

"Bayesian Approaches to Clinical Trials and Health-Care Evaluation"

David J. Spiegelhalter, Keith R. Abrahms, and Jonathan P. Myles, 2004, 391 pages, John Wiley & Sons, \$90.00

Review by Norman M. Goldfarb

"Bayesian Approaches to Clinical Trials and Health-Care Evaluation" is a clear and comprehensive text for biostatisticians who want to understand and apply Bayesian statistical methods to clinical research.

Traditional frequentist statistics start from scratch with each clinical trial (albeit with power calculated based on prior experience). Integrating results from multiple, disparate trials is an exercise in adding apples, lemons and Buicks.

This book has been selected for
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Essential reading for clinical research professionals

In contrast, Bayesian statistics are the mathematics of learning from experience. Each clinical trial (or stage within a clinical trial) starts with a prior assumption, which the trial adjusts. Bayesian statistics thus naturally makes the most of all prior and new information. It is therefore well-suited to flexible designs that minimize the cost of a clinical trial, e.g., by apportioning subjects to the most promising arms in a dose ranging study. This flexibility raises suspicions about the integrity of Bayesian study designs, but the mathematics and simulations are now available to ensure statistical integrity for many Bayesian designs.

The book consists of 10 chapters:

- Introduction
- Basic Concepts from Traditional Statistical Analysis
- An Overview of the Bayesian Approach
- Comparison of Alternative Approaches to Inference
- Prior Distributions
- Randomised Clinical Trials
- Observational Studies
- Evidence Synthesis
- Cost-effectiveness, Policy-Making and Regulation
- Conclusions and Implications for Future Research

The book includes 55 worked examples. It is available in bookstores.

Reviewer

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