



# Bayesian Modeling Using WinBUGS

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## DESCRIPTION

### **A hands-on introduction to the principles of Bayesian modeling using WinBUGS**

*Bayesian Modeling Using WinBUGS* provides an easily accessible introduction to the use of WinBUGS programming techniques in a variety of Bayesian modeling settings. The author provides an accessible treatment of the topic, offering readers a smooth introduction to the principles of Bayesian modeling with detailed guidance on the practical implementation of key principles.

The book begins with a basic introduction to Bayesian inference and the WinBUGS software and goes on to cover key topics, including:

- Markov Chain Monte Carlo algorithms in Bayesian inference
- Generalized linear models
- Bayesian hierarchical models

- Predictive distribution and model checking
- Bayesian model and variable evaluation

Computational notes and screen captures illustrate the use of both WinBUGS as well as R software to apply the discussed techniques. Exercises at the end of each chapter allow readers to test their understanding of the presented concepts and all data sets and code are available on the book's related Web site.

Requiring only a working knowledge of probability theory and statistics, *Bayesian Modeling Using WinBUGS* serves as an excellent book for courses on Bayesian statistics at the upper-undergraduate and graduate levels. It is also a valuable reference for researchers and practitioners in the fields of statistics, actuarial science, medicine, and the social sciences who use WinBUGS in their everyday work.

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## ABOUT THE AUTHOR

**Ioannis Ntzoufras, PhD**, is Assistant Professor of Statistics at Athens University of Economics and Business (Greece). Dr. Ntzoufras has published numerous journal articles in his areas of research interest, which include Bayesian statistics, statistical analysis and programming, and generalized linear models.

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## FEATURES

- Detailed examples will be provided ranging from the very basic to the more advanced; they will also reflect realistic data sets (available from the Internet).
- An underlying emphasis is given to Generalized Linear Models (GLMs) that are familiar to most readers and researchers.
- Details are given concerning (1) modeling building, (2) prior specification, (3) writing WinBUGS code, and (4) analyzing and interpreting WinBUGS output.

- Carefully constructed exercise sets with subroutine explanations are provided at the ends of chapters so as to reinforce the concepts and techniques that are discussed in the text. Their solutions are available on the Internet, along with the above mentioned data sets.

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