

Spring 2012
Statistics 678: Survival Analysis

I. General Information

Lecture: MW 4:00-5:15 pm, GMCS 325
Course web pages: rohan.sdsu.edu/~jjfan/sta678
and <http://blackboard.sdsu.edu>

Instructor: Juanjuan Fan
Office: GMCS 519
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Office Hours: MW 11:00-11:50 am, GMCS 519

Textbook: *Survival Analysis: Techniques for Censored and Truncated Data, 2nd Ed.*
by JP Klein and ML Moeschberger (2003), Springer

References:

1. *Survival Analysis: A Self-Learning Text, 2nd Ed.*
by DG Kleinbaum and M Klein (2005), Springer
2. *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*, by JD Singer and JB Willett (2003), Oxford University Press
3. *Survival Analysis Using SAS: A Practical Guide, 2nd Ed.*
by PD Allison (2010), SAS Publishing

Prerequisites: Stat 551B or 670B

Grading: Homework: 10%
Two midterms: 50% (25% each)
Class participation and presentation: 15%
Data analysis project: 25%

Homework, exams and project:

Late assignments will not be accepted.
NO early or makeup exams are given - no exceptions.

II. Other Information

1. Homework assignments and solutions will be posted on blackboard.
2. There will be two in-class midterm exams on Wednesdays, February 29 and April 18.

3. You will be asked to do a major data analysis project (in lieu of a final exam). You will be asked to present your findings during the last two weeks of classes. In addition, a written report will be due by Monday, May 14 at 5pm.
4. You can choose to use any statistical package available for analyzing censored survival data. However, help will be available only if you use R. A R introductory session will be held in GMCS 422 and relevant R commands will be taught in class.
5. Due to concerns of computer viruses, I ask that you hand in all your assignments as a hard copy. No electronic copies will be accepted.

IV. Tentative Course Content

1. Introduction: overview, survival data, functions in survival analysis, censoring mechanisms Chapters 1-2
2. Nonparametric estimates and inferences: Kaplan-Meier estimator, Nelson-Aalen estimator, logrank, stratified logrank and trend tests Chapters 4 & 7
3. The Cox proportional hazards model: partial likelihood, Wald, score and likelihood ratio tests, Breslow estimator, stratification Chapters 8-9
4. Cox regression model diagnostics: residuals, functional forms, outlying and influential cases, checking the PH assumption, model validation Chapter 11
5. Parametric regression models Chapter 12
6. Multivariate survival analysis: marginal approach, frailty models, counting process formulation, time-dependent covariates Chapter 13