Problem set 1

Exercises to hand in: 0.8, 0.10

For all other homework assignments, I am expecting a mixture of text, code, and output. However, this first assignment just has text. Write your answers in the spaces after the questions.

As you work, I suggested rendering your document frequently to see if you encounter errors. You need to upload the rendered PDF document of your finished homework. This means you should:

- Render your document and look at the preview to make sure it looks good
- Go to the Files tab of your RStudio and find the file that ends in .pdf (for this assignment, probably problemset1.pdf)
- Upload that PDF file to Gradescope

0.8 Predicting NFL wins

a. Identify the response variable in this model. Is it quantitative or categorical?

Quantitative Variable

b. Identify the explanatory variables in this model. Are they quantitative or categorical?

Average points a team scores per game, and points allowed per game. Both are quantitative variables.

c. According to this model, how many more wins is a team expected to achieve in a season if they increase their scoring by an average of 3 points per game?

1.5

d. According to this model, how many more wins is a team expected to achieve in a season if they decrease their points allowed by an average of 3 points per game?

0.9

e. Based on your answers to parts (c) and (d), does it seem that a team should focus more on improving its offense or improving its defense?

I think they should work on improving their defense.

f. Are the data analyzed for this study observational or experimental?

Observational Study

0.10 Measuring pumpkins

a. What is the population of interest to the farmer?

All of the pumpkins he grows.

Local grocery store.b. Is the descriptive summary computed by the farmer (91%) a statistic or a parameter? Explain.

Parameter, because the farmer is using all his pumpkins to compute the percentage for the summary.

c. What is the population of interest to the customer?

Number of pumpkin seeds inside the pumpkins at the store.

d. Is the numerical summary (123.2) a statistic or a parameter? Explain.

Statistics, because the customer only bought 20 pumpkins from the store and the numerical summary is collected from the 20 pumpkins instead of all his pumpkins.