Applied Survival Analysis
VA/UW Summer Epidemiology
Seattle, 2005

Lecture: M-Th 2:00pm – 4:30pm

Instructor:

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Course Objectives:
This course introduces the principles and methods of statistical inference that are commonly used for the epidemiologic analysis of survival data. The major topics covered are: Kaplan-Meier and log-rank methods; and Cox regression.

Upon entering this course the student is expected to be able to:

- (*optional*) use a statistical package (STATA) to enter data and calculate summary statistics.
- perform two-sample hypothesis tests for binary data (proportions).
- compute and interpret confidence intervals for one-sample and two-sample situations.
- perform "multivariable" linear regression and interpret model coefficients, compute confidence intervals for model coefficients, and test hypotheses using the partial F test.

Upon completing this course students can expect to be able to:

- compute and interpret the product limit estimate (Kaplan-Meier) estimate of survival and associated confidence intervals.
- perform and interpret the log-rank test for differences between survival curves with right censored survival data.
- perform Cox regression to estimate proportional hazards model coefficients, interpret coefficient estimates and confidence intervals, and test hypotheses that one or more coefficients in the regression model are zero.
- interpret and critique the results of application of these statistical techniques as found in the health sciences literature.

Lectures:
Lecture notes will be distributed prior to the course, and made available on the course web page.

Exercise Sets:
Daily exercise sets will be assigned. Exercises are designed to provide practice using the methods that are discussed in the lecture.

Text:

$\boxed{\star}$ *Survival Analysis* , D.G. Kleinbaum, Springer. (optional)

Statistical Computing:
STATA (student version available – see web page) either version 7.0 or 8.0 should be adequate.

Computer Lab:
Access is provided to the PCs in the Micro Computing Laboratory in the Health Sciences Library. The lab is accessible whenever the library is open, except the lab closes one-half hour earlier than the library.

Course Web Page:
A course web page will be maintained to provide access to data sets and other course materials.

Office Hours:

Patrick Heagerty:

- Tuesday 4:30am - 5:30am, F-667
- Wednesday 4:30am - 5:30am, F-667
- ◦ other times by appointment

Tentative Course Outline

Date	**Topics**	**Reading**	**Exercises**
M 6/20	Introduction / Motivation / Regression Survival Data / Kaplan-Meier Estimation	K: chapter 1, 2	 STATA exercises
Tu 6/21	Testing Survival Curves Hazard Functions / Cox Regn Intro	K: chapter 3, 4	 STATA exercises
W 6/22	Cox Regression: Multiple predictors Choosing covariates	K: chapter 5	 STATA exercises
Th 6/23	Model Checking / Stratification Case study	K: chapter 6	