

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 &
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  Variable

Module 4: Joint, Marginal, and Conditional Distributions & Functions of Random Variable > Joint, Marginal, and Conditional Distributions > Independence of Random Variables - Quiz

# Independence of Random Variables - Quiz

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## Question 1

1/1 point (graded)

True or false: Having information about the marginal distributions of two random variables is always enough to work backwards and reconstruct the joint distribution.

o a. True	
● b. False ✔	

#### **Explanation**

This is false. Joint distributions contain three pieces of information: how one variable is distributed, how a second variable is distributed, and the relationship between the two variables. Having the marginal distributions gives the first two pieces of information, but it does not give us information about how the two variables are related.

Submit You have used 1 of 1 attempts

# Joint, Marginal, and Conditional Distributions

Finger Exercises due Oct 24, 2016 at 05:00 IST

### <u>Functions of Random</u> Variables

Finger Exercises due Oct 24, 2016 at 05:00 IST

#### Module 4: Homework

<u>Homework due Oct 17, 2016 at 05:00 IST</u>

(A)

- Module 5: Moments of a Random Variable,
   Applications to Auctions,
   Intro to Regression
- Exit Survey

✓ Correct (1/1 point)

# Question 2

- ullet a. The joint PDF is equal to the sum of the marginal PDFs:  $f_{xy}(x,y)=f_x(x)+f_y(y)$
- ullet b. The joint PDF is equal to the product of the marginal PDFs:  $f_{xy}(x,y)=f_x(x)f_y(y)$
- ullet c. The marginal PDFs are symmetrical:  $f_x(x)=f_y(y)$
- ullet d. The joint PDF integrates to 1:  $\iint f_{xy}(x,y) dx dy = 1$

### **Explanation**

X and Y are independent if the joint PDF is equal to the product of the marginal PDFs, so B is correct.

Submit

You have used 1 of 2 attempts

Correct (1/1 point)

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