STS435: Introduction to Mathematical Statistics

Course Description, Spring 2024
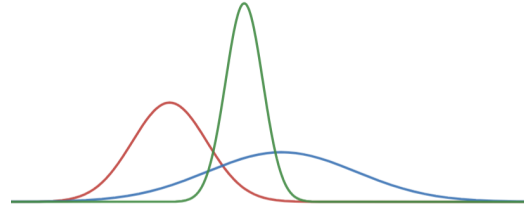

Instructor
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Class
MWF 1:00 PM - 1:50 PM, Neville 421

Course description
STS435 is an introduction to mathematical statistics. In this course, we will study statistical inference: the process of inferring properties about a population based on data. Here are some examples of questions that statistics can help us answer:

- How can we test if a new medication works by performing a trial on a small sample of the population?
- How can we use polls to form confidence intervals for the true proportion of a population that supports a particular policy?
- How can we predict the sale price of a house given parameters like its location, number of bedrooms, etc?

In this course, we will aim to understand both the theory and methods of statistics: We will use probability theory to build up the theory of why and how well statistical methods work. We will also learn how to apply statistical methods to real-world data and interpret the results, including some work with R (a programming language for statistical computing). Topics in this course include point and interval estimators, hypothesis testing, linear regression, analysis of variance, and other topics as time permits.

(Optional) Textbooks
- *Mathematical Statistics with Applications* by Wackerly, Mendenhall, and Scheaffer
- *Mathematical Statistics with Data Analysis* by John A. Rice

Credits: 3

Prerequisites: STS434 (Introduction to Probability)

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