Module 1: Introduction to Simple Linear Regression

Live Sessions
July 13: 9:00 - 9:50 am EDT (Blue), 10:00 - 10:50 am EDT (Orange)

Office Hours
Tue & Thu: 9:00 - 9:50 am EDT (Blue), 10:00 - 10:50 am EDT (Orange).

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MODULE WELCOME

Linear regression models are used to explore the relationship between variables as well as make predictions. By the end of the course, you will be able to appropriately select from and apply regression models as a way to examine relationships between multiple variables. You also will be able to interpret the results derived from such implementations. To do this, we will start module 1 by reviewing the simple linear regression model. Simple linear regression uses the term "simple," because it concerns the study of only one predictor variable with one response variable. In contrast, multiple linear regression, which we will study in module 4, uses the term "multiple," because it concerns the study of two or more predictor variables with one response variable. In this module, we will also explore the Analysis of Variance (ANOVA) approach to the regression model, which consists of calculations that provide information about levels of variability within a regression model and forms a basis for tests of significance.

ESSENTIAL QUESTIONS

- *How is the simple linear regression model set up?*
- *How do we use a simple linear regression model to assess the relationship between two variables?*
- *How do we assess the fit of a simple linear regression model for our data?*

LEARNING OBJECTIVES

1. Describe the setup of the simple linear regression model.
2. Use a simple linear regression model to answer questions regarding relationships between two quantitative variables and make predictions.
3. Use scatterplots and measures such as correlation and R-squared to assess the appropriateness of a simple linear regression model for a given data set.

ASSIGNED RESOURCES

- *Introduction to Linear Regression Analysis,* Sections 2.1 to 2.2.3, 2.3.3, and 2.6.
- Module 1 R tutorial, data set: purity.txt, and R-code: tutorial_module 1.R
- Module 1 guided question set and data set: bp.txt

Optional: Visit the Module 1 Discussion Forum to communicate with one another about the assigned readings and resources or to discuss any other topics of interest with your instructor or fellow students.

Module 1 General Discussion

MODULE OVERVIEW