

SAS Survival Analysis Techniques for Medical Research, Second

Edition, by Alan B. Cantor, Cary, NC , SAS Institute Inc. 2003, ISBN 1-59047-135-0, viii+ 230pp., \$39.95

Centered on major SAS survival analysis procedures, such as nonparametric PROC LIFETEST and semi-parametric PROC PHREG., Alan B. Cantor built an equivalent of the introduction to survival analysis in this book. The techniques have heavily been used in the medical research to study the effectiveness of treatments by comparing survival functions of the new treatment with the baseline or known survival curves.

This book is divided into five chapters which the first three chapters deal with the issues related to the nonparametric estimation of survival curves, such as Kaplan-Meier and Actuarial Life Table. The basic concept of survival function and hazard function are introduced in Chapter 1. Chapters 4 and 5 deal with the Proportional Hazards Regression and parametric methods of estimating survival functions. The appendices at the end of the book discuss some elementary concepts in mathematics, statistics and SAS procedures.

This book provides enough details about each procedure discussed, such as the model assumptions, the extended concepts for which the assumptions can be either loosened or changed, and always followed by examples of how the actual procedures are run in the SAS program. Taking the Cox Proportional Hazards Regression Method as an example, the basic model assumption of constant hazard ratio is postulated, then followed by the discussions of the meaning and the limitation of this assumption and with a treatment of how a partial likelihood function can be constructed as a conditional probability of the death of the patient whose observation time was t_i given that there was a death among those observed for at least that long.

The survival analysis techniques in this book can be applied to reliability studies in the engineering development also. The major difference between the medical research and engineering study is that the subjects under study in the medical research are human and thus the ethics and the control treatment of the subjects are more difficult in the medical research. The useful death event data in the medical study can not be accelerated for the obvious ethical reason. On the other hand, in the engineering study an accelerated test can be used to reduce the study time by subjecting the testing to a higher than normal stress for producing failure events.

This book is to serve as the jackknife of survival analysis for the beginner, the book is self contained with the necessary basic mathematical, statistical and SAS programming information to understand how is the application being used in the medical studies. If for nothing else, this book can be used as a neat SAS survival analysis procedure guide.

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