The Statistical Analysis of Recurrent Events (Statistics for Biology and Health)

Richard J. Cook, Jerald Lawless
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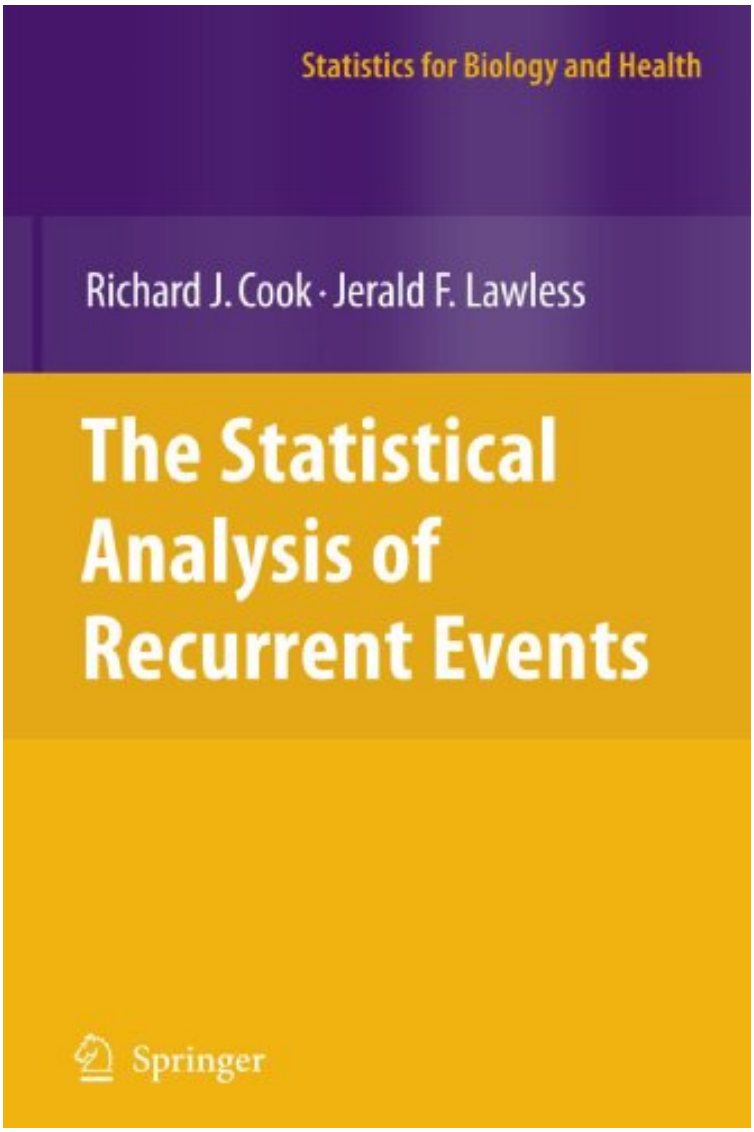

#4383259 in Books Cook Richard J Lawless Jerald F 2010-11-23Original language:EnglishPDF # 1 9.00 x .96 x 6.00l, 1.31 #File Name: 1441924159404 pagesThe Statistical Analysis of Recurrent Events | File size: 34.Mb

Richard J. Cook, Jerald Lawless : The Statistical Analysis of Recurrent Events (Statistics for Biology and Health) before purchasing it in order to gage whether or not it would be worth my time, and all praised The Statistical Analysis of Recurrent Events (Statistics for Biology and Health):

29 of 29 people found the following review helpful. new book on recurrent eventsBy Michael R. ChernickThese

authors along with Wayne Nelson have been doing the pioneering work on recurrent events. Recurrent events are outcomes that occur more than once for the subjects under study. One example that Wayne Nelson used in his course and text is the time of birth and the total number of births by an adult woman. In reliability it could be the number of times and mileage when the car battery fails or a tire goes flat. In onco;ogy it can be the recurrence of a tumor. The methodology is a modification to survival analysis accounting for multiple events. The problem can also be posed as a multvariate survival problem where the multiple events for each subject are represented by a vector times of occurrence. It differs from the standard approach such as given in the text by Hougaard. Nelson concentrates on the mean cumulative function whereas Lawless and Cook are more concerned with hypothesis testing.This text is very clearly written and covers the state of the art in recurrent event theory. These methods should and will see much more use in the future as there are many applications in reliability with maintenance, warranties and clinical trial data analysis.

This book presents models and statistical methods for the analysis of recurrent event data. The authors provide broad, detailed coverage of the major approaches to analysis, while emphasizing the modeling assumptions that they are based on. More general intensity-based models are also considered, as well as simpler models that focus on rate or mean functions. Parametric, nonparametric and semiparametric methodologies are all covered, with procedures for estimation, testing and model checking.

From the s: "The book provides many good real life examples to demonstrate application of the methods discussed....[it] is excellent for teaching an advanced class in statistics on this topic as it also contains many good exercises at the end of each chapter, some being extensions of the discussions." (Journal of Biopharmaceutical Statistics (JBS), Issue #5, 2008) "This book provides a timely and comprehensive review of methodologies for recurrent event data analysis and should be beneficial to Biometrics readers who are interested in recurrent events." "The strength of this book is its scope. It covers most of the methodology that is readily available for general use. ...Overall, we think this is a very good reference for recurrent event data analysis, especially because no other books provide a similar degree of coverage, and it would providea nice textbook for a graduate-level course on the topic." (Biometrics, September 2008) "This book deals with processes generating multiple events over time. The book comprises eight chapters, four appendices and a useful notational glossary. it is directed to a much broader target readership, like social scientists, economists and industrial statisticians as well. Many examples are used to illustrate and discuss the models and statistical methods in great detail. Techniques for estimation, testing and model checking are lucidly described for a graduate course." (Harald Heinzl, Zentralblatt MATH, Vol. 1159, 2009) Every aspiring statistical researcher interested in recurrent events should have this book on his/her shelf as a great guide for learning the state-of-the-art stochastic models, frequentist (mostly estimating equation and asymptotic based) methods, and computational tools (including popular programs and routines). This is a very well-organized and comprehensive book on a very rapidly expanding area of research. As a mentor of PhD students, I myself will definitely recommend every graduate student interested in mastering recurrent events to read this book thoroughly to understand the current state of the literature as well as areas of future research and further development. (Journal of the American Statistical Association, Dec. 2009, Vol. 104, No. 488)From the Back CoverRecurrent event data arise in diverse fields such as medicine, public health, insurance, social science, economics, manufacturing and reliability. The purpose of this book is to present models and statistical methods for the analysis of recurrent event data. No single comprehensive treatment of these areas currently exists. The authors provide broad but detailed coverage of the major approaches to analysis, while also emphasizing the modeling assumptions that they are based on. Thus, they consider important models such as Poisson and renewal processes, with extensions to incorporate covariates or random effects. More general intensity-based models are also considered, as well as simpler models that focus on rate or mean functions. Parametric, nonparametric and semiparametric methodologies are all covered, with clear descriptions of procedures for estimation, testing and model checking. Important practical topics such as observation schemesand selection of individuals for study, the planning of randomized experiments, events of several types, and the prediction of future events are considered. Methods of modeling and analysis are illustrated through many examples taken from health research and industry. The objectives and interpretations of different analyses are discussed in detail, and issues of robustness are addressed. Statistical analysis of the examples is carried out with S-PLUS software and code is given for some examples. This book is directed at graduate students, researchers, and applied statisticians working in industry, government or academia. Some familiarity with survival analysis is beneficial since survival software is used to carry out many of the analyses considered. This book can be used as a textbook for a graduate course on the analysis of recurrent events or as a reference for a more general course on event history analysis. Problems are given at the end of chapters to reinforce the material presented and to provide additional background or extensions to certain topics. Richard J. Cook is Professor in the Department of Statistics and Actuarial Science at the University of Waterloo and Canada Research Chair in Statistical Methods for Health Research. He is an Associate Editor for Lifetime Data Analysis. Jerald F. Lawless is Professor in the Department of Statistics and Actuarial Science at the University of

Waterloo. He is a former Editor of Technometrics and from 1994-2004 held the General Motors Canada-NSERC Industrial Research Chair in Quality and Productivity. He is the author of Statistical Models and Methods for Lifetime Data, Second Edition (2003).