

MITx: 14.310x Data Analysis for Social Scientists

Heli



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- Entrance Survey
- Module 2:

 Fundamentals of
 Probability, Random

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Variance in the Average Treatment Effect - Quiz

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Question 1

1/1 point (graded)

The variance of the average treatment effect is given by: $V(\hat{ au}) = rac{S_c^2}{N_c} + rac{S_t^2}{N_t} - rac{S_{tc}^2}{N}$.

What does the term $\frac{S_t^2}{N_t}$ represent?

- ullet a. The standard deviation of the outcomes Y_i in the treatment group
- ullet b. The variance of the outcomes Y_i in the treatment group ullet
- ullet c. The average outcomes Y_i in the treatment group
- ullet d. The average of the variance of Y_i in the treatment group and in the control group

Explanation

The term $rac{S_t^2}{N_t}$ represents the variance of the outcomes Y_i in the treatment group.

- Module 5: Moments of a Random Variable,
 Applications to Auctions,
 Intro to Regression
- Module 6: Special
 Distributions, the
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- Module 7: Assessing and Deriving Estimators - Confidence Intervals, and Hypothesis Testing
- Module 8: Causality,
 Analyzing Randomized
 Experiments, &
 Nonparametric
 Regression

Causality

due Nov 21, 2016 05:00 IST

<u>Analyzing Randomized</u> <u>Experiments</u>

due Nov 21, 2016 05:00 IST

Submit

You have used 1 of 2 attempts

✓ Correct (1/1 point)

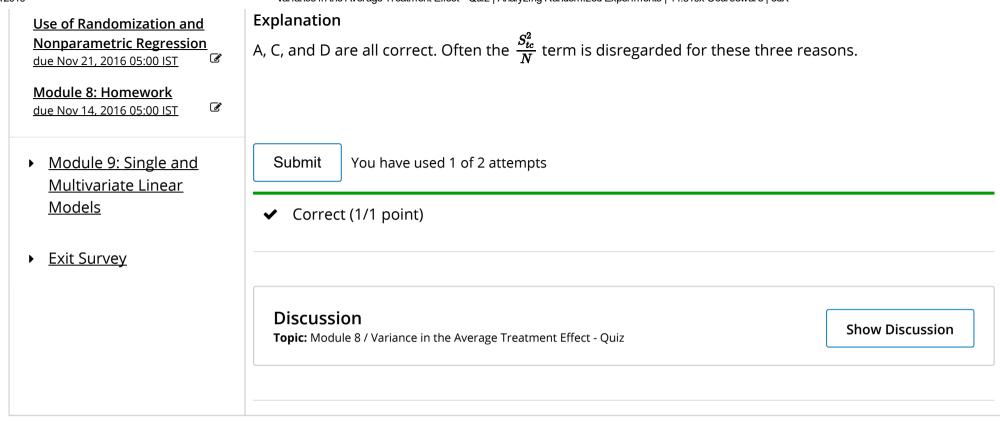
Question 2

1/1 point (graded)

The term $\frac{S_{tc}^2}{N}$ represents the variance of the unit-level treatment effects. This cannot be directly observed, and is often ignored. Which of the following are consistent with why it would be okay to ignore this term? (Select all that apply.)

- ☑ a. If we are interested in a larger population than this particular sample, this term would drop
 from the variance in any case
- b. In applications of randomized experiments, treatment and control groups are balanced, S^2_{tc} = 0, and the term drops out overall
- c. If the treatment effect is constant, then $\frac{S_{tc}^2}{N} = 0$ and we can disregard
- d. If the treatment effect is not constant, then using $\frac{S_{tc}^2}{N}$ as an estimator of sampling variance is actually conservative





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