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- ▶ [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](#)

Module 9: Single and Multivariate Linear Models > The Linear Model > Normality of Errors and Estimation - Quiz

Normality of Errors and Estimation - Quiz

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Question 1

1/1 point (graded)

If we assume that the errors are i.i.d. normal, which of the following follow? (Select all that apply.)

☒ a. $\hat{\beta}_0$ is normally distributed☒ b. $\hat{\beta}_1$ is normally distributed☐ c. β_0 is normally distributed☐ d. β_1 is normally distributed

Explanation

Under the stronger assumption that our errors are identically and independently normally distributed, then it follows that our estimators $\hat{\beta}_0$ and $\hat{\beta}_1$ are also normally distributed. However, β_0 and β_1 are true values, so it does not make sense to say that they are normally distributed.

- ▶ [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](#)
- ▼ [Module 9: Single and Multivariate Linear Models](#)

The Linear Model

due Nov 28, 2016 05:00 IST



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You have used 1 of 2 attempts

✓ Correct (1/1 point)

Question 2

1/1 point (graded)

How do we estimate the error variance (σ^2)? $\hat{\sigma}^2 =$

☐ a. $\frac{1}{n} \sum \hat{\epsilon}_i^2$

☐ b. $\frac{1}{n-1} \sum \hat{\epsilon}_i^2$

☒ c. $\frac{1}{n-2} \sum \hat{\epsilon}_i^2$ ✓

☐ d. $\frac{1}{n} \sum (\hat{\epsilon}_i - 1)^2$

Explanation

The Multivariate Linear Model

due Nov 28, 2016 05:00 IST



Module 9: Homework

due Nov 21, 2016 05:00 IST



- ▶ Module 10: Practical Issues in Running Regressions, and Omitted Variable Bias

- ▶ Exit Survey

We use the estimator with $n - 2$ in the denominator because it is unbiased in the linear model when we are estimating two parameters β_0 and β_1 . Recall that when we were estimating only one parameter, the estimator with $n - 1$ in the denominator would return an unbiased estimator.

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Question 3

1/1 point (graded)

Assuming normality of errors, $\hat{\beta}_0$ and $\hat{\beta}_1$ are normally distributed. If we don't know their variances, we will have to estimate them. If we are interested in the means of the our estimators, what distribution will be relevant?

☐ a. F-distribution

☐ b. P-distribution

☐ c. N-distribution

☒ d. t-distribution ✓

Explanation

The t-distribution is relevant in situations where the random variable is normally distributed and the variance is unknown. We will discuss “t-tests” as related to the linear model in a later lecture.

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Discussion

Topic: Module 9 / Normality of Errors and Estimation - Quiz

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