Introduction to Statistics

Course overview

This 4-session course introduces key concepts of statistical analysis. These methods can be applied to practical settings such as: Selecting a statistical test, examining trends, exploring group differences, visualizing data, and reviewing results with clients.

Course objectives

Provide an understanding in 1) how to conduct a statistical analysis and 2) how to review the statistical results of others.

Requirements

Attendance when possible.

This course does not interfere with your work.

There are no assignments but it may help to replicate the results from the notes in your preferred stats software or Excel. The results were created in the free shiny app found on GitHub.

Schedule

WEEK 1

Distributions: Central tendency and variability

WEEK 2

Relationships in the data: Correlations and scatterplots

WEEK 3

Inference: Confidence intervals

WEEK 4

Inference: Distribution tests and power analysis

Optional readings

WEEK 1: Intro to Stats “What is statistics?”, How to Think About Stats, Chapter 1 (pp. 1-6, 8-12)

WEEK 2:

WEEK 3: Intro to Stats “Central Limit Theorem”, How to Think About Stats, Chapter 7

WEEK 4:

Books

How to Think About Statistics, 5th Edition. John L. Phillips.

Introduction to the Practice of Statistics. David Moore & George McCabe. (limited sections)

Important websites

My YouTube playlists for the: 1) Statistics course, and 2) Analysis App

<https://www.youtube.com/channel/UC4O1KRAM5_FCb2WFclVyrhw/playlists>

My GitHub site that has all files, notes, code, and example data:

<https://www.youtube.com/channel/UC4O1KRAM5_FCb2WFclVyrhw/playlists>

Choosing the right statistical test

<http://www.stat.ucla.edu/~dinov/courses_students.dir/Applets.dir/ChoiceOfTest>

with statistical software code

<https://stats.idre.ucla.edu/other/mult-pkg/whatstat/>

Data sources:

1. titanic3

<https://hbiostat.org/data/>

1. Covid-19 hospital impact time series by state

<https://healthdata.gov/Hospital/COVID-19-Reported-Patient-Impact-and-Hospital-Capa/g62h-syeh>

1. mtcars: CSV file in my github page documentation link below

<https://stat.ethz.ch/R-manual/R-devel/library/datasets/html/mtcars.html>