

MITx: 14.310x Data Analysis for Social Scientists

Helj



- 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 5: Moments of a Random Variable, Applications to Auctions, & Intro to Regression > Expectation, Variance, and an Introduction to Regression > Properties of Covariance - Quiz

Properties of Covariance - Quiz

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Question 1

1/1 point (graded)

True or False: If two variables are independent, then their covariance is equal to zero. Similarly, if we know that the covariance between two variables is equal to zero, then it must be the case that the variables are independent.

O a. True							
b. False	~						

Explanation

It is true that if two variables are independent, then their covariance must be equal to zero. However, the relationship does not necessarily run the other way, and it does not hold that if the covariance between two variables is equal to zero, the two variables are independent.

Submit You have used 1 of 1 attempts

 Module 5: Moments of a Random Variable,
 Applications to
 Auctions, & Intro to
 Regression

Moments of a Distribution and Auctions

Finger Exercises due Oct 31, 2016 at 05:00 IST

Expectation, Variance, and an Introduction to Regression

Finger Exercises due Oct 31, 2016 at 05:00 IST

Module 5: Homework Homework due Oct 24, 2016 at

Exit Survey

05:00 IST

✓ Correct (1/1 point)

Question 2

1/1 point (graded)

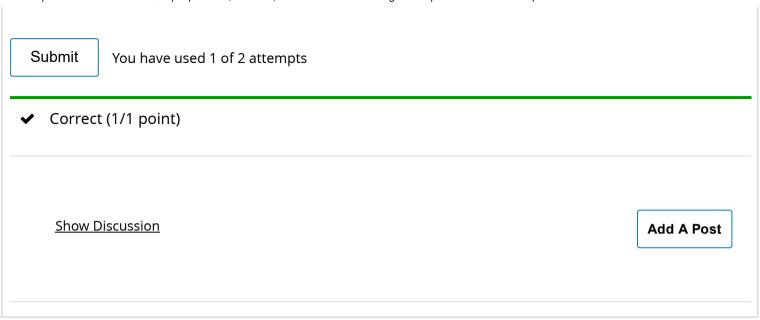
The property that Cov(aX + b, cY + d) = ac * Cov(X, Y) implies which of the following? (Check all that apply.)

- a. The covariance of a linear transformation of a set of variables is equal to the covariance of the original variables
- c. Covariance from a linear transformation of two variables is altered by both the coefficient of change and the additive constant
- d. Covariance is unchanged for a linear transformation of a set of two independent variables



Explanation

B and D are correct. The property Cov(aX+b,cY+d)=ac*Cov(X,Y) implies that when you take a linear transformation of variables, the covariance is equal to the original covariance multiplied by the coefficients of the linear transformation, but not considering the additive constants. Since the original covariance is multiplied by the coefficients of the linear transformation, in the case of independent variables with covariance equal to zero, that covariance will remain unchanged (zero) after the linear transformation.



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