

Assignment 1: Bottling Company Case Study – DUE Dec 14, 2016

Worth 140 points

Imagine you are a manager at a major soda bottling company. Customers have begun to complain that the bottles of the brand of soda produced in your company contain less than the advertised 16 ounces of product. Your boss wants to solve the problem at hand and has asked you to investigate. You have your employees randomly pull thirty (30) bottles off the line from all the shifts at the bottling plant. You ask your employees to measure the amount of soda there is in each bottle.

Note: Use the data set provided below to complete this assignment. Assume that the distribution is normal. **Also, note that some of the numbers for this project ARE DIFFERENT from what other classes are using and these are NOT the numbers listed in the online syllabus.**

Bottle Number	Ounces	Bottle Number	Ounces	Bottle Number	Ounces
#1	15.9	#11	15.9	#21	14.3
#2	15.5	#12	16.2	#22	14.2
#3	15.6	#13	16.0	#23	14.3
#4	15.7	#14	15.3	#24	15.2
#5	15.8	#15	16.7	#25	14.6
#6	16.1	#16	14.9	#26	14.6
#7	15.8	#17	16.7	#27	14.5
#8	16.4	#18	16.8	#28	14.7
#9	15.7	#19	16.7	#29	14.7
#10	16.0	#20	15.4	#30	14.8

Write a two to five (2-5) page report in which you:

1. Calculate to **four significant decimals**, the mean, median, and sample standard deviation for ounces in the bottles.
2. Construct a 95% Confidence Interval for the ounces in the bottles.
3. Use at least one chart, table, or illustration to present your results from parts 1 and/or 2. You can also meet this requirement by using a Box and Whisker or Stem/Leaf diagram.
4. Conduct a hypothesis test (at $\alpha = 0.05$) to determine if you can reject the claim that a bottle contains 16 or more ounces of soda. Clearly state the logic of your test (H_0 and H_1), the calculations and related values, and the conclusion of your test.
5. Provide the following discussion based on the conclusion of your test:
 - a. If you conclude that there are less than 16 ounces in a bottle of soda, speculate on three (3) possible causes (feel free to be creative). Next, suggest one or more strategies to avoid/prevent/mitigate these problems in the future.

Or

- b. If you conclude that the claim of less soda per bottle is not supported or justified, provide a detailed explanation to your boss about the situation. Include your speculation on the reason(s) behind the claim, and recommend at least one (1) strategy geared toward mitigating this issue in the future.

Your assignment must follow these formatting requirements:

- Be typed, double spaced, using Times New Roman font (size 12), with one-inch margins on all sides. No citations and references are required, but **IF** you use them, they must follow the APA format.
- Include an APA cover page containing the title of the assignment, the student's name, the professor's name, the course title, and the date. The cover page and the reference page are not included in the required assignment page length. An abstract is not necessary.

The specific course learning outcomes associated with this assignment are:

- Calculate measurements of central tendency and dispersal.
- Be able to present data in a visual manner through a chart or diagram.
- Determine confidence intervals for data.
- Describe the vocabulary and principles of hypothesis testing.
- Discuss application of course content to professional contexts.
- Use technological tools to solve problems in statistics.
- Write clearly and concisely about statistics using proper writing mechanics.