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Nota di contenuto	Bayesian Approaches to Clinical Trials and Health-Care Evaluation; Contents; Preface; List of examples; 1 Introduction; 1.1 What are Bayesian methods?; 1.2 What do we mean by 'health-care evaluation'?; 1.3 A Bayesian approach to evaluation; 1.4 The aim of this book and the intended audience; 1.5 Structure of the book; 2 Basic Concepts from Traditional Statistical Analysis; 2.1 Probability; 2.1.1 What is probability?; 2.1.2 Odds and log-odds; 2.1.3 Bayes theorem for simple events; 2.2 Random variables, parameters and likelihood; 2.2.1 Random variables and their distributions 2.2.2 Expectation, variance, covariance and correlation 2.2.3 Parametric distributions and conditional independence; 2.2.4 Likelihoods; 2.3 The normal distribution; 2.4 Normal likelihoods; 2.4.1 Normal approximations for binary data; 2.4.2 Normal likelihoods for survival data; 2.4.3 Normal likelihoods for count responses; 2.4.4 Normal likelihoods for continuous responses; 2.5 Classical inference; 2.6 A

catalogue of useful distributions*; 2.6.1 Binomial and Bernoulli; 2.6.2 Poisson; 2.6.3 Beta; 2.6.4 Uniform; 2.6.5 Gamma; 2.6.6 Root-inverse-gamma; 2.6.7 Half-normal; 2.6.8 Log-normal
2.6.9 Student's 2.6.10 Bivariate normal; 2.7 Key points; Exercises; 3 An Overview of the Bayesian Approach; 3.1 Subjectivity and context; 3.2 Bayes theorem for two hypotheses; 3.3 Comparing simple hypotheses: likelihood ratios and Bayes factors; 3.4 Exchangeability and parametric modelling*; 3.5 Bayes theorem for general quantities; 3.6 Bayesian analysis with binary data; 3.6.1 Binary data with a discrete prior distribution; 3.6.2 Conjugate analysis for binary data; 3.7 Bayesian analysis with normal distributions; 3.8 Point estimation, interval estimation and interval hypotheses
3.9 The prior distribution 3.10 How to use Bayes theorem to interpret trial results; 3.11 The 'credibility' of significant trial results*; 3.12 Sequential use of Bayes theorem*; 3.13 Predictions; 3.13.1 Predictions in the Bayesian framework; 3.13.2 Predictions for binary data*; 3.13.3 Predictions for normal data; 3.14 Decision-making; 3.15 Design; 3.16 Use of historical data; 3.17 Multiplicity, exchangeability and hierarchical models; 3.18 Dealing with nuisance parameters*; 3.18.1 Alternative methods for eliminating nuisance parameters*; 3.18.2 Profile likelihood in a hierarchical model*
3.19 Computational issues 3.19.1 Monte Carlo methods; 3.19.2 Markov chain Monte Carlo methods; 3.19.3 WinBUGS; 3.20 Schools of Bayesians; 3.21 A Bayesian checklist; 3.22 Further reading; 3.23 Key points; Exercises; 4 Comparison of Alternative Approaches to Inference; 4.1 A structure for alternative approaches; 4.2 Conventional statistical methods used in health-care evaluation; 4.3 The likelihood principle, sequential analysis and types of error; 4.3.1 The likelihood principle; 4.3.2 Sequential analysis; 4.3.3 Type I and Type II error; 4.4 P-values and Bayes factors*
4.4.1 Criticism of P-values

Sommario/riassunto

READ ALL ABOUT IT! David Spiegelhalter has recently joined the ranks of Isaac Newton, Charles Darwin and Stephen Hawking by becoming a fellow of the Royal Society. Originating from the Medical Research Council's biostatistics unit, David has played a leading role in the Bristol heart surgery and Harold Shipman inquiries. Order a copy of this author's comprehensive text TODAY! The Bayesian approach involves synthesising data and judgement in order to reach conclusions about unknown quantities and make predictions. Bayesian methods have become increasingly popular in recent years, notab