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Descrizione fisica	1 online resource (242 p.)
Collana	Statistics in practice
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Soggetti	Competing risks Electronic books.
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 209-213) and index.
Nota di contenuto	Competing Risks; Contents; Preface; Acknowledgements; 1 Introduction; 1.1 Historical notes; 1.2 Defining competing risks; 1.3 Use of the Kaplan-Meier method in the presence of competing risks; 1.4 Testing in the competing risk framework; 1.5 Sample size calculation; 1.6 Examples; 1.6.1 Tamoxifen trial; 1.6.2 Hypoxia study; 1.6.3 Follicular cell lymphoma study; 1.6.4 Bone marrow transplant study; 1.6.5 Hodgkin's disease study; 2 Survival - basic concepts; 2.1 Introduction; 2.2 Definitions and background formulae; 2.2.1 Introduction; 2.2.2 Basic mathematical formulae 2.2.3 Common parametric distributions 2.2.4 Censoring and assumptions; 2.3 Estimation and hypothesis testing; 2.3.1 Estimating the hazard and survivor functions; 2.3.2 Nonparametric testing: log-rank and Wilcoxon tests; 2.3.3 Proportional hazards model; 2.4 Software for survival analysis; 2.5 Closing remarks; 3 Competing risks - definitions; 3.1 Recognizing competing risks; 3.1.1 Practical approaches; 3.1.2 Common endpoints in medical research; 3.2 Two mathematical definitions; 3.2.1 Competing risks as bivariate random

variable; 3.2.2 Competing risks as latent failure times  
3.3 Fundamental concepts  
3.3.1 Competing risks as bivariate random variable; 3.3.2 Competing risks as latent failure times; 3.3.3 Discussion of the two approaches; 3.4 Closing remarks; 4 Descriptive methods for competing risks data; 4.1 Product-limit estimator and competing risks; 4.2 Cumulative incidence function; 4.2.1 Heuristic estimation of the CIF; 4.2.2 Nonparametric maximum likelihood estimation of the CIF; 4.2.3 Calculating the CIF estimator; 4.2.4 Variance and confidence interval for the CIF estimator; 4.3 Software and examples; 4.3.1 Using R; 4.3.2 Using SAS; 4.4 Closing remarks  
5 Testing a covariate  
5.1 Introduction; 5.2 Testing a covariate; 5.2.1 Gray's method; 5.2.2 Pepe and Mori's method; 5.3 Software and examples; 5.3.1 Using R; 5.3.2 Using SAS; 5.4 Closing remarks; 6 Modelling in the presence of competing risks; 6.1 Introduction; 6.2 Modelling the hazard of the cumulative incidence function; 6.2.1 Theoretical details; 6.2.2 Model-based estimation of the CIF; 6.2.3 Using R; 6.3 Cox model and competing risks; 6.4 Checking the model assumptions; 6.4.1 Proportionality of the cause-specific hazards; 6.4.2 Proportionality of the hazards of the CIF  
6.4.3 Linearity assumption  
6.5 Closing remarks; 7 Calculating the power in the presence of competing risks; 7.1 Introduction; 7.2 Sample size calculation when competing risks are not present; 7.3 Calculating power in the presence of competing risks; 7.3.1 General formulae; 7.3.2 Comparing cause-specific hazards; 7.3.3 Comparing hazards of the subdistributions; 7.3.4 Probability of event when the exponential distribution is not a valid assumption; 7.4 Examples; 7.4.1 Introduction; 7.4.2 Comparing the cause-specific hazard; 7.4.3 Comparing the hazard of the subdistribution; 7.5 Closing remarks  
8 Other issues in competing risks

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## Sommario/riassunto

The need to understand, interpret and analyse competing risk data is key to many areas of science, particularly medical research. There is a real need for a book that presents an overview of methodology used in the interpretation and analysis of competing risks, with a focus on practical applications to medical problems, and incorporating modern techniques. This book fills that need by presenting the most up-to-date methodology, in a way that can be readily understood, and applied, by the practitioner.

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