Lecture 16: Chapter 10 Mastery/Test 3 Review

C C Moxley

UAB Mathematics

22 July 15

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We conduct a hypothesis test for correlation and find that r = -0.46. What proportion of the total variation can is unexplained? Explained?

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The following tables give the total enrollment (in thousands) of a university and the number of crime on campus. Determine the best predicted value for the number of crimes on a campus with 33000 students enrolled.

Enrollment	32	31	53	28	27	36	42	30	34	46
Crimes	103	103	86	57	32	131	157	20	27	161

A sample of 20 people was taken to determine if the minutes spent on a treadmill was correlated with blood sugar levels. The sample resulted in a correlation coefficient of 0.52. If we use $\alpha = 0.01$, can we say that minutes spent on a treadmill and blood sugar levels are correlated?

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A sample of 20 people was taken to determine if the minutes spent on a treadmill was correlated with blood sugar levels. The sample resulted in a correlation coefficient of 0.52. If we use $\alpha = 0.01$, can we say that minutes spent on a treadmill and blood sugar levels are correlated? What else might be nice to know to verify this correlation? A sample of 20 people was taken to determine if the minutes spent on a treadmill was correlated with blood sugar levels. The sample resulted in a correlation coefficient of 0.52. If we use $\alpha = 0.01$, can we say that minutes spent on a treadmill and blood sugar levels are correlated? What else might be nice to know to verify this correlation? You'd like to investigate the scatterplot!



Which of the following is the best example of a null hypothesis?



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- The probability of committing a Type-II Error.
- The population mean is greater than 10.
- The sample mean is 10.
- The population mean is 10.

For the following claim, would supporting claim be equivalent to rejecting or failing to reject the null hypothesis? Claim: The standard deviation of the weights if cats is no more than 3 ounces.

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Say you want to test with 5% significance the claim that the standard deviation of the weights of cats is no more than three ounces. After conducting the test, you find that your *P*-value is 0.045. Does this mean that you support your claim or that you do not support your claim?

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Say you want to test with 98% confidence that the standard deviation of the weights of cats is no more than three ounces. If you want to test this claim with a confidence interval, how much area would be under the curve between the lower and the upper bounds of the confidence interval?

Say you want to test with 98% confidence that the standard deviation of the weights of cats is no more than three ounces. If you want to test this claim with a confidence interval, how much area would be under the curve between the lower and the upper bounds of the confidence interval? After constructing this appropriate confidence interval, you get (2.90, 3.01). Do you fail to reject or reject your null hypothesis? Do you support your claim?

We want to test the claim that watching TV negatively impacts cognitive function. We ask 25 test subjects to perform a cognitive task before and after watching 30 minutes of TV and subtract the time spent of the first task from the time spent on the second task. We get a test statistic of -2.04. Do we reject or fail to reject our null hypothesis? Do we support our claim or not? Use significance of $\alpha = 0.02$.

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Describe in words what a 90% CI for a population proportion is.





When do critical value tests include one critical value? Two? What gets compared to the critical values?





Make sure to spend time learning the requirements for each type of hypothesis test.

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Make sure to spend time learning the requirements for each type of hypothesis test. Be able to articulate the difference between confidence interval tests, *P*-value tests, and critical value(s) tests. You may also want to go through the mastery questions in the lecture slides from the chapters covered.