Survival Analysis Using the Proportional Hazard Model

The aim of this course is to help you increase your skills in using survival analysis with SAS. It is assumed that you have had at least a one quarter/semester course in regression (linear models) or a general statistical methods course that covers simple and multiple regressions and have access to a survival analysis textbook that explains the theoretical background of the materials covered in this course. Our course materials also assume you are familiar with using SAS, for example that you have taken the SAS classes or have equivalent knowledge of SAS.

This course is discusses survival analysis concepts with an emphasis on health care problems. The topics include performing explanatory data analysis using survival curves, fitting the proportional hazards model, handling time-dependent variables, and assessing the fit of the model. The more advanced topics include multiple and repeated event.

Audience
This course is designed for biostatiscian, epidemiologists, social scientists, and physical scientists who are modeling time-to-event data. The most part of the course is in Swedish (if there is no foreigner audience present at lecture). All course materials are in Swedish except from SAS program-code and comments to these codes.

Prerequisites
Before attending this course, you should

- Be able to create SAS data sets and manipulate data. You can gain this experience from the SAS programming II. Manipulation Data with the DATA Step course.
- Have completed a statistics course such as the Statistics I: Introduction to ANOVA, Regression, and Logistic Regression or Statistics II: ANOVA and Regression Course.
- Be able to create SAS data sets and manipulate data.

Course Contents:
Day 1 Exploratory data analysis, Cox proportional hazard model
Introduction to survival analysis, life table, Kaplan-Meier and comparison of survival. Introduction, estimating cox-regression models and validating the assumption of the Cox proportional hazard model

Day2 Advanced topics
Fitting cox proportional hazard models for repeated events
Analysis of tied or discrete data, data with time-dependent covariates
Guideline and course evaluation. (macro program)
Software Addressed
This course addresses the following software product(s): SAS/STATA, SAS/GRAPH. This course is offered on the Windows platform by SAS 9.1 only.

Date and place
11-12 December 2008
SAS Institute
Stockholm-Solna,

Course Materials
- *Survival Analysis Using the SAS System: A Practical Guide* by Paul D. Allison
- *Course compendium* (in Swedish), statistical theories and exercise by SAS, more advanced topic and tips by teachers at SAS, 2007 Stockholm

References
- *SAS(R) Survival Analysis Techniques for Medical Research*, Second Edition by Dr. Alan B. Cantor Copyright(c) 2003 by SAS Institute Inc., Cary, NC, USA
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