V25 - Hypothesis Testing – Part 1

- What is Hypothesis Testing?
- Two types of hypotheses (null vs. alternative)
- Proof by Contradiction

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What is Hypothesis Testing?

- Just finished **Estimation** via _____
- Focus now on **Drawing Conclusions** using _____

  Equivalent forms of _____

- Hypothesis Test:
  - Uses sample information (e.g., sample average, sample size)
  - To test claim or belief
  - About a *parameter* value (e.g., _____, _____, _____, _____)
  - To draw conclusion

2 Types of Hypotheses

1) Null hypothesis ___ ___: ____ = _____

- Existing belief or claim about parameter value
  - Belief can be viewed as:
    - Status quo
    - Historical knowledge
  - May be posed as:
    - Advertised value
    - Standard or spec value

2) Alternative hypothesis ___ ___: ____ ≠ _____

- Directly opposes _____
- New claim or belief one is testing
- "Research" hypothesis

2 Types of Hypotheses

Two possible conclusions:

1) Reject H_0 and _____

OR

2) Fail to Reject H_0

2 Types of Hypotheses

H_0: $\mu = 8.5$

If Reject H_0

it's because there's _____

If Fail to Reject H_0

it's because there's _____

If Fail to Reject H_0

This does <u>not</u> mean you accept H_o

You should NOT say "Accept H_o"

Proof by Contradiction

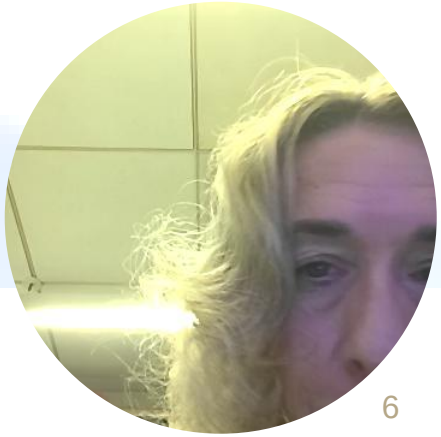
Goal: Prove A to be true

1. Assume A is false
2. Proceed with proof
3. If obtain contradiction, then "assumption of A false" cannot be good/accurate

   → A must be true!

   → You've proven A to be true!

Will follow up in class



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