

Math 659: Survival Analysis

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General Information

- ▶ Introduction
- ▶ Go through the syllabus and other important information about the course
- ▶ Big picture of the course
- ▶ Office: 210B Cullimore Hall
- ▶ Contact information: most convenient way is email
- ▶ Office hours: T 2:00 pm - 3:00 pm, F 11:30 am - 12:30 pm or by appointment

- ▶ Textbook: John P. Klein and Melvin L. Moeschberger (2003). *Survival Analysis: Techniques for Censored and Truncated Data (2nd Edition)*, Springer.
- ▶ Other references
 - ▶ David G. Kleinbaum and Michael Kline (2005). *Survival Analysis: A Self-Learning Text (2nd Ed.)*, Springer.
 - ▶ Mara Tableman and Jong Sung Kim (2003). *Survival Analysis Using S: Analysis of Time-to-Event Data*, Chapman and Hall/CRC.
 - ▶ Paul D. Allison (2010). *Survival Analysis Using SAS: A Practical Guide (2nd Ed.)*, SAS publishing.
 - ▶ T. Therneau and P. Grambsch (2000). *Modeling Survival Data: Extending the Cox Model*, Springer.
 - ▶ J. D. Kalbfleisch and R. L. Prentice (2002). *The Statistical Analysis of Failure Time Data*, Wiley.

- ▶ Email list for the class, to deliver syllabus, lecture slides, homework/solutions, exam/solutions and some important notifications.
- ▶ Computing: We will use **R**.
- ▶ Will talk more about computing when we need it.

Big Picture of the Course

- ▶ Part I:
 - ▶ Basic quantities and models, censoring and truncation
 - ▶ Estimation and confidence intervals
 - ▶ Hypothesis tests
- ▶ Part II:
 - ▶ Cox proportional hazard regression, partial likelihood
 - ▶ Refinements of Cox proportional hazards model:
time-dependent covariates and stratified proportional hazards model
 - ▶ Regression diagnostics for assessing the fit of a Cox model, determining the functional form of a covariate, graphical checks of the proportional hazards assumption, and checking the influence of individual observations
- ▶ Midterm (Part I)
- ▶ Project (Parts I – II)
- ▶ Final (Parts I – II)

Course Evaluation

- ▶ Letter grade will be given based on
 $\text{Homework}(20\%) + \text{Midterm}(25\%) + \text{Project}(20\%) + \text{Final}(35\%)$
- ▶ Homework: bi-weekly. 6 homework in total.
- ▶ Midterm: one and a half hour, in-class, closed book.
Tentatively scheduled at 10/20
- ▶ Final: two hour, in-class, open book. Will be on 12/15.

Project

- ▶ Find an interesting dataset yourself, real data
- ▶ Time-to-event data with explanatory variable(s)
- ▶ Interesting and complicated to some extent
- ▶ Write a report, 8-10 pages
- ▶ Give a presentation in front of the class
- ▶ A group of 1-2 people is recommend

Any questions/comments?