

You may work with one other person on this assignment, submitting one report with both names, provided that both of you contribute substantially to the work.

***Which Tire?***

We collected data in class based on a well-known campus legend. The data is posted in a file called `WhichTire.txt` on our course website (under “data and applets” link). We found that 24 of 54 students in class chose the right front tire.

You will conduct a test of whether the data provide evidence that Cal Poly students tend to choose the right front tire more often than would be expected if the four tire choices were equally likely.

- a) Identify the observational units and variable in this study. Also classify the variable as categorical or quantitative. If the variable is categorical, also indicate whether it is binary.
- b) State the appropriate null and alternative hypothesis, in symbols and in words.
- c) Use software (either R or Minitab) to produce a bar graph of the student responses. Submit this graph, and comment on what it reveals.
- d) Use software (either R or Minitab) to determine the (exact binomial) p-value for the test of your hypotheses in b).
- e) Write a sentence describing what this p-value is the probability of.
- f) Write a couple of sentences summarizing the conclusion that you would draw from this analysis and also explaining the reasoning process that underlies your conclusion.
- g) Suppose that a colleague of mine conducts this same study in her class, which has exactly half as many students as our class. Suppose further that her class obtains the same proportion of students choosing the right front tire. Determine the exact p-value in this case. Describe how the p-value and your conclusion would be different in her class as opposed to our class, and comment on why this makes intuitive sense.