



## Biostatistics: A Bayesian Introduction

George G. Woodworth

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**\$182.00**

### DESCRIPTION

An essential introductory text linking traditional biostatistics with bayesian methods

In recent years, Bayesian methods have seen an explosion of interest, with applications in fields including biochemistry, ecology, medicine, oncology, pharmacology, and public health. As an interpretive system integrating data with observation, the Bayesian approach provides a nuanced yet mathematically rigorous means of conceptualizing biomedical statistics--from diagnostic tests to DNA evidence.

Biostatistics: A Bayesian Introduction offers a pioneering approach by presenting the foundations of biostatistics through the Bayesian lens. Using easily understood, classic Dutch Book thought experiments to derive subjective probability from a simple principle of rationality, the book connects statistical science with scientific reasoning. The author shows how to compute, interpret, and report Bayesian statistical analyses in practice, and illustrates how to reinterpret traditional statistical reporting--such as confidence intervals, margins of error, and one-sided p-values--in Bayesian terms. Topics covered include:

- \* Probability and subjective probability
- \* Distributions and descriptive statistics
- \* Continuous probability distributions
- \* Comparing rates and means

- \* Linear models and statistical adjustment
- \* Logistic regression and adjusted odds ratios
- \* Survival analysis
- \* Hierarchical models and meta-analysis
- \* Decision theory and sample size determination

The book includes extensive problem sets and references in each chapter, as well as complete instructions on computer analysis with the versatile SAS and WinBUGS software packages as well as the Excel spreadsheet program. For professionals and students, *Biostatistics: A Bayesian Introduction* offers an unique, real-world entry point into a remarkable alternative method of interpreting statistical data.

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## ABOUT THE AUTHOR

GEORGE G. WOODWORTH, PhD, holds dual professorships in statistics and public health at the University of Iowa. The author of more than 100 individual and collaborative publications, he received his PhD from the University of Minnesota.

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Biostatistics. A Bayesian introduction. Article "How we measure 'reads'". We estimated discard survival of fish released for the tagging experiments using relative risk in a Bayesian framework (Woodworth 2004). Relative risk (RR) of fish released in compromised categories was estimated from the number of fish released (N) and returned in each condition (C) as follows

Bayesian Biostatistics introduces the reader smoothly into the Bayesian statistical methods with chapters that gradually increase in level of complexity. Master students in biostatistics, applied statisticians and all researchers with a good background in classical statistics who have interest in Bayesian methods will find this book useful. Read more. See all Editorial Reviews. If you are a seller for this product, would you like to suggest updates through seller support? No\_content\_in\_feature. Start reading Bayesian Biostatistics (Statistics in Practice) on your Kindle in under a minute. Don't have a Kindle? Get your Kindle here, or download a FREE Kindle Reading App. Biostatistics are the development and application of statistical methods to a wide range of topics in biology. It encompasses the design of biological experiments, the collection and analysis of data from those experiments and the interpretation of the results. Biostatistical modeling forms an important part of numerous modern biological theories. Genetics studies, since its beginning, used statistical concepts to understand observed experimental results. Some genetics scientists even contributed with

@inproceedings{Woodworth2004BiostatisticsAB, title={Biostatistics: A Bayesian Introduction}, author={George G. Woodworth}, year={2004} }. George G. Woodworth. Preface 1. Introduction to Statistical Science 2. Probability 3. Subjective Probability 4. Distributions and Descriptive Statistics 5. Statistical Inference 6. Continuous Probability Distributions 7. Comparing Two Rates 8. Inference on Means 9. Linear Models and Statistical Adjustment 10. Logistic Regression 11. Hierarchical Models 12. Time to Event Analysis 13. Decision Analysis A. Tables B. Introduction to WinBUGS C. Introduction to SA Biostatistics: A Bayesian Introduction offers a pioneering approach by presenting the foundations of biostatistics through the Bayesian lens. Using easily understood, classic Dutch Book thought experiments to derive subjective probability from a simple principle of rationality, the book connects statistical science with scientific reasoning. The author shows how to compute, interpret, and report Bayesian statistical analyses in practice, and illustrates how to reinterpret traditional statistical reporting--such as confidence intervals, margins of error, and one-sided p-values--in Bayesian term