
Preface

In the continuous development of statistics, models for the analysis of longitudinal data took a particularly important place, especially in biostatistics. The Biostatistics team of Bordeaux within the Public Health Institute (ISPED) and successive INSERM units (currently Research Center of Epidemiology and Biostatistics) contributed to this development in terms of research and teaching. This book aims at describing the methods available to date with a pedagogical concern and dissemination among applied statisticians. We hope it will be a tool for teaching biostatistics at the master's degree level, a reference for PhD students in biostatistics or epidemiology, and will also be useful to statisticians engaged in data analysis of time-dependent data. This book is not an encyclopedia covering any topic in statistics or even in biostatistics, an ambition that could not be achieved. With the exception of a chapter summarizing the main results of statistical inference, the book focuses on models for longitudinal data at large, that is to say, repeated measures of quantitative or qualitative variables and events history (including survival and multistate models), and a chapter about the dynamic approach to causal inference.

The work is accompanied by the development of a set of software that will allow applying most of the advanced methods such as multistate models and joint models. Most of the methods may be applied using the SAS or R software.

One feature of this book is that it is a collective work, the fruit of research and teaching experience of a team whose members have worked together for years. With this shared experience of the eight authors, the book is homogeneous both in general vision and in notations.