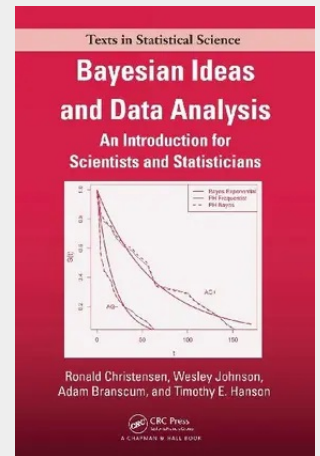


Bayesian Ideas and Data Analysis

An Introduction for Scientists and Statisticians

Emphasizing the use of WinBUGS and R to analyze real data, Bayesian Ideas and Data Analysis: An Introduction for Scientists and Statisticians presents statistical tools to address scientific questions. It highlights foundational issues in statistics, the importance of making accurate predictions, and the need for scientists and statisticians to collaborate in analyzing data. The WinBUGS code provided offers a convenient platform to model and analyze a wide range of data. The first five chapters of the book contain core material that spans basic Bayesian ideas, calculations, and inference, including modeling one and two sample data from traditional sampling models. The text then covers Monte Carlo methods, such as Markov chain Monte Carlo (MCMC) simulation. After discussing linear structures in regression, it presents binomial regression, normal regression, analysis of variance, and Poisson regression, before extending these methods to handle correlated data. The authors also examine survival analysis and binary diagnostic testing. A complementary chapter on diagnostic testing for continuous outcomes is available on the book's website. The last chapter on nonparametric inference explores density estimation and flexible regression modeling of mean functions. The appropriate statistical analysis of data involves a collaborative effort between scientists and statisticians. Exemplifying this approach, Bayesian Ideas and Data Analysis focuses on the necessary tools and concepts for modeling and analyzing scientific data. Data sets and codes are provided on a supplemental website.

Emphasizing the use of WinBUGS and R to analyze real data, this text presents statistical tools to address scientific questions. It highlights foundational issues in statistics, the importance of making accurate predictions, and the need for scientists and statisticians to collaborate in analyzing data. The authors cover a large number of statistical models, explore numerical approximations via MCMC simulation, and include numerous exercises and real-world examples. The WinBUGS code provided offers a convenient platform to model and analyze a wide range of data. Code and other materials are available on the book's website.



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