

Hypothesis Testing vs. Confidence Interval: A Clear Guide

For Dr. Bukhari's Statistics Exams

1 Key Difference

The following table summarizes the core differences between **Hypothesis Testing** and **Confidence Intervals (CI)**:

Topic	Hypothesis Testing	Confidence Interval (CI)
Purpose	Test a claim or assumption about a population parameter.	Estimate a range for a population parameter.
Output	Decision: <i>Reject</i> or <i>Fail to Reject</i> the null hypothesis.	Interval: (Lower Bound, Upper Bound).
Based on	Test statistic (z, t) and p-value or critical region.	Margin of error and sample mean or proportion.

2 Identifying Question Types

Recognize the question type by looking for specific **keywords** and phrases.

2.1 Hypothesis Testing Questions

Clues/Keywords:

- “Test the claim...”
- “Is there enough evidence...”
- “At 5% significance level...”
- “Reject or fail to reject...”
- “Null and alternative hypothesis”
- “p-value” or “critical value”
- “ H_0 ” and “ H_1 ” mentioned

Example:

A company claims their average delivery time is less than 3 days. A sample of 40 deliveries showed an average of 2.7 days. At 0.05 significance level, *test the claim*.

This is a Hypothesis Testing question.

2.2 Confidence Interval Questions

Clues/Keywords:

- “Construct a confidence interval...”
- “Estimate the population mean/proportion...”

- “Find the range...”
- “At 95% confidence level...”
- “How wide is the interval...”
- “What is the margin of error...”

Example:

From a sample of 100 people, the average height is 167 cm with a standard deviation of 5 cm. *Construct a 95% confidence interval for the population mean.*

This is a Confidence Interval question.

3 Dr. Bukhari’s Teaching Style

Dr. Bukhari’s exam questions may emphasize:

- **Interpretation:** Explain what the interval or decision means in context.
- **Clear Hypotheses:** Write precise H_0 and H_1 for Hypothesis Testing.
- **Real-Life Scenarios:** Apply concepts to practical situations.
- **Formulas and Tables:** Use z/t tables and show calculations.

4 Final Tip

To quickly identify the question type, ask:

“Am I checking a claim (Testing) or estimating a range (CI)?”

This simple question will guide you to the correct approach.

Want a flowchart or practice examples? Contact your instructor!