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Variance in the Average Treatment Effect - Quiz

Bookmark this page

Question 1

1/1 point (graded)

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

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

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

Explanation

The term $\frac{S_t^2}{N_t}$ 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 Sample Mean, the Central Limit Theorem, and Estimation
- 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

Analyzing Randomized Experiments
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.)

- [x] 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_{tc}^2 = 0, and the term drops out overall
- [x] c. If the treatment effect is constant, then $\frac{S_{tc}^2}{N}$ = 0 and we can disregard
- [x] d. If the treatment effect is not constant, then using $\frac{S_{tc}^2}{N}$ as an estimator of sampling variance is actually conservative

✔

Use of Randomization and Nonparametric Regression
due Nov 21, 2016 05:00 IST

Module 8: Homework
due Nov 14, 2016 05:00 IST

- Module 9: Single and Multivariate Linear Models
- Exit Survey

Explanation

A, C, and D are all correct. Often the $\frac{S_{tc}^2}{N}$ term is disregarded for these three reasons.

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✔ Correct (1/1 point)

Discussion

Topic: Module 8 / Variance in the Average Treatment Effect - Quiz

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