

UTAustinX: UT.7.20x Foundations of Data Analysis - Part 2

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Question 3

An industrial plant dumps its waste into a nearby river, but claims that it is not impacting the native species of frogs that live in the river. The frogs are able to tolerate calcium concentrations up to 91 mg/L.

You measure the concentration of calcium in 25 random samples from the river. Your measurements are approximately normally distributed, with a mean of 93.6 mg/L, with a standard deviation of 7.8 mg/L.

(1/1 point)

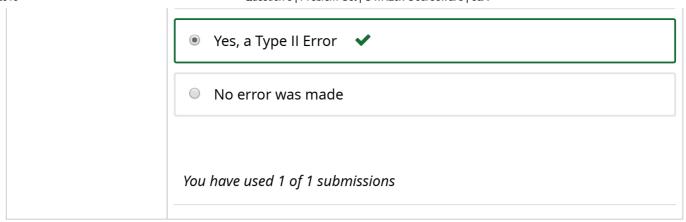
3a. What is the appropriate **alternative hypothesis** if the industrial plant's runoff is believed to be producing higher calcium concentrations than are deemed acceptable for the frogs? Let μ represent the true calcium concentration in the river downstream from the plant.

- $\mu = 91$
- $\mu \neq 91$
- $\mu < 91$
- $\mu > 91$

You have used 1 of 1 submissions

Question 3 | Problem Set | UT.7.20x Courseware | edX Lab due May 03, 2016 at 17:00 UTC (1/1 point) **Problem Set** Problem Set due May 3b. Calculate the **test statistic**. (Round to 2 decimal places.) 03, 2016 at 17:00 UT 1.67 **Answer: 1.67** 1.67 You have used 1 of 1 submissions (1/1 point) 3c. What is the **t-critical** value? Assume an alpha level of .05.(Round to 3 decimal places.) 1.711 **Answer: 1.711** 1.711 You have used 1 of 1 submissions (1/1 point) 3d. Does your data provide sufficient evidence to suggest that the calcium concentration in the river is more than 91 mg/L? Yes No You have used 1 of 1 submissions (1/1 point) 3e. Suppose as part of a broader investigation into the plant's impact on the river's ecosystem, an environmental group conducted a large-scale study and found that the actual mean calcium concentration level downstream from the plant is 95 mg/L. Did you make an error in your hypothesis test, and if so, what type was it?

Yes, a Type I Error



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