Module 9: Logistic Regression

Live Sessions	Office Hours	
July 31: 9:00 - 9:50 am EDT (Blue), 10:00 - 10:50 am EDT (Orange)	Tue & Thu: 9:00 - 9:50 am EDT (Blue), 10:00 - 10:50 am EDT (Orange).	 Dr. Woo yjw4b@virginia.edu

MODULE WELCOME

Up to this point, you have learned about linear regression. Linear regression concerns the study of a quantitative response variable and at least one predictor. However, in many situations the response variable is binary rather than quantitative. Binary variables are variables that take on only two outcomes, which are not numerical. Some examples are pass or fail, male or female, and dead or alive. Binary variables lead us to a regression analysis called logistic regression. Logistic regression allows us to predict a binary outcome from one or more predictors.

This module introduces the logistic regression model. In this module, you will learn how to estimate and interpret the coefficients of a logistic regression model, perform various inferential procedures to answer various questions of interest, and assess the fit of the model.

In the next module, you will learn about the multinomial logistic regression model. This model is used when the response variable is categorical. Recall that categorical variables are those that fall in a particular category. For example, hair color, college major, and dog breed are all categorical variables. A binary variable is a categorical variable that can take on exactly two values.

ESSENTIAL QUESTIONS

- *How do we interpret the estimated coefficients in a logistic regression model?*
- *How do we decide if certain predictors need to be added to an existing logistic regression model?*
- *How do we assess if our data fits a logistic regression model?*

LEARNING OBJECTIVES

1. Given a data set, fit a logistic regression model appropriately and use the model to answer relevant questions of interest.

ASSIGNED RESOURCES

- *Introduction to Linear Regression Analysis*, Sections 13.2.1 to 13.2.4
- Module 9 R tutorial, data set: titanic.txt, data set: dose.txt, and R-code: tutorial_module 9.R
- Module 9 guided question set and data set: wcgs.csv

OPTIONAL

Visit the Module 9 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 9 General Discussion

MODULE OVERVIEW