264B
Regression with Applications in Marketing and Finance
Professor Peter E. Rossi

Course Description

Regression analysis is one of the most powerful statistical tools for exploring relationships between two or more variables. Many applications of regression analysis focus on conditional prediction, i.e. making predictions of some target variable given a set of predictor variables. Most business decisions involve some non-trivial component of prediction. Examples considered in the course include models of sales response and marketing mix and property valuation. In other contexts, regression models are useful to describe a relationship and quantify the effects of one variable on another. Examples include the pricing of risk and portfolio performance evaluation.

The course provides a comprehensive treatment that is designed to equip students with the necessary skills to highly proficient at regression analysis. The class will be very data intensive and use examples from Marketing and Finance to illustrate each of the principles.

We will use the R computing environment. R is a powerful statistical and graphical environment that has been adopted by many leading edge companies. R is free and available for all computing environments. No prior knowledge of R is required.

Course Evaluation

8 problem sets, a midterm, and a final will be used to assign grades for the class. The assignments are designed to reinforce concepts covered in the class lectures.

Course Format

Classes will be mostly lecture with intensive use of computer examples. Students are highly encouraged to bring laptops and follow along with the lecture. No textbook will be required; instead students will review the instructors slides which will be available free of charge on the course website.

Prerequisites

It is assumed that students have a thorough grasp of key concepts from basic statistics. These concepts are: Random variables, normal and t distributions, mean and variance of a linear combination of random variables, hypothesis-testing including the concepts of significance level and p-value, t-tests and confidence intervals, sampling error, and the standard error of the mean. These concepts are treated in Data and Decisions.

Mathematical prerequisites include summation notation and familiarity with logarithmic and exponential functions.