Lifetime Data Analysis
BIST 0616
Spring Semester, 2014, SPH
Mondays, 6:10-9:00 pm, Piscataway, NJ, crn 57038
Rutgers School of Public Health

TA: TBD
Dirk F Moore, PhD
Department of Biostatistics
Office Hours: Mondays 5–6 pm.
732-235-9748
Rutgers-SPH Room 234
dirk.moore@rutgers.edu

Course Description: This is a course in survival analysis that emphasizes concepts and applications used in public health studies. The product limit estimator, the Cox proportional hazard model, and parametric models will be discussed. Censoring and truncation patterns will also be studied. Model building and checking will be discussed throughout.

Prerequisites: Introductory biostatistics, including hypothesis testing, confidence intervals, and linear regression; basic probability theory, including conditional probability, probability density functions, cumulative distribution functions, the binomial, Poisson, normal, and chi-square distributions; basic calculus, including derivatives, integrals, limits, function maximization; basic SAS programming; likelihood theory is desirable.


Online notes: We will be using Moodle to distribute datasets, lecture notes, other handouts, and to post grades.

Course Objectives: Since this course is an intermediate-level course on survival analysis methods, some statistical theory is necessary to be covered in the lectures. However, the emphasis will be on the applications and interpretations of the models.

Grading:
Midterm exam 30%; Final exam 30%; Homework 15%; Quizzes 10%; Project 15%.

Schedule:
Monday January 27, 2014 – First class
Monday March 10, 2014 – Midterm exam (tentative)
Monday March 17, 2014 – No class (Spring Break)
Monday April 21, 2014 – No class
Monday May 5, 2014 - Last class
Monday May 12, 2014 – Snow day, if needed

Syllabus/Outline (approximate schedule):

Week 2. Censoring and truncation. Product limit estimator and parametric models.
    Maximum likelihood primer.
Week 3. Comparing survival curves
Week 4. The Cox proportional hazards model
Week 5. Model building and diagnostics.
Week 7. Mid-term.
Week 8. Partial likelihood and time-dependent variables.
Week 9. Censoring and truncation patterns.
Week 12. Power, sample size, survival trees, random forests.
Week 13. Projects.

Grading policy:

1. On all homework assignments/problem sets, students are encouraged to discuss with one another, but work should be carried out and written up independently.
2. It’s the students’ responsibility to make their papers legible. Unreadable work will NOT be graded.
3. The students are asked to answer each question as accurately and concisely as possible. If it is necessary to attach the computer output with the homework assignment, ONLY the “essential” segments are required. Do NOT submit the complete output section or the log file.
4. Unless you notify the instructor beforehand, late homework will NOT be graded.

HONOR CODE

Each student bears a fundamental responsibility for maintaining academic integrity and intellectual honesty in his or her graduate work. For example, all students are expected to observe the generally accepted principles of scholarly work, to submit their own rather than another’s work, to refrain from falsifying data, and to refrain from receiving and/or giving aid on examinations or other assigned work requiring independent effort. In submitting written material, the writer takes full responsibility for the work as a whole and implies that, except as properly noted by use of quotation marks, footnotes, etc., both the ideas and the words used are his or her own. In addition to maintaining personal academic integrity, each student is expected to contribute to the academic integrity of the school community by not facilitating inappropriate use of her/his own work by others and by reporting acts of academic dishonesty by others to an appropriate school authority. It should be clearly understood that plagiarism, cheating, or other forms of academic dishonesty will not be tolerated and can lead to sanctions up to and including separation from the UMDNJ-School of Public Health.