

Econ 103: Statistics for Economists

Hypothesis Testing Quiz

Mallick Hossain

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 - Alternatively, add "`code_folding: hide`" to the top of your document to hide the code, but it can be expanded if I want to see how you generated a particular graph or table

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 - No. Participation is a composite of all of those facets. Composite means all pieces contribute.

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2. How do you construct a null hypothesis?
 - It should be specific. “Specific” means that you are able to compute probabilities about the population based on the null. As a result, you are able to compute the likelihood of observing the particular outcome in your data. If it’s highly unlikely, the null is unlikely to be true.

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4. What is the p-value?
 - This is the probability of observing a test statistic at least as extreme as the one we actually observed. Alternatively, this is the smallest significance level at which we could have rejected the null.

Old Exam Questions (Fall 2012 Question 10)

This question concerns the “Pepsi Challenge” experiment. The setup is identical to the one we used in class except with five cups of each soda rather than four. The experimental procedure is as follows. We first fill five cups with Pepsi and five with Coke. Then we randomize the order of the cups and allow our expert to taste each. Finally, we ask the expert to identify which five cups contain Coke and record the number of cups that she correctly identifies. The idea is to determine whether our expert can really tell the difference between Coke and Pepsi based on the results of the experiment. This question asks to you formalize the experiment as a statistical hypothesis test. Our test statistic T is the number of Cokes that our expert correctly identified.

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3. Under H_0 what is the probability that $T = 5$?
 - This is the probability that out of the 10 cups, the expert correctly identifies all 5 Cokes. There's only 1 way to correctly choose all 5 and there are $\binom{10}{5} = 252$ ways of choosing 5 cups from 10. Hence, there is a $\frac{1}{252} \approx 0.4\%$ chance that all 5 are correctly identified.

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 - We would reject if $T > 4$ or alternatively, if $T = 5$
6. Suppose our expert identified four Cokes correctly. What is the p-value for our test against the alternative you specified?
 - This is simply the sum of the two probabilities we found above, so it is roughly 10.4%

Ready for the next lecture?

Let's Do This!

