

MATH 7762/8762 - Survival Analysis

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Fall, 2017

Time: MW 2:20pm - 3:45pm pm (DH203)

Office Hours: MW 10am-11:30am (DH219) or by appointment.

1. Brief introduction to survival analysis:
 - (a) Major characteristics: censored data, various type of censored data, survival function, hazard rate, cumulative hazard rate.
 - (b) Functions and characterizations of survival time and their relationships
2. Examples and applications of survival data analysis
3. Nonparametric methods of estimating survival functions: product-limit estimates (Kaplan-Meier Estimator) of survival function, life-table analysis.
4. Nonparametric methods for comparing survival distributions: comparison of two survival distributions, Mantel-Haenszel test.
5. Popular parametric survival distributions: Exponential distribution, Weibull distribution, Lognormal distribution, Gamma and generalized gamma distributions, Log-Logistic distribution
6. Estimation and testing procedures for parametric survival distributions:
 - (a) without covariates
 - (b) with covariates
7. Parametric methods for comparing two survival distributions
8. Identification of prognostic factors related to survival time: Cox proportional hazards model and some non-parametric models. proportional hazards model, partial likelihood function
9. Identification of risk factors related to dichotomous and polychotomous outcomes

(B) Office Hours: MW 10am-11:30am (DH 219) or by appointment. email: lihdeng@memphis.edu

(C) Textbook:

- “Statistical Methods for Survival Data Analysis”, Fourth Edition (Third Edition OK). Authors: Elisa T. Lee and John Wenyu Wang. Publisher: Wiley ISBN: 978-1-118-09502-7

(D) Grading:

- mid-term project 30 %
- final project: group project 40 %
- homework and class participation 30 %