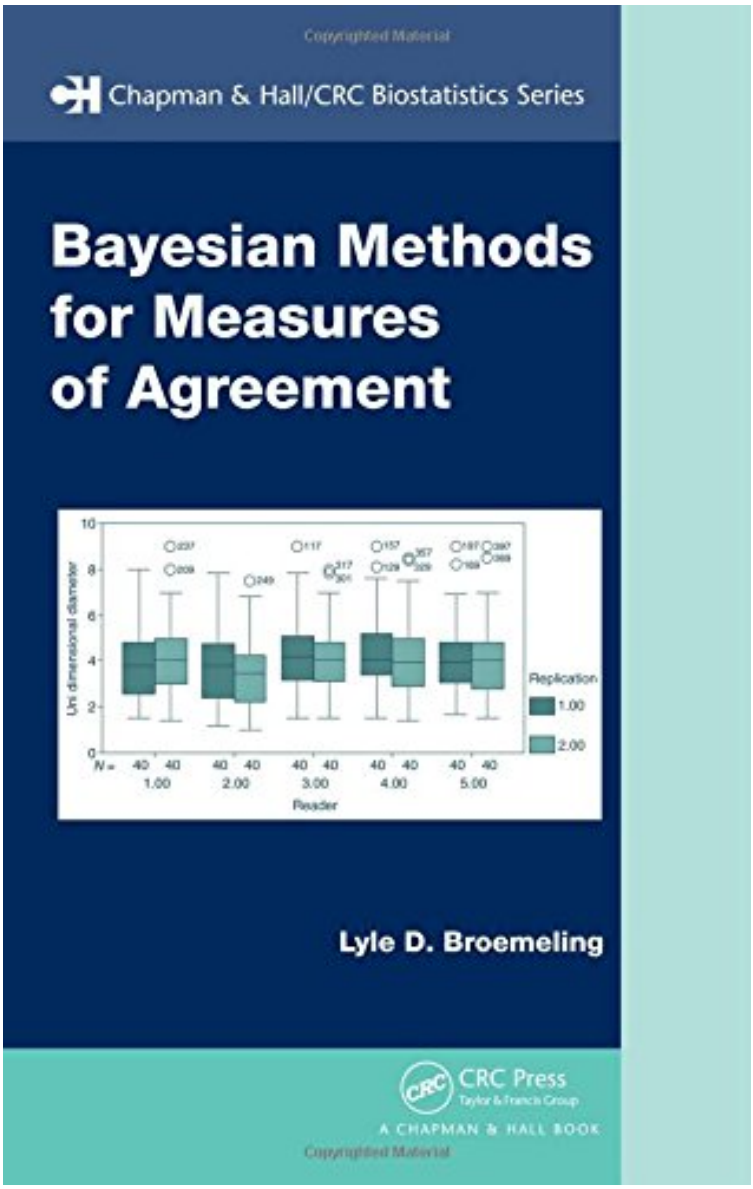
Bayesian Methods for Measures of Agreement (Chapman Hall/CRC Biostatistics Series)

Lyle D. Broemeling



#4311304 in Books 2009-01-12Original language:EnglishPDF # 1 9.30 x .90 x 6.00l, 1.35 #File Name: 1420083414340 pages | File size: 74.Mb

Lyle D. Broemeling : Bayesian Methods for Measures of Agreement (Chapman Hall/CRC Biostatistics Series) before purchasing it in order to gage whether or not it would be worth my time, and all praised Bayesian Methods for Measures of Agreement (Chapman Hall/CRC Biostatistics Series):

4 of 4 people found the following review helpful. agree or disagree how do we measure itBy Michael R. ChernickThis

is the scond book of Lyle Broemeling that I am reviewing for . I met him at the Joint Statistical Meetings a few years ago when he was just retiring from M.D. Anderson. in recent years M. D. Anderson has become a leader in designing Bayesian adaptive designs of clinical trials. This is mainly due to the leadership of Don Berry who came to head up the biostatistics group at M. D. Anderson several years ago when he was attracted away from Duke. Broemeling benefitted from the arrival of Berry because he was establishe there as a Bayesian and had written a book on Bayesian analysis many years earlier.Now that he is retired from M. D. Anderson he is writing applied biostatistics texts applying Bayesian methods to specialized topics. The first one which I reviewed earlier on was on diagnostic testing and this one is to analyze measures of agreement among judges. The two books are both scholarly written and authoritative and clear. They both also provide many real examples based on Lyle's vast experience at M. D. Anderson.A few years ago I was supporting the company BioImaging in the development of their protocols for medical imaging data from patients in oncology clinical trials. I learned that an important aspect of determining the efficacy of a drug against a particular cancer tumor. This performance is usually measured by individual ranking from radiologist who read the scans over time and assess growth or shrinkage of the tumor after being treated by a drug. Typically there are two or three readers and the rating of progression or remission depends on a concensus of the radiologists assessments.This is exactly the problem Broemeling faced at at M. D. Anderson and he has a wealth of applications in the setting of oncology trials. Broemeling details the history of the develop of methods used to reach a conclusion. He provides a wealth of examples and also includes interesting examples from sports including an analysis of a famous boxing match between Lennox Lewis and Evander Holyfield. He deals methodically with the case of two raters (where an adjudicator general resolve the conflicting cases) and then three or more raters where things get more complicated.Modern Bayesian approaches are demonstrated using the winBugs software. Broemeling provides the code in the winBugs language to handle various examples. This approach involves Markov Chain Monte Carlo methods. Examples are explained in detail and illustrated very carefully.Broemeling also provides a history of the various statistics used to measure agrrement between readers or judges. Another example that struck me as very interesting is a forgery case where a signature was forged to produce a fake will. Usually in forgery cases the methods are used to find differences in the signature that are large enough to assert that they came from different people. However in this example the forged signature was traced from the original persons sample signature. So in the case the objective was to show that the cases are too similar not to have been forged. We are able to do this because we can show repeated signatures from the same hand will have more variability than the traced signature. So in this case the hired statisticians showed that the two signatures are much too similar for the second one to be real and independent of each other.Bayesian sample size estimation is also covered in the text. It is a great reference book for anyone who does oncology trials and appreciates the advantages of the Bayesian approach. The Kappa measure is the one that is given the most attention in the book.

Using WinBUGS to implement Bayesian inferences of estimation and testing hypotheses, Bayesian Methods for Measures of Agreement presents useful methods for the design and analysis of agreement studies. It focuses on agreement among the various players in the diagnostic process. The author employs a Bayesian approach to provide statistical inferences based on various models of intra- and interrater agreement. He presents many examples that illustrate the Bayesian mode of reasoning and explains elements of a Bayesian application, including prior information, experimental information, the likelihood function, posterior distribution, and predictive distribution. The appendices provide the necessary theoretical foundation to understand Bayesian methods as well as introduce the fundamentals of programming and executing the WinBUGS software. Taking a Bayesian approach to inference, this hands-on book explores numerous measures of agreement, including the Kappa coefficient, the G coefficient, and intraclass correlation. With examples throughout and end-of-chapter exercises, it discusses how to successfully design and analyze an agreement study.

"This book is a welcome addition to the literature on Bayesian inference as it presents methods for the design and analysis of agreement studies. The approach presented by the author is novel and the novice will find a helpful introduction to Bayesian inference in an appendix. The text is readable and will form a valuable reference source. For those unfamiliar with WinBUGS, the author introduces the fundamentals of programming and executing BUGS."International Statistical , 2010 "This book deals with measures of agreement from a Bayesian perspective, focusing mainly on variants of Cohens , but also other measures included in Shoukri (2003) and von Eye and Mun (2005), frequentist texts for which this book is intended to be a Bayesian companion. Dr. Broemeling uses examples throughout the book to illustrate concepts rather than resorting to jargon This book would be valuable for those using the methods in Shoukri and von Eye and Mun. "Journal of the Royal Statistical Society, Series A, Volume 173, Issue 1, January 2010From the AuthorThe reader of this book can access the WinBUGS code at medtestacc.blogspot.com. With this feature the various analyses can be verified and the exercises completed.About the AuthorMedical Lake, Washington, USA