

Lab 6 Assignment

MA 2611

*Successful completion and submission of this assignment in html, pdf, or docx format through the use of R Markdown will meet one of your two required assignments for the **L.1 standard**. The following problems are numbered based on the lab standard that is intended to be met. Your grade will be based on whether these standards are met. Refer to the syllabus for further details on standards-based grading.*

Problem L.22 and L.23. A snack food company uses a machine to package 454 oz bags of peanuts. As part of an in-line inspection, to ensure the machine is calibrated properly, operators measured the weights (in oz) of $n = 25$ randomly selected bags. Assume the net weights of the bags are normally distributed.

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Construct and interpret a 95% confidence interval for the weight of the peanut bags using the `t.test()` function. Against a significance level of $\alpha = 0.05$, are the bags being packaged within the expected weight?

Problem L.23. On a Google review of Yellowstone National Park, a disgruntled visitor gave two stars and claimed the eruption of Old Faithful was “not as long as expected” while the geyser was erupting. According to various guidebooks, the length of time an eruption of Old Faithful lasts is 5 minutes, but the “disgruntled visitor” claimed the time was shorter than 5 minutes.

Use the R built-in data set “faithful,” against a significance level of $\alpha = 0.05$, was the “disgruntled visitor” correct in their claim about the eruption of Old Faithful being shorter than expected? Why or why not?

Problem L.24. In a randomly selected group of 568 students, when asked to pick a random number between 1 and 20, 42 students chose the number 7. There is curiosity if the students will be biased towards picking “lucky number” 7 or if the likelihood is the same for all 20 numbers.

Against a significance level of $\alpha = 0.01$, is there potential bias towards “lucky number” 7? How did this compare to your confidence interval in the previous lab?