Statistical Methods For Survival Data Analysis By Lee Elisa T 1980 Hardcover

This book introduces readers to copula-based statistical methods for analyzing survival data involving dependent censoring. Primarily focusing on likelihood-based methods performed under copula models, it is the first book solely devoted to the problem of dependent censoring. The book demonstrates the advantages of the copula-based methods in the context of medical research, especially with regard to cancer patients' survival data. Needless to say, the statistical methods presented here can also be applied to many other branches of science, especially in reliability, where survival analysis plays an important role. The book can be used as a textbook for graduate coursework or a short course aimed at (bio-) statisticians. To deepen readers' understanding of copula-based approaches, the book provides an accessible introduction to basic survival analysis and explains the mathematical foundations of copula-based survival models.

Survival data or more general time-to-event data occur in many areas, including medicine, biology, engineering, economics, and demography, but previously standard methods have requested that all time variables are univariate and independent. This book extends the field by allowing for multivariate times. As the field is rather new, the concepts and the possible types of data are described in detail. Four different approaches to the analysis of such data are presented from an applied point of view.

* Contains additional discussion and examples on left truncation as well as material on more general censoring and truncation patterns. * Introduces the martingale and counting process formulation swil lbe in a new chapter. * Develops multivariate failure time data in a separate chapter and extends the material on Markov and semi Markov formulations. * Presents new examples and applications of data analysis.

Applied statisticians in many fields must frequently analyze time to event data. While the statistical tools presented in this book are applicable to data from medicine, biology, public health, epidemiology, engineering, economics, and demography, the focus here is on applications of the techniques to biology and medicine. The analysis of survival experiments is complicated by issues of censoring, where an individual's life length is known to occur only in a certain period of time, and by truncation, where individuals enter the study only if they survive a sufficient length of time or individuals are included in the study only if the event has occurred by a given date. The use of counting process methodology has allowed for substantial advances in the statistical theory to account for censoring and truncation in survival experiments. This book makes these complex methods more accessible to applied researchers without an advanced mathematical background. The authors present the essence of these techniques, as well as classical techniques not based on counting processes, and apply them to data. Practical suggestions for implementing the various methods are set off in a series of Practical Notes at the end of each section. Technical details of the derivation of the techniques are sketched in a series of Technical Notes. This book will be useful for investigators who need to analyze censored or truncated life time data, and as a textbook for a graduate course in survival analysis. The prerequisite is a standard course in statistical methodology.

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This book introduces readers to advanced statistical methods for analyzing survival data involving correlated endpoints. In particular, it describes statistical methods for applying Cox regression to two correlated endpoints by accounting for dependence between the endpoints with the aid of copulas. The practical advantages of employing copula-based models in medical research are explained on the basis of case studies. In addition, the book focuses on clustered survival data, especially data arising from meta-analysis and multicenter analysis. Consequently, the statistical approaches presented here employ a frailty term for heterogeneity modeling. This brings the joint frailty-copula model, which incorporates a frailty term and a copula, into a statistical model. The book also discusses advanced techniques for dealing with high-dimensional gene expressions and developing personalized dynamic prediction tools under the joint frailty-copula model. To help readers apply the statistical methods to real-world data, the book provides case studies using the authors' original R software package (freely available in CRAN). The emphasis is on clinical survival data, involving time-to-tumor progression and overall survival, collected on cancer patients. Hence, the book offers an essential reference guide for medical statisticians and provides researchers with advanced, innovative statistical tools. The book also provides a concise introduction to basic multivariate survival models.

A concise summary of the statistical methods used in the analysis of survival data with censoring. Emphasizes recently developed nonparametric techniques. Outlines methods in detail and illustrates them with actual data. Discusses the theory behind each method. Includes numerous worked problems and numerical exercises.

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.

With the booming of big complex data, various Statistical methods and Data Science techniques have been developed to retrieve valuable information from them. The progress is slower with survival data due to the additional difficulty from censoring and truncation. Except for a few straightforward extensions, most modern learning methods have been absent in survival analysis for years since their invention. The theory on the survival version of those methods also falls further behind. There is a strong demand on computational efficient and theoretical reliable methods for big complex data with time-to-event outcomes in various Health related fields where immense resource has been poured into. This thesis is devoted to incorporating censoring and truncation to state-of-art Statistical methodology and theory, to promote the evolution of survival analysis and support Medical research with up-to-date tools. In Chapter 1, I study the mixture cure-rate model with left truncation and right-censoring. We propose a Nonparametric

Maximum Likelihood Estimation (NPMLE) approach to effectively handle the truncation issue. We adopt an efficient and stable EM algorithm. We are able to give a closed form variance estimator giving rise to valid inference. In Chapter 2, I study the estimation and inference for the Fine-Gray competing risks model with high-dimensional covariates. We develop confidence intervals based on a one-step bias-correction to an initial regularized estimator. We lay down a methodological and theoretical framework for the one-step bias-corrected estimator with the partial likelihood. In Chapter 3, I study the inference on treatment effect with censored time-to-event outcome while adjusting for high-dimensional covariates. We propose an orthogonal score method to construct honest confidence intervals for the treatment effect. With a slight modification, we obtain a doubly robust estimator extremely tolerant to both estimation inconsistency and volatility. All the methods in aforementioned chapters are tested through extensive numerical experiments and applied on real data with authentic medical interests.

Readers will find in the pages of this book a treatment of the statistical analysis of clustered survival data. Such data are encountered in many scientific disciplines including human and veterinary medicine, biology, epidemiology, public health and demography. A typical example is the time to death in cancer patients, with patients clustered in hospitals. Frailty models provide a powerful tool to analyze clustered survival data. In this book different methods based on the frailty model are described and it is demonstrated how they can be used to analyze clustered survival data. All programs used for these examples are available on the Springer website.

This book gathers invited presentations from the 2nd Symposium of the ICSA- CANADA Chapter held at the University of Calgary from August 4-6, 2015. The aim of this Symposium was to promote advanced statistical methods in big-data sciences and to allow researchers to exchange ideas on statistics and data science and to embraces the challenges and opportunities of statistics and data science in the modern world. It addresses diverse themes in advanced statistical analysis in big-data sciences, including methods for administrative data analysis, survival data analysis, missing data analysis, high-dimensional and genetic data analysis, longitudinal and functional data analysis, the design and analysis of studies with response-dependent and multi-phase designs, time series and robust statistics, statistical inference based on likelihood, empirical likelihood and estimating functions. The editorial group selected 14 high-quality presentations from this successful symposium and invited the presenters to prepare a full chapter for this book in order to disseminate the findings and promote further research collaborations in this area. This timely book offers new methods that impact advanced statistical model development in big-data sciences.

Modelling Survival Data in Medical Research describes the modelling approach to the analysis of survival data using a wide range of examples from biomedical research.Well known for its nontechnical style, this third edition contains new chapters on frailty models and their applications, competing risks, non-proportional hazards, and dependent censo

Critically acclaimed and resoundingly popular in its first edition, Modelling Survival Data in Medical Research has been thoroughly revised and updated to reflect the many developments and advances--particularly in software--made in the field over the last 10 years. Now, more than ever, it provides an outstanding text for upper-level and graduate courses in survival analysis, biostatistics, and time-to-event analysis.The treatment begins with an introduction to survival analysis and a description of four studies that lead to survival data. Subsequent chapters then use those data sets and others to illustrate the various analytical techniques applicable to such data, including the Cox regression model, the Weibull proportional hazards model, and others. This edition features a more detailed treatment of topics such as parametric models, accelerated failure time models, and analysis of interval-censored data. The author also focuses the software section on the use of SAS, summarising the methods used by the software to generate its output and examining that output in detail. Profusely illustrated with examples and written in the author's trademark, easy-to-follow style, Modelling Survival Data in Medical Research, Second Edition is a thorough, practical guide to survival analysis that reflects current statistical practices.

This book collects and unifies statistical models and methods that have been proposed for analyzing interval-censored failure time data. It provides the first comprehensive coverage of the topic of interval-censored data and complements the books on right-censored data. The focus of the book is on nonparametric and semiparametric inferences, but it also describes parametric and imputation approaches. This book provides an up-to-date reference for people who are conducting research on the analysis of interval-censored failure time data as well as for those who need to analyze interval-censored data to answer substantive questions.

Handbook of Survival Analysis presents modern techniques and research problems in lifetime data analysis. This area of statistics deals with time-to-event data that is complicated by censoring and the dynamic nature of events occurring in time. With chapters written by leading researchers in the field, the handbook focuses on advances in survival analysis techniques, covering classical and Bayesian approaches. It gives a complete overview of the current status of survival analysis and should inspire further research in the field. Accessible to a wide range of readers, the book provides: An introduction to various areas in survival analysis for graduate students and novices A reference to modern investigations into survival analysis for more established researchers A text or supplement for a second or advanced course in survival analysis A useful guide to statistical methods for analyzing survival data experiments for practicing statisticians

Applied Survival Analysis Using R covers the main principles of survival analysis, gives examples of how it is applied, and teaches how to put those principles to use to analyze data using R as a vehicle. Survival data, where the primary outcome is time to a specific event, arise in many areas of biomedical research, including clinical trials, epidemiological studies, and studies of animals. Many survival methods are extensions of techniques used in linear regression and categorical data, while other aspects of this field are unique to survival data. This text employs numerous actual examples to illustrate survival curve estimation, comparison of survivals of different groups, proper accounting for censoring and truncation, model variable selection, and residual analysis. Because explaining survival analysis requires more advanced mathematics than many other statistical topics, this book is organized with basic concepts and most frequently used procedures covered in earlier chapters, with more advanced topics near the end and in the appendices. A background in basic linear regression and categorical data analysis, as well as a basic knowledge of calculus and the R system, will help the reader to fully appreciate the information presented. Examples are simple and straightforward while still illustrating key points, shedding light on the application of survival analysis in a way that is useful for graduate students, researchers, and practitioners in biostatistics.

Never HIGHLIGHT a Book Again! Includes all testable terms, concepts, persons, places, and events. Cram101 Just the FACTS101 studyguides gives all of the outlines, highlights, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanies: 9781118095027. This item is printed on demand.

This practical guide to survival data and its analysis for readers with a minimal background in statistics shows why the analytic methods work and how to effectively analyze and interpret epidemiologic and medical survival data with the help of modern computer systems. The introduction presents a review of a variety of statistical methods that are not only key elements of survival analysis but are also central to statistical analysis in general. Techniques such as statistical tests, transformations, confidence intervals, and analytic modeling are presented in the context of survival data but are, in fact, statistical tools that apply to understanding the analysis of many kinds of data. Similarly, discussions of such statistical concepts as bias, confounding, independence, and interaction are presented in the context of survival analysis and also are basic components of a broad range of applications. These topics make up essentially a 'second-year', one-semester biostatistics course in survival analysis concepts and techniques for

non-statisticians.
Praise for the Third Edition “. . . an easy-to read introduction to survival analysiswhich covers the major concepts and techniques of thesubject.” —Statistics in Medical Research Updated and expanded to reflect the latest developments,Statistical Methods for Survival Data Analysis, FourthEdition continues to deliver a comprehensive introduction tothe most commonly-used methods for analyzing survival data.Authored by a uniquely well-qualified author team, the FourthEdition is a critically acclaimed guide to statistical methods withapplications in clinical trials, epidemiology, areas of business,and the social sciences. The book features many real-world examplesto illustrate applications within these various fields, althoughspecial consideration is given to the study of survival data inbiomedical sciences. Emphasizing the latest research and providing the mostup-to-date information regarding software applications in thefield, Statistical Methods for Survival Data Analysis, FourthEdition also includes: Marginal and random effect models for analyzing correlatedcensored or uncensored data Multiple types of two-sample and K-sample comparisonanalysis Updated treatment of parametric methods for regression modelfitting with a new focus on accelerated failure time models Expanded coverage of the Cox proportional hazards model Exercises at the end of each chapter to deepen knowledge of thepresented material Statistical Methods for Survival Data Analysis is anideal text for upper-undergraduate and graduate-level courses onsurvival data analysis. The book is also an excellent resource forbiomedical investigators, statisticians, and epidemiologists, aswell as researchers in every field in which the analysis ofsurvival data plays a role.
Statistical Methods for Survival Data AnalysisJohn Wiley & Sons
Modelling Survival Data in Medical Research describes the modelling approach to the analysis of survival data using a wide range of examples from biomedical research. Well known for its nontechnical style, this third edition contains new chapters on frailty models and their applications, competing risks, non-proportional hazards, and dependent censoring. It also describes techniques for modelling the occurrence of multiple events and event history analysis. Earlier chapters are now expanded to include new material on a number of topics, including measures of predictive ability and flexible parametric models. Many new data sets and examples are included to illustrate how these techniques are used in modelling survival data. Bibliographic notes and suggestions for further reading are provided at the end of each chapter. Additional data sets to obtain a fuller appreciation of the methodology, or to be used as student exercises, are provided in the appendix. All data sets used in this book are also available in electronic format online. This book is an invaluable resource for statisticians in the pharmaceutical industry, professionals in medical research institutes, scientists and clinicians who are analyzing their own data, and students taking undergraduate or postgraduate courses in survival analysis.
The Wiley-Interscience Paperback Series consists of selected booksthat have been made more accessible to consumers in an effort toincrease global appeal and general circulation. With these newunabridged softcover volumes, Wiley hopes to extend the lives ofthese works by making them available to future generations ofstatisticians, mathematicians, and scientists. "The book is a valuable completion of the literature in this field.It is written in an ambitious mathematical style and can berecommended to statisticians as well as biostatisticians." -Biometrische Zeitschrift "Not many books manage to combine convincingly topics fromprobability theory over mathematical statistics to appliedstatistics. This is one of them. The book has other strong pointsto recommend it: it is written with meticulous care, in a lucidstyle, general results being illustrated by examples fromstatistical theory and practice, and a bunch of exercises serve tofurther elucidate and elaborate on the text." -Mathematical Reviews "This book gives a thorough introduction to martingale and countingprocess methods in survival analysis thereby filling a gap in theliterature." -Zentralblatt für Mathematik und ihre Grenzgebiete/MathematicsAbstracts "The authors have performed a valuable service to researchers inproviding this material in [a] self-contained and accessible form.. . This text [is] essential reading for the probabilist ormathematical statistician working in the area of survivalanalysis." -Short Book Reviews, International Statistical Institute Counting Processes and Survival Analysis explores the martingaleapproach to the statistical analysis of counting processes, with anemphasis on the application of those methods to censored failuretime data. This approach has proven remarkably successful inyielding results about statistical methods for many problemsarising in censored data. A thorough treatment of the calculus ofmartingales as well as the most important applications of thesemethods to censored data is offered. Additionally, the bookexamines classical problems in asymptotic distribution theory forcounting process methods and newer methods for graphical analysisand diagnostics of censored data. Exercises are included to providepractice in applying martingale methods and insight into thecalculus itself.
Praise for the First Edition "An indispensable addition to any serious collection on lifetime data analysis and . . . a valuable contribution to the statistical literature. Highly recommended . . ." -Choice "This is an important book, which will appeal to statisticians working on survival analysis problems." -Biometrics "A thorough, unified treatment of statistical models and methods used in the analysis of lifetime data . . . this is a highly competent and agreeable statistical textbook." -Statistics in Medicine The statistical analysis of lifetime or response time data is a key tool in engineering, medicine, and many other scientific and technological areas. This book provides a unified treatment of the models and statistical methods used to analyze lifetime data. Equally useful as a reference for individuals interested in the analysis of lifetime data and as a text for advanced students, Statistical Models and Methods for Lifetime Data, Second Edition provides broad coverage of the area without concentrating on any single field of application. Extensive illustrations and examples drawn from engineering and the biomedical sciences provide readers with a clear understanding of key concepts. New and expanded coverage in this edition includes: * Observation schemes for lifetime data * Multiple failure modes * Counting process-martingale tools * Both special lifetime data and general optimization software * Mixture models * Treatment of interval-censored and truncated data * Multivariate lifetimes and event history models * Resampling and simulation methodology
The Wiley-Interscience Paperback Series consists of selected books that have been made more accessible to consumers in an effort to increase global appeal and general circulation. With these new unabridged softcover volumes, Wiley hopes to extend the lives of these works by making them available to future generations of statisticians, mathematicians, and scientists. "The book is a valuable completion of the literature in this field. It is written in an ambitious mathematical style and can be recommended to statisticians as well as biostatisticians." -Biometrische Zeitschrift "Not many books manage to combine convincingly topics from probability theory over mathematical statistics to applied statistics. This is one of them. The book has other strong points to recommend it: it is written with meticulous care, in a lucid style, general results being illustrated by examples from statistical theory and practice, and a bunch of exercises serve to further elucidate and elaborate on the text." -Mathematical Reviews "This book gives a thorough introduction to martingale and counting process methods in survival analysis thereby filling a gap in the literature." -Zentralblatt f?r Mathematik und ihre Grenzgebiete/Mathematics Abstracts "The authors have performed a valuable service to researchers in providing this material in [a] self-contained and accessible form. . . This text [is] essential reading for the probabilist or mathematical statistician working in the area of survival analysis." -Short Book Reviews, International Statistical Institute Counting Processes and Survival Analysis explores the martingale approach to the statistical analysis of counting processes, with an emphasis on the application of those methods to censored failure time data. This approach has proven remarkably successful in yielding results about statistical methods for many problems arising in censored data. A thorough treatment of the calculus of martingales as well as the most important applications of these methods to censored data is offered. Additionally, the book examines classical problems in asymptotic distribution theory for counting process methods and newer methods for graphical analysis and diagnostics of censored data. Exercises are included to provide practice in applying martingale methods and insight into the calculus itself.

In survival data analysis, covariates are often subject to measurement error. A naive analysis with measurement error ignored commonly leads to biased estimation of parameters of survival models. Measurement error also causes efficiency loss for detecting possible association between risk factors and time to event. Furthermore, it induces difficulty on model building and model checking, because the presence of measurement error frequently masks true underlying patterns of data. Although there has been a large body of literature to handle error-prone survival data since the paper by Prentice (1982), many important issues still remain unexplored in this area. This thesis focuses on several important issues of survival analysis with covariate measurement error. One problem that has received little attention is on misspecification of measurement error models. In this thesis, we investigate this important problem with the attention particularly paid to error-contaminated survival data under the Cox model. In particular, we conduct bias analysis which offers a way to unify many existing methods of survival data with measurement error, and study the impact of misspecifying the error models in survival data analysis. A simple expression is obtained to quantify the bias of "working" estimators derived under misspecified error models. Consistent estimators under general error models are derived based on this simple expression. Furthermore, we study hypothesis testing with both model misspecification and measurement error present. A second problem of our interest is about the validity of survival model assumptions when measurement error is involved. In the literature, a large number of methods have been developed to correct for measurement error effects, and these methods basically assume the survival model to be the Cox model. When the Cox model or the error model assumptions fail to hold, existing methods would break down. In this thesis, we address the issue of checking the Cox model assumptions with measurement error. We propose valid goodness of fit tests for survival data with covariate measurement error. This research offers us an important addition to the literature of survival data with measurement error. Our third topic concerns survival data analysis under additive hazards models with covariate measurement error. The additive hazards model is a useful and important alternative to the Cox model. However, this model is relatively less studied for situations where covariates are measured with error. In this thesis, we make important contributions to this topic. Specifically, we explore asymptotic bias induced from ignoring measurement error. A number of inference methods are developed to correct for error effects. The validity of the proposed methods is justified both theoretically and empirically. We investigate issues of model checking and model misspecification as well. In many studies, collection of data often includes a large number of variables in which many of them are unimportant in explaining survival of an individual. An important task is thus to identify relevant risk factors which are linked to the hazards of subjects. Although there is work on variable selection for survival data analysis, the available methods typically require all variables be precisely measured. This requirement is, however, often infeasible. More challengingly, in some studies, the dimension of the risk factors can be quite large or even much larger than the size of subjects. Our fourth topic concerns about estimation and variable selection for survival data with high dimensional mismeasured covariates. We propose corrected penalized methods. Our methods can adjust for measurement error effects, and perform estimation and variable selection simultaneously. Our research on this topic closes multiple gaps among the areas of survival analysis, measurement error and variable selection.

This dissertation, "Semiparametric Analysis of Interval Censored Survival Data" by Yongxian, Long, ???, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. DOI: 10.5353/th_b4554115 Subjects: Survival analysis (Biometry) Medicine - Research - Statistical methods Parameter estimation

This book contains extended versions of 34 carefully selected and reviewed papers presented at the Third International Conference on Mathematical Methods in Reliability, held in Trondheim, Norway in 2002. It provides a broad overview of current research activities in reliability theory and its applications. There are chapters on reliability modelling, network and system reliability, reliability optimization, survival analysis, degradation and maintenance modelling, and software reliability. The authors are all leading experts in the field. A particular feature of the book is a historical review by Professor Richard E Barlow, well known for his pioneering research on reliability. The list of authors also includes the plenary session speakers Odd O Aalen, Philip J Boland, Sallie A Keller-McNulty, and Nozer Singpurwalla. Contents: Reliability Theory in the Past and Present Centuries; General Aspects of Reliability Modelling; Reliability of Networks and Systems; Stochastic Modelling and Optimization in Reliability; Modelling in Survival and Reliability Analysis; Statistical Methods for Degradation Data; Statistical Methods for Maintained Systems; Statistical Inference in Survival Analysis; Software Reliability Methods. Readership: Graduate students, academics and professionals in probability & statistics, reliability analysis, survival analysis, industrial engineering, software engineering, operations research and applied mathematics research.

This book introduces readers to advanced statistical methods for analyzing survival data involving correlated endpoints. In particular, it describes statistical methods for applying Cox regression to two correlated endpoints by accounting for dependence between the endpoints with the aid of copulas. The practical advantages of employing copula-based models in medical research are explained on the basis of case studies. In addition, the book focuses on clustered survival data, especially data arising from meta-analysis and multicenter analysis. Consequently, the statistical approaches presented here employ a frailty term for heterogeneity modeling. This brings the joint frailty-copula model, which incorporates a frailty term and a copula, into a statistical model. The book also discusses advanced techniques for dealing with high-dimensional gene expressions and developing personalized dynamic prediction tools under the joint frailty-copula model. To help readers apply the statistical methods to real-world data, the book provides case studies using the authors' original R software package (freely available in CRAN). The emphasis is on clinical survival data, involving time-to-tumor progression and overall survival, collected on cancer patients. Hence, the book offers an essential reference guide for medical statisticians and provides researchers with advanced, innovative statistical tools. The book also provides a concise introduction to basic multivariate survival models.

Survival analysis deals with the distribution of life times, essentially the times from an initiating event such as birth or the start of a job to some terminal event such as death or pension. This book, originally published in 1980, surveys and analyzes methods that use survival measurements and concepts, and helps readers apply the appropriate method for a given situation. Four broad sections cover introductions to data, univariate survival function, multiple-failure data, and advanced topics.

This book is an accessible, practical and comprehensive guide for researchers from multiple disciplines including biomedical, epidemiology, engineering and the social sciences. Written for accessibility, this book will appeal to students and researchers who want to understand the basics of survival and event history analysis and apply these methods without getting entangled in mathematical and theoretical technicalities. Inside, readers are offered a blueprint for their entire research project from data preparation to model selection and diagnostics. Engaging, easy to read, functional and packed with enlightening examples, 'hands-on' exercises, conversations with key scholars and resources for both students and instructors, this text allows researchers to quickly master advanced statistical techniques. It is written from the perspective of the 'user', making it suitable as both a self-learning tool and graduate-level textbook. Also included are up-to-date innovations in the field, including advancements in the assessment of model fit, unobserved heterogeneity, recurrent events and multilevel event history models. Practical instructions

are also included for using the statistical programs of R, STATA and SPSS, enabling readers to replicate the examples described in the text.
Third Edition brings the text up to date with new material and updated references. New content includes an introduction to left and interval censored data; the log-logistic distribution; estimation procedures for left and interval censored data; parametric methods iwth covariates; Cox's proportional hazards model (including stratification and time-dependent covariates); and multiple responses to the logistic regression model. Coverage of graphical methods has been deleted. Large data sets are provided on an FTP site for readers' convenience. Bibliographic remarks conclude each chapter.
Statistical methods have become an increasingly important and integral part of research in the health sciences. Many sophisticated methodologies have been developed for specific applications and problems. This self-contained comprehensive volume covers a wide range of topics pertaining to new statistical methods in the health sciences, including epidemiology, pharmacovigilance, quality of life, survival analysis, and genomics. The book will serve the health science community as well as practitioners, researchers, and graduate students in applied probability, statistics, and biostatistics.