Students can

## From First Half of the Quarter

- differentiate categorical and numerical variables and calculate corresponding statistics such as proportion and mean.

- understand the statistics mean, proportion, standard deviation and variance

- identify the sample and population in a given news article, research study excerpt etc.

- make meaningful conclusions considering sampling design and study design.

- identify response, explanatory, and (potential) confounding variables.

## Weeks 6 - 8 Statistical Inference

- write hypotheses using words (e.g. pink cows)

- write hypotheses using notation for single proportion, difference of two proportions, single mean, difference of two means

- state the sampling distribution for $H_0$.

- decide whether data are paired, i.e. differentiate single mean vs. difference of two means.

- test hypotheses using notation for single proportion, difference of two proportions, single mean, difference of two means

- construct confidence intervals for single proportion, difference of two proportions, single mean, difference of two means

- understand different components of confidence interval construction stage (e.g. margin of error or standard error) and how each of these components contribute to confidence interval construction

- state the meaning of confidence intervals

- check conditions for using Central Limit Theorem for single proportion, difference of two proportions, single mean, difference of two means

- compare $z$ (standard normal) and $t$ distributions and write R functions for these distribution (e.g. `pnorm()`).

## Week 9 Linear Regression

- write the equation of the line using notation.

- match the R output of `lm` results with the corresponding notation (e.g. $b_0$)

- interpret the slope and interpret coefficients' estimates.

- write hypotheses for the slope and intercept coefficients and test these hypotheses based on R output of `lm` results utilizing p values.

- interpret confidence intervals for slope and intercept coefficients.

- when given appropriate information (e.g. plots) can check for conditions of linear regression.

## Go over problems

We solved the following exercises from OpenIntro. It might be worth going over them.

6.8
6.22
6.24
7.7
7.18
7.20
7.24
7.26
8.32 9.4