Bookmarks

- Module 1: The Basics of R and Introduction to the Course
- Entrance Survey
- Module 2: Fundamentals of Probability, Random Variables, Distributions, and Joint Distributions
- Module 3: Gathering and Collecting Data, Ethics, and Kernel Density Estimates
- Module 4: Joint, Marginal, and Conditional Distributions & Functions of Random Variable

Confidence Interval and Hypothesis Testing - Quiz

Bookmark this page

Question 1

1/1 point (graded)

Suppose you are interested in estimating T_s, the percentage of voters who support Donald Trump in your Facebook network. To this goal, you administer a survey to poll some randomly selected sample of friends. You do some work in R, then you obtain an estimate T_x^* of the fraction of Trump voters from your data,. By default, R returns a $(1-\alpha)$ level confidence interval for your estimand T_s (default is $\alpha = 5\%$). Which of the following is true? (Select all that apply)

- [ ] a. You are 95% sure that your estimate of the fraction of Trump voters in Facebook network is correct.
- [x] b. If you compute the interval in repeated samples, then $(1-\alpha)$-percent of the time, the interval will bracket the true fraction T_s.
- [x] c. α is the significance level of the test

✔

Explanation

Since the interval is constructed based on your random sample, your interval is also random. You assume a particular sampling distribution for your estimator (in practice, we often use critical values from a Normal distribution), and based on that and your sample properties you construct a confidence interval for your estimand. But think about it: your sample is random, so by virtue of that, your interval is as well. That is, in repeated samples, say your significance level is 5%, then your confidence interval will bracket the true fraction 95% of the time. If you increase your level, your interval becomes narrower, so chances of the real fraction lying in that interval will be smaller.

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

Question 2

1/1 point (graded)

The hypothesis test below tests _____.

$$H_o : \frac{1}{N}\sum_{i=1}^{N} Y(1) - Y(0) = 0$$

$$H_a : \frac{1}{N}\sum_{i=1}^{N} Y(1) - Y(0) \neq 0$$

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

a. The null hypothesis that the average treatment effect is zero versus the alternate hypothesis that the average treatment effect is positive

b. The null hypothesis that the treatment effect on any individual is zero versus the alternate hypothesis that the treatment effect on any individual is nonzero

c. The null hypothesis that the average treatment effect is zero versus the alternate hypothesis that the average treatment effect is nonzero ✔

d. The null hypothesis that there is no treatment effect for any individual i versus the alternate hypothesis that the treatment effect is nonzero

Explanation
The test shown above is the Neyman hypothesis, which tests the null hypothesis that the average treatment effect is zero against the alternate hypothesis that the average treatment effect is nonzero.

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

Question 3

1/1 point (graded)

In the Neyman hypothesis test described in the previous question, the test statistic, t, is calculated as shown below. The numerator refers to _____ and the denominator refers to _____ is for a specific outcome. What does the term in the denominator refer to?

$$t = \frac{\overline{Y_t^{obs}} - \overline{Y_c^{obs}}}{\sqrt{\hat{V}_{Neyman}}}$$

- a. The actual population difference in means between the treatment and control groups ; The square root of the actual population variance
- b. The difference in sample means between the treatment and control groups ; The square root of the estimated variance ✔
- c. The difference in outcomes in pairs of units in the treatment and control groups, averaged ; The square root of the actual population variance
- d. The estimated difference in outcomes in pairs of units in the treatment and control groups, averaged ; The square root of the estimated variance

Explanation

The test statistic for a Neyman hypothesis test can be calculated as the difference in sample means between the treatment and control groups divided by the square root of the estimated variance.

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

Discussion
Topic: Module 8 / Confidence Interval and Hypothesis Testing - Quiz

Show Discussion