomics at the University of Montreal in Quebec, Canada and former head of the EORTC Health Economics Unit and former senior health economist at the Belgian HTA organization. Zahid Bashir has over twelve years experience working in the pharmaceutical industry in medical affairs and oncology drug development where he is involved in the design and execution of oncology clinical trials and development of reimbursement dossiers for HTA submission.
Developing a Protocol for Observational Comparative Effectiveness Research: A User's Guide Pharmaceutical Press
This book brings together important topics of current research in probabilistic graphical modeling, learning from data and probabilistic inference. Coverage includes such topics as the characterization of conditional independence, the learning of graphical models with latent variables, and extensions to the influence diagram formalism as well as important application fields, such as the control of vehicles, bioinformatics and medicine.
Handbook of Applied Health Economics in Vaccines John Wiley & Sons
Policy-capturing models, data-based aids, expert systems and decision analysis are the main decision-making techniques introduced here, with attention to their methodological bases and practical evaluation.
Behavioral Intervention Research Springer

This book clearly demonstrates how to best make medicaldecisions while incorporating clinical practice guidelines anddecision support systems for electronic medical record systems. New to this edition is how medical decision making ideas arebeing incorporated into clinical decision support systems inelectronic medical records and also how they are being used toshape practice guidelines and policies.

The Prevention and Treatment of Missing Data in Clinical Trials Springer Nature

Tells doctors and students how to evaluate complex clinical information to improve health care.

Decision Making in Natural Resource Management Cambridge University Press

Sensitivity analysis should be considered a pre-requisite for statistical model building in any scientific discipline where modelling takes place. For a non-expert, choosing the method of analysis for their model is complex, and depends on a number of factors. This book guides the non-expert through their problem in order to enable them to choose and apply the most appropriate method. It offers a review of the state-of-the-art in sensitivity analysis, and is suitable for a wide range of practitioners. It is focussed on the use of SIMLAB – a widely distributed freely-available sensitivity analysis software package developed by the authors – for solving problems in sensitivity analysis of statistical models. Other key features: Provides an accessible overview of the current most widely used methods for sensitivity analysis. Opens with a detailed worked example to explain the motivation behind the book. Includes a range of examples to help illustrate the concepts discussed. Focuses on implementation of the methods in the software SIMLAB - a freely-available sensitivity analysis software package developed by the authors. Contains a large number of references to sources for further reading. Authored by the leading authorities on sensitivity analysis.

Cost-Effectiveness Analysis in Health Academic Press

Patient Surveillance After Cancer Treatment covers the history of cancer patient surveillance after curative-intent treatment, the rationale, the methodologies used in the past and at present, the methodologies that will probably emerge in the future, the costs of surveillance, the definitions of various terms used in the field, and how those who are interested in the topic can get more information about it from the internet. The secondary focus of the book is to publicize the need for well-designed, adequately powered randomized clinical trials comparing two (or more) surveillance strategies for each type of cancer. The audience includes all oncologists, cancer researchers, medical economists and policy makers in government and insurance companies, and finally, interested patients. This book is part of the Current Clinical Oncology series, which provides cutting-edge knowledge of cancer diagnosis, management, and treatment. World renowned experts share their insights in all the major fields of clinical oncology. From the fundamentals of pathophysiology to the latest developments in experimental and novel therapies, Current Clinical Oncology is an indispensable resource for today’s practicing oncologist.

Meta-Analysis, Decision Analysis, and Cost-Effectiveness Analysis Springer

Resource constraints in healthcare and the increasing costs of new treatments have prompted the resorting to pharmacoeconomic studies. New techniques allow to tailor to the specificity of each situation, thus giving back accurate calculations and estimations. The desire to publish a more updated version of “Pharmacoeconomics. Principle and Practice” fits into this frame and provide readers with the basic principles of this complex discipline. Compared with the version we published 10 years ago, new techniques were described, an entire new chapter about epidemiology was added, and the reference literature and the examples were updated. The abstracts at the beginning of each chapter have the purpose to provide an overview and ease the finding of information. Readers are given also the possibility to test their knowledge thanks to the Questions and Answers sections. Last but not least, the entire book underwent peer review, thus ensuring the highest quality level.

Economic Evaluation Springer

"This book is an introduction to economic evaluation for those with little or no knowledge of economics or health economics. Essentials of Economic Evaluation in Healthcare gives an overview of economic issues specific to healthcare, and describes the main types of economic evaluation: cost effectiveness, cost utility and cost benefit analysis. The use of decision analysis to design and carry out economic evaluations is discussed. Preferred statistical methods for handling costs, current approaches to dealing with uncertainty and quantifying patient preferences using discrete choice experiments are explained. Each chapter contains worked examples and questions. With increasing pressure on national healthcare budgets, all healthcare professionals should have a basic understanding of the finite nature of healthcare resources, and the need to make choices between treatments based on a cost-benefit comparison. This book will be invaluable to pharmacists and pharmacy students as well as to other healthcare professionals, researchers and managers." -- publisher website.

Response Surface Methodology as a Sensitivity Tool in Decision Analysis CRC Press

Developed from the authors’ longstanding course on decision and risk analysis, Value-Added Decision Making for Managers explores the important interaction between decisions and management action and clarifies the barriers to rational decision making. The authors analyze strengths and weaknesses of the best alternatives, enabling decision makers to improve on these alternatives by adding value and reducing risk. The core of the text addresses decisions that involve selecting the best alternative from diverse choices. The decisions include buying a car, picking a supplier or home contractor, selecting a technology, picking a location for a manufacturing plant or sports stadium, hiring an employee or selecting among job offers, deciding on the size of a sales force, making a late design change, and sourcing to emerging markets. The book also covers more complex decisions arising in negotiations, strategy, and ethics that involve multiple dimensions simultaneously. Numerous activities interspersed throughout the text highlight real-world situations, helping readers see how the concepts presented can be used in their own work environment or personal life. Each chapter also includes discussion questions and references. Web Resource The book’s website at http://ise.wayne.edu/research/decision.php offers tutorials of Logical Decisions software for multi-objective decisions and Precision Tree software for probabilistic decisions. Directions for downloading student versions of the DecisionTools Suite and Logical Decisions software can be found in the appendices. Password-protected PowerPoint presentations for each chapter and solutions to all of the numeric examples are available for instructors.

Health Systems Policy, Finance, and Organization Hospital Medicine

This volume is unique in its systematic approach to these three pillars of health systems analysis will give readers of various backgrounds authoritative material about subjects adjacent to their own specialties. Assembling such comparative materials is usually an onerous task because so many programs possess their own vocabularies, goals, and methods. This book will provide common grounds for people in programs as diverse as economics and finance, allied health, business and management, and the social sciences, including psychology. Gives readers of various backgrounds authoritative material about subjects adjacent to their own specialties Provides common grounds for people in programs as diverse as economics and finance, allied health, business and management, and the social sciences, including psychology

Bayesian Networks and Decision Graphs John Wiley & Sons

Hospital MedicineLippincott Williams & Wilkins

Advances in Computational Intelligence, Part III John Wiley & Sons

The refereed proceedings of the 7th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty, ECSQARU 2003, held in Aalborg, Denmark in July 2003. The 47 revised full papers presented together with 2 invited survey articles were carefully reviewed and selected for inclusion in the book. The papers are organized in topical sections on foundations of uncertainty concepts, Bayesian networks, algorithms for uncertainty inference, learning, decision graphs, belief functions, fuzzy sets, possibility theory, default reasoning, belief revision and inconsistency handling, logics, and tools.

Evidence Synthesis in Healthcare CRC Press

This textbook presents methodologies and applications associated with multiple criteria decision analysis (MCDA), especially for those students with an interest in industrial engineering. With respect to methodology, the book covers (1) problem structuring methods; (2) methods for ranking multi-dimensional deterministic outcomes including multiattribute value theory, the analytic hierarchy process, the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), and outranking techniques; (3) goal programming,; (4) methods for describing preference structures over single and multi-dimensional probabilistic outcomes (e.g., utility functions); (5) decision trees and influence diagrams; (6) methods for determining input probability distributions for decision trees, influence diagrams, and general simulation models; and (7) the use of simulation modeling for decision analysis. This textbook also offers: · Easy to follow descriptions of how to apply a wide variety of MCDA techniques · Specific examples involving multiple objectives and/or uncertainty/risk of interest to industrial engineers · A section on outranking techniques ; this group of techniques, which is popular in Europe, is very rarely mentioned as a methodology for MCDA in the United States · A chapter on simulation as a useful tool for MCDA, including ranking & selection procedures. Such material is rarely covered in courses in decision analysis · Both material review questions and problems at the end of each chapter . Solutions to the exercises are found in the Solutions Manual which will be provided along with PowerPoint slides for each chapter. The methodologies are demonstrated through the use of applications of interest to industrial engineers, including those involving product mix optimization, supplier selection, distribution center location and transportation planning, resource allocation and scheduling of a medical clinic, staffing of a call center, quality control, project management, production and inventory control,and so on. Specifically, industrial engineering problems are structured as classical problems in multiple criteria decision analysis, and the relevant methodologies are demonstrated.

Advances in Probabilistic Graphical Models Government Printing Office

Applying economics to vaccine delivery can save money and lives. With better analytical knowledge and better skills in decision-analysis, decision makers can improve vaccination program sustainability, efficiency, and financial predictability, leading to overall improvement in health system allocative efficiency. This handbook is a practical and accessible guide to the theory, methods, and research of health economics applied to immunization, and an essential and timely addition to the series of Handbooks in Health Economic Evaluation. By bringing these principles of vaccines and economics together, it is a valuable resource for public health workers, healthcare practitioners, educators, students, researchers, decision makers, and all those working in the immunization field. The handbook guides readers through this critical subject, whether they are already versed in economics or new to the subject. The handbook includes practical examples relevant to high-, middle-, and low-income settings. It offers background information on vaccines and the vaccine landscape, with relevant reviews of vaccine financing, vaccine adoption, and scaling up vaccine delivery. The handbook's main chapters are on principles, costing, economic evaluation, advanced methods, and financing and resource tracking. Summarizing both theory and applications, it is suitable for self-learning and for training and courses. Links to online exercises and resources will help readers learn and apply key insights.

Health Technology Assessment in Japan McGraw-Hill Education (UK)

Decision making in health care involves consideration of a complex set of diagnostic, therapeutic and prognostic uncertainties. Medical therapies have side effects, surgical interventions may lead to complications, and diagnostic tests can produce misleading results. Furthermore, patient values and service costs must be considered. Decisions in clinical and health policy require careful weighing of risks and benefits and are commonly a trade-off of competing objectives: maximizing quality of life vs maximizing life expectancy vs minimizing the resources required. This text takes a proactive, systematic and rational approach to medical decision making. It covers decision trees, Bayesian revision, receiver operating characteristic curves, and cost-effectiveness analysis, as well as advanced topics such as Markov models, microsimulation, probabilistic sensitivity analysis and value of information analysis. It provides an essential resource for trainees and researchers involved in medical decision modelling, evidence-based medicine, clinical epidemiology, comparative effectiveness, public health, health economics, and health technology assessment.

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