Module 0: Review of Statistical Inference

MODULE WELCOME

In this module, you will review some key concepts associated with statistical inference: the process of estimating features of a population of interest based on a random sample. Features of a representative and large random sample are likely to be close to the features of a population, but are unlikely to be exactly the same. We will explore ways to measure how different we expect features from samples could be, as well as ascertain whether the difference could just be due to random variation or evidence that there is something more interesting that our sample is informing us. We will start by reviewing sampling distributions: how can we describe the variation associated with different samples. We will then review two big tools in inferential statistics: confidence intervals and hypothesis testing. These tools allow us to use our sample to make an inference about the population, by accounting for randomness associated with random samples.

ESSENTIAL QUESTIONS

- *How do sample means vary from random sample to random sample?*

- *How close is the sample mean from our random sample to the true population mean?*

- *If the sample mean from our random sample differs from our assumed value of the population mean, can the difference be attributed to either 1) random sampling, or 2) the assumed value of the population mean being incorrect?*

LEARNING OBJECTIVES

1. Describe the sampling distribution of the sample mean, and perform probability calculations based on the sampling distribution.

2. Construct a confidence interval for a population mean, and make conclusions about the population mean based on the confidence interval.

3. Conduct a hypothesis test for a population mean to answer questions of interest about the value of the population mean.

MODULE 0 TO-DO LIST

- View the module 0 videos.

- Complete the module 0 Practice Questions

0.1: Introduction to the lesson

0.2: Sampling Distributions

0.3: Confidence Intervals

0.4: Hypothesis Testing

0.5: Practice Questions (Ungraded)