Question 1 1 / 1 point

Which of the following best describes the role of the null hypothesis in hypothesis testing for a proportion?

- It adjusts the population proportion based on the sample data.
- It claims that the sample was biased and not randomly selected.
- It assumes the sample proportion is the true population proportion.
- ✓ It specifies a fixed value of the population proportion to test against.

Question 2 1 / 1 point

What does it mean if your calculated z-statistic falls inside the rejection region?

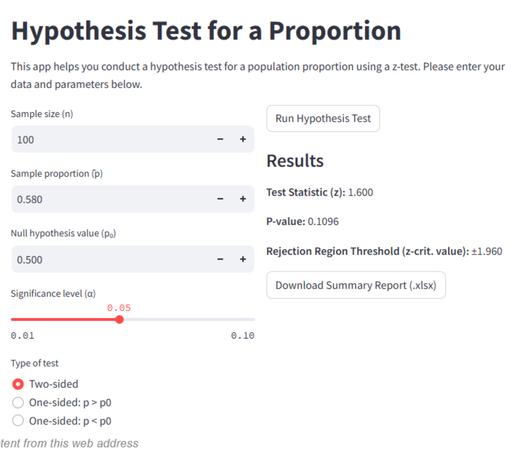
- ✓ The sample result is significantly different from the null, so you reject the null hypothesis.
- You need to collect more data before making a conclusion.
- The alternative hypothesis is definitely true.
- The null hypothesis is definitely true.

Hypothesis Testing Problem

Context:
Suppose you are part of a research team that is investigating how students who have declared a political science major feel about the president's handling of the economy. You ran a survey that measures whether each student either **approves (1)** or **disapproves (0)** of the president's economic policies.

Suppose you have been given a **random sample of 100 political science majors**, drawn from the student population at Stony Brook. Further, suppose that the calculated **sample proportion of students who approve is 58%**. The goal is to use this sample to test whether the **population proportion** of students who approve is statistically **different from 0.50.**

Below is the app you must use for your calculations. (If you have issues displaying the app in the quiz, you can click this link or open it in a new tab: https://iurbinah-prop-test.hf.space)



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Question 3 1 / 1 point

Which of the following correctly states the null and alternative hypotheses?

- $H_0 : p = 0.50 \quad H_A : p > 0.50$
- $H_0 : p = 0.50 \quad H_A : p < 0.50$
- ✓ $H_0 : p = 0.50 \quad H_A : p \neq 0.50$
- $H_0 : \hat{p} = 0.50 \quad H_A : \hat{p} \neq 0.50$

Question 4 1 / 1 point

Which of the following correctly states whether the normal approximation is appropriate as the sampling distribution of the test statistic? (*Justify your answer with the appropriate calculation in your hand-written work*).

- ✓ Yes it is appropriate because both np_0 and $n(1 - p_0)$ are greater than 15.
- No it is not appropriate because we don't know the standard deviation.
- Yes it is appropriate because $\hat{p}$ is close to 0.50.
- No it is not appropriate because the sample size is not greater than 30.

Question 5 1 / 1 point

Using the provided app, compute the test statistic. Which of the following is closest to the correct value of the test statistic? (*Do not forget to upload a snapshot of the output given by the app at the end of the quiz*).

- $z \approx 1.96$
- $z \approx 11.75$
- ✓ $z \approx 1.60$
- $z \approx 2.43$
- $z \approx 10$

Question 6 1 / 1 point

Suppose the significance level is $\alpha = 0.05$. Which of the following best describes the rejection region for this two-sided test?

- Reject H_0 if $|z| > 2.58$
- Reject H_0 if $z < -1.645$
- Reject H_0 if $z > 1.645$
- ✓ Reject H_0 if $|z| > 1.96$

Question 7 1 / 1 point

Based on your test statistic and the rejection region, what is the correct decision?

- Reject H_0; there is sufficient evidence that the proportion is different from 0.50.
- Reject H_0; the sample proportion is numerically different than 0.5
- Fail to reject H_0; the population is not normal.
- ✓ Fail to reject H_0; there is not enough evidence that the proportion is different from 0.50.

Question 8 1 / 1 point

Which of the following is the most appropriate conclusion?

- The sample shows that 50% of political science majors approve, so no difference exists in the population.
- There is significant evidence that the approval rate among political science majors is greater than 50%.
- Political science majors strongly disapprove of the president's handling of the economy.
- ✓ There is not enough evidence to conclude that the approval rate among political science majors is different from 50%.