
UNIVERSITY OF TEXAS AT AUSTIN

Quiz # 9

Inference for proportions: Hypothesis testing.

Provide your **complete solution** to the following problems.

Problem 9.1. (3 points) Suppose that a dietician suspects that more than 30% of adults are allergic to Wensleydale. How is she going to formulate her null and alternative hypotheses?

Problem 9.2. (6 points) After a college football team once again lost a game to their archrival, the alumni association conducted a survey to see if alumni were in favor of firing the coach. A simple random sample of 100 alumni from the population of all living alumni was taken. Sixty-four of the alumni in the sample were in favor of firing the coach. Let p represent the proportion of all living alumni who favored firing the coach. Suppose the alumni association wished to see if the majority of alumni are in favor of firing the coach. To do this they test the hypotheses

$$H_0 : p = 0.50 \quad \text{versus} \quad H_a : p > 0.50.$$

What is the p -value for this hypothesis test?

Problem 9.3. (3 points) Your friend claims that he is better at shooting three-pointers in the sense that his proportion of successes is higher than yours. You disagree. Your plan is to set up a hypothesis test. Specify the hypotheses in this test.

Problem 9.4. (3 points) A pharmaceutical company is testing whether their new medication works for a higher proportion of people than the existing medication. Specify the parameters in this situation and the hypotheses in the necessary hypothesis test.