STA13 - Week 2 Study Objectives

You should be able to

1. Give examples of selection bias, measurement (or response) bias, and nonresponse bias. Explain how each affects your ability to generalize the results of a study to the population.
2. Describe how to perform simple random sampling with or without replacement and systematic sampling.
3. Explain the difference between strata and clusters used in stratified sampling and cluster sampling, respectively. Explain what these approaches have in common with blocking in an experimental study.
4. Determine whether a study design is observational or experimental and if a causal inference can be made. For experimental studies, be able to say if the design is single-blind, double-blind, or neither.
5. Identify possible confounding and extraneous factors in a study design. Comment on how these could be addressed through randomization, blocking, direct control, or use of a control group.
6. Give an example of a placebo and explain why it is used.
7. Compute a frequency distribution, relative frequency distribution and cumulative frequency distribution from a data set. Plot each of them.
8. Draw a barchart, piechart, dotplot or histogram of univariate data. Know which ones are appropriate for a given data type.
9. Determine from a histogram if the data distribution is symmetric (vs. left or right skewed). Comparing two histograms or a histogram and a normal curve, determine which one has heavier tails.
10. Draw a comparative barchart of multivariate categorical data.
11. Draw a scatterplot of bivariate numerical data.
12. Be able to draw conclusions from a data plot.