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.