

8.E: Introduction to Hypothesis Testing (Exercises)

1. In your own words, explain what the null hypothesis is.

Answer:

Your answer should include mention of the baseline assumption of no difference between the sample and the population.

2. What are Type I and Type II Errors?
3. What is α ?

Answer:

Alpha is the significance level. It is the criteria we use when decided to reject or fail to reject the null hypothesis, corresponding to a given proportion of the area under the normal distribution and a probability of finding extreme scores assuming the null hypothesis is true.

4. Why do we phrase null and alternative hypotheses with population parameters and not sample means?
5. If our null hypothesis is " $H_0 : \mu = 40$ ", what are the three possible alternative hypotheses?

Answer:

$$H_A : \mu \neq 40, H_A : \mu > 40, H_A : \mu < 40$$

6. Why do we state our hypotheses and decision criteria before we collect our data?
7. When and why do you calculate an effect size?

Answer:

We calculate an effect size when we find a statistically significant result to see if our result is practically meaningful or important

8. Determine whether you would reject or fail to reject the null hypothesis in the following situations:
 - a. $z = 1.99$, two-tailed test at $\alpha = 0.05$
 - b. $z = 0.34$, $z^* = 1.645$
 - c. $p = 0.03$, $\alpha = 0.05$
 - d. $p = 0.015$, $\alpha = 0.01$

This page titled [8.E: Introduction to Hypothesis Testing \(Exercises\)](#) is shared under a [CC BY-NC-SA 4.0](#) license and was authored, remixed, and/or curated by [Foster et al.](#) ([University of Missouri's Affordable and Open Access Educational Resources Initiative](#)) via [source content](#) that was edited to the style and standards of the LibreTexts platform.

- [7.E: Introduction to Hypothesis Testing \(Exercises\)](#) by [Foster et al.](#) is licensed [CC BY-NC-SA 4.0](#). Original source: <https://irl.umsl.edu/oer/4>.