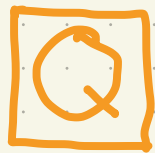


5. Testing



Under what conditions will the sampling distribution of $\hat{Y}_1 - \hat{Y}_0$ be

A) Normal?

B) t?

What is the actual distribution of $\hat{\gamma}_1, -\hat{\gamma}_0$?

↳ See code

What is the actual distribution of $\hat{\gamma}_1 - \hat{\gamma}_0$?

↳ See code



What does this distribution represent?

Inference

Key Question: Is it possible our estimate is due to chance?

Steps of a Hypothesis Test

- 1) Choose an alpha-level (α) / decision boundary.
 - ↳ $0 \leq \alpha \leq 1$
 - ↳ $\alpha \geq P_{H_0}(\text{Reject } H_0)$ ← Type I error
- 2) Define a random data generating process.
- 3) Determine meaningful null hypothesis, H_0 , and alt., H_A .
- 4) Determine a test statistic, T (which is a RV).
- 5) Derive / approximate distribution of T .
- 6) Decide whether or not to reject null, H_0 .

Nonparametric Method (Permutation Test)

1)

2)

3)

Nonparametric Method (Permutation Test)

1) $\alpha = .05$

2) $Y_i(1), Y_i(0)$ are fixed. Y_i is random only because D_i is random.

3) H_0 : "Previous question does not affect response"

$\hookrightarrow H_0: Y_i(1) = Y_i(0)$ for all i \leftarrow this allows us to populate a full schedule of outcomes.

This Weekend

- Finish + submit Lab 1
- Work on PS 1.