

BIOS 680: Introductory Survival Analysis

Course Outline

| TOPICS | Reading |
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| 1. INTRODUCTION TO SURVIVAL ANALYSIS AND TIME-TO-EVENT DATA | Chapter 1 |
| 2. PARAMETRIC METHODS: ONE SAMPLE Failure Time Distributions Likelihood Theory | Chapters 5.1-5.3 Chapter 6.1 |
| 3. ONE, TWO & K-SAMPLE NONPARAMETRIC METHODS FOR CENSORED SURVIVAL DATA Product-limit Estimator Nelson-Aalen Cumulative Hazard Estimator Kernel Hazard Function Estimator Life Table Method Logrank, Gehan/Breslow and Peto/Prentice Tests Logrank Test for Trend | Chapter 2 |
| 4. ASSOCIATION OF EXPLANATORY VARIABLES WITH SURVIVAL TIMES USING PARAMETRIC MODELS Accelerated Life Model Proportional Hazards Model | Chapters 5, 6, 7 |
| 5. INTRODUCTION TO THE COX REGRESSION MODEL Form of the Model Interpretation of Parameters Estimators, Confidence Intervals and Test Statistics Relationship to K-Sample Methods Stratification Survival Curve and Hazard Function Estimation Tied Data Goodness of Fit Tests and Regression Diagnostics Time Dependent Covariates | Chapters 3, 4, 8, 11 |

6. ADDITIONAL TOPICS

Chapters 9, 10, 12-15

Truncation
Power and Sample Size
Competing Risks
Interval Censored Survival Data
Frailty Models
Recurrent Events
Dependent Censoring