Double-shift schooling primarily aims to extend access and minimise unit costs. However, some systems only achieve those goals at the expense of educational quality. Policy-makers may be faced by difficult choices when designing systems. Drawing on experiences in a wide range of countries, this book highlights the advantages and problems of double-shift systems. Comparison is made with single-shift systems, and also with systems having triple or even quadruple shifts. The book will be useful both for national and regional policy-makers, and for headteachers and others responsible for running double-shift schools. This is the third edition of a book first published in 1989 and updated in 2000. Drawing on experiences in a wide range of countries, this book highlights the advantages and problems of double-shift systems. Comparison is made with single-shift systems, and also with systems having triple or even quadruple shifts. The book will be useful both for national and regional policy-makers, and for headteachers and others responsible for running double-shift schools. This is the third edition of a book first published in 1989 and updated in 2000.

This report argues that environmental health interventions prevent illness by reducing exposure to adverse conditions and by promoting behavioral change. Child mortality and morbidity rates and have plateaued after considerable progress over the past 20 years. New environmental hazards in urban areas and demographic changes threaten advances made in the past decades. Environmental health interventions tend not to be included in child survival packages because of assumptions about cost-effectiveness or the role of health service providers. Water supply and sanitation were ignored after 1979 due to cost comparisons made by Walsh and Warren (1979). This analysis differs from the Walsh and Warren cost analysis in being limited to health sector costs. This model is described in chapter 1. Chapter 2 describes a framework developed for integrating environmental health interventions with child survival. Chapter 3 discusses the impact and effectiveness of hygiene interventions for controlling childhood diarrhea. Chapter 4 explains some principles of the proposed cost-effectiveness model and how costs were estimated. Chapter 5 presents the cost-effectiveness results. Chapter 6 draws conclusions and puts forth recommendations. The model assumes that costs of physical hardware and physical infrastructure are not a health sector budget cost. User charges and public health subsidies pay for construction through public works. The indicative cutoff value for cost-effectiveness is $150 per disability-adjusted life year. The model is based on the global disease paradigm of Murray and Lopez (1994) and the WHO. It draws on the literature. Costs of hygiene are the costs of carrying out ongoing campaigns of hygiene promotion and maintaining contact with target clients. Hygiene was found to be cost-effective in four scenarios in Mexico.

The pressure to minimize expenditure and provide value for money from reduced resources means that complex projects have to encompass a wide range of often conflicting issues and interests. Systems Lifecycle Cost-Effectiveness shows how to manage the difficulties that can arise. Massimo Pica presents a variety of models for calculating cost, benefits and risk in projects, and explains how the human factors associated with a system’s design and consequent value are as important as the technical costs associated with its construction or creation. This comprehensive text can be used by students, experienced system engineers, cost analysts and managers to improve their understanding of the wide range of issues involved in the evaluation of system lifecycle cost-effectiveness.

Cost-effectiveness analysis is becoming an increasingly important tool for decision making in the health systems. Cost-Effectiveness of Medical Treatments formulates the cost-effectiveness analysis as a statistical decision problem, identifies the sources of uncertainty of the problem, and gives an overview of the frequentist and Bayesian statistical approaches for decision making. Basic notions on decision theory such as space of decisions, space of parameters, utility function of a decision and optimal decisions are explained in detail using easy to read mathematics. Features Focuses on cost-effectiveness analysis as a statistical decision problem and applies the well-established optimal statistical decision methodology. Describes utility functions for cost-effectiveness analysis. Enlarges the class of models typically used in cost-effectiveness analysis with the incorporation of linear models to account for covariates of the patients. This permits the formulation of the group (or subgroup) theory. Provides Bayesian procedures to account for model uncertainty in variable selection for linear models and in clustering for models for heterogeneous data. Model uncertainty in cost-effectiveness analysis has not been considered in the literature. Illustrates examples with real data. In order to facilitate the practical implementations of real datasets, provides the codes in Mathematica for the proposed methodology. The motivation for the book is to make the achievements in cost-effectiveness analysis accessible to health providers, who need to make optimal decisions, to the practitioners and to the students of health sciences. Elías Moreno is Professor of Statistics and Operational Research at the University of Granada, Spain, Corresponding Member of the Royal Academy of Sciences of Spain, and elect member of ISI. Francisco José Vázquez-Polo is Professor of Mathematics and Bayesian Methods at the University of Las Palmas de Gran Canaria, and Head of the Department of Quantitative Methods. Miguel Angel Negro is Senior Lecturer in the Department of Quantitative Methods at the ULPGC. His main research topics are Bayesian methods applied to Health Economics, economic evaluation and cost-effectiveness analysis, meta-analysis and equity in the provision of healthcare services.
This research note discusses an important issue, the training of soldiers in the use of a weapon system, which is important to the operational cost and success of the system in the carrying out of its mission. Cost and Training Effectiveness Analysis (CTEA) models formalize the process of choosing among alternative training technologies by comparing the cost and training effectiveness of these technologies. In this report, an economic framework is presented for integrating cost and training effectiveness data for CTEA studies. The framework builds on transfer effectiveness models and offers a model for the effectiveness of cost-minimizing training technologies. The model is particularly well-suited to the selection of training technologies for tasks that are trained on weapons systems whose operation is costly or life threatening. The research note shows how cost data would be developed for the model in evaluating computer assisted instruction as a training technology for the M1 Abrams tank. Keywords: Army training; Training devices; Transfer of training; Operational effectiveness. (sdw).

Most decision problems are those in which a choice among multiple-objective alternatives must be made. The central difficulty of such decision problems lies in finding single decision criteria that combine the decision maker's objectives and interests in an acceptable way. In this paper, a general procedure for the construction of such single decision criteria is presented. This general procedure is then applied to the construction of a decision criterion for a "two-objective" decision problem such as which pupils, if any, should be enrolled in which educational programs when cost and effectiveness are essential factors. The use of the resulting decision model is illustrated in detail.

Epidemiologists warn that the next pandemic influenza could infect 33% of the world population and kill millions. Therefore, it is critical to deploy the medical and budgetary resources in an effective way to contain an influenza outbreak. In this research, a cost-effectiveness analysis has been conducted to examine the relative importance of vaccination and self-isolation, two common measures for controlling the spread of infectious diseases, with respect to the 2009 H1N1 outbreak. A simulation model has been developed for the spread of H1N1 which allows for different interventions: antiviral prophylaxis and treatment, vaccination, and self-isolation and quarantine. An optimization model has been developed to find the most cost-effective level of vaccination and self-isolation as a control policy to contain the outbreak. To validate the model, the author has taken advantage of the cooperation of the NC State University Student Health Services Medical Director as an expert. Finally, a sensitivity analysis has been conducted on the key input parameters to ensure robust results and conclusions. This research received the 2010 IERC Best Paper Award in Modeling and Simulation.

Influenza is a contagious infectious disease and every year approximately 5%-15% of the world's population is infected. An influenza pandemic occurs when approximately 20%-40% of people are infected worldwide. In the last century, three major pandemics were observed which killed millions of people. In 2009, a novel human to human transmissible influenza A (H1N1) virus caused the first influenza pandemic of the century, killing thousands of people worldwide. Since influenza viruses can reassort and mutate, there will always be a chance of emergence and re-emergence of novel human to human transmissible viruses that may cause future influenza pandemics resulting in significant morbidity and mortality. The adverse impact of future influenza pandemics may be minimized through suitable use of intervention strategies. However, the effectiveness and cost-effectiveness of these strategies cannot be evaluated through real-world experiments prior to an actual pandemic. Modelling and simulation may partially overcome this problem.

This second edition of Cost Effectiveness Analysis in Health reviews issues and methods of assessing health care technologies and related programs. It emphasizes methods to perform economic evaluations, such as cost-effectiveness and cost-benefit analysis; methods to assess efficacy, effectiveness, and safety of health care technologies; effectiveness research; and applications to clinical and public policy. The book provides in-depth discussion of the uses and conducting of cost-effectiveness analyses (CEAs) as decision-making aids in public health, health services, and medicine. It explores cost-effectiveness in the context of societal decision making for resource allocation purposes. Chapter topics include: Defining and explaining cost-effectiveness, principles of cost-effectiveness analysis, how to develop a research project, working with costs, probabilities and models, calculating life expectancy, working with health-related quality of life measures, calculating quality-adjusted life years, conducting a sensitivity analysis, preparing your study for publication, working with data, and finding the data you need. " For instructors, data sets and other ancillary materials are freely available at http://www.pceo.org/."
The book provides a description of the process of health economic evaluation and modelling for cost-effectiveness analysis, particularly from the perspective of a Bayesian statistical approach. Some relevant theory and introductory concepts are presented using practical examples and two running case studies. The book also describes in detail how to perform health economic evaluations using the R package BCEA (Bayesian Cost-Effectiveness Analysis). BCEA can be used to post-process the results of a Bayesian cost-effectiveness model and perform advanced analyses producing standardized and highly customisable outputs. It presents all the features of the package, including its many functions and their practical application, as well as its user-friendly web interface. The book is a valuable resource for statisticians and practitioners working in the field of health economics wanting to simplify and standardize their workflow, for example in the preparation of dossiers in support of marketing authorisation, or academic and scientific publications.

This paper proposes an original method for assessing costs of medical treatment. It defines states in a semi-Markov model associated with specific costs of the treatment, and not with patients' health statuses. Costs assigning to these “costs states” is more straightforward; moreover, it allows to estimate the periods separately when no treatment is administered. This method is applied to individuals' data drawn from the Czech clinical practice in the treatment of metastatic HER2+ breast cancer. The aim is to assess the cost-effectiveness of adding pertuzumab to the combination of trastuzumab+docetaxel within first-line therapy. The Kaplan-Meier estimates of survival functions were supplemented by the Cox proportional hazard model and the accelerated failure time model that both control for patients' characteristics. Based on the employed data, the addition of pertuzumab does not result in significantly longer patients' survival. Since the treatment is associated with higher costs, adding pertuzumab is not considered to be cost-effective; however, this could be due to relatively short patients' follow-up that is available at the moment.


The purpose of this dissertation is to analyze three models in medicine and finance using Bayesian inference with the Markov chain Monte Carlo method. The model in medicine addresses cost-effectiveness analysis using copulas, and the two models in finance include discrete-time asset pricing models and a short-term interest rate model with stochastic volatility. The first chapter develops the model that allows dependence between cost and effectiveness using copulas in cost-effectiveness analysis. The model was applied with sample of adults from the NHANES I Epidemiologic Follow-up Study, assuming a lognormal distribution for cost and a Weibull distribution for effectiveness as the marginals. Cost-effectiveness analysis is conducted for two types of patients using the estimated posterior densities of parameters regarding the hypothetical intervention for hypertension. A simulation based on Bayesian predictive densities is also performed to analyze cost and effectiveness at an individual patient level. The empirical result indicated a negative dependence between measures of effectiveness and cost. The second chapter conducts a Bayesian analysis of discrete-time asset pricing model. The chapter particularly discusses the naive discretization problem, which arises from using discrete-time data to estimate continuous-time models. Our results using generated data showed that the naive discretization would not work well when data generating process is unknown, when the data is sampled at low frequency, and averaged data is used. The final chapter develops a Bayesian analysis of a short-term interest rate model with stochastic volatility. The model was developed based on the CKLS model (Chan et al. 1992). We constructed MCMC algorithms suitable for the model based on the Jacquire, Polson and Rossi (1994) algorithm. The empirical results with the 3-month T-bond constant maturity rate suggested that there was high autocorrelation in volatility of the error terms. Finally, the developed model was compared with the model with a GARCH error, using Bayesian predictive densities. The predictive densities obtained by CKLS with stochastic volatility have wider variance than the ones from CKLS-GARCH, and the realized value did not fall in the support of the predicted values for the CKLS GARCH model because of the tight variance in prediction.

The third volume in the Handbooks in Health Economic Evaluation series, this book provides the reader with a comprehensive set of instructions and examples of how to perform an economic evaluation of a health intervention. It focuses solely on cost-effectiveness analyses in health care. The book is developed out of the Advanced Methods of Cost-Effectiveness Analysis course taught at the University of Oxford and the four main sections mirror the four principal components of the course: Outcomes, Costs, Modelling using decision trees and Markov models, and Presenting cost-effectiveness results.©L ABOUT THE SERIES Series editors Alastair Gray and Andrew Briggs Economic evaluation of health intervention is a growing specialist field, and this series of practical handbooks tackles, in depth, topics superficially addressed in more general economics books. Each book includes illustrative material, case histories and worked examples to encourage the reader to apply the methods discussed, with supporting material provided online. The series is for health economists in academia, the pharmaceutical industry and the health sector, those on advanced health economics courses, and health researchers in associated fields.

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