

MITx: 14.310x Data Analysis for Social Scientists

Helj



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Marginal Distributions: Discrete Example - Quiz

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Question 1

1/1 point (graded)

Given a joint distribution for discrete random variables X and Y, how do we get the probability that X=x?

- a. Average the probabilities over all possible values of Y, given that X=x
- ullet b. Sum up the probabilities over all possible values of Y, given that X=x ullet
- c. Integrate with respect to Y, where X=x
- d. Take the derivative of the joint PDF with respect to Y, where X=x

Explanation

In order to get the probability that X=x given a joint distribution for discrete random variables X and Y, you just have to sum up all the probabilities over all possible values of Y holding that X=x.

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

Homework due Oct 17, 2016 at 05:00 IST

(A)

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

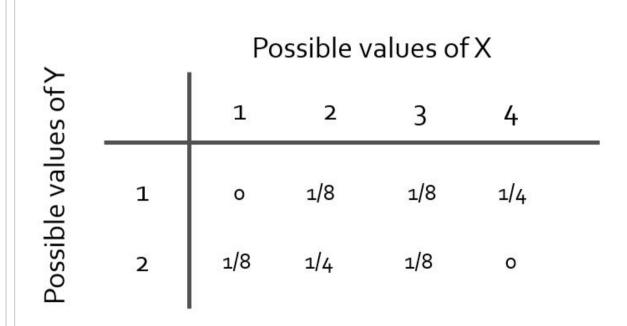
Submit You have used 1 of 2 attempts

✓ Correct (1/1 point)

Question 2

1/1 point (graded)

Suppose that you have two discrete random variables X and Y with the following joint probability distribution, which is similar to the example in class. Fill in the marginal probabilities that belong in A, B, C, and D.



$$f_{x}(1) = A$$

$$f_x(2) = B$$

$$f_{x}(3) = C$$

$$f_{x}(1) = A$$

$$f_{x}(2) = B$$

$$f_{x}(3) = C$$

$$f_{x}(4) = D$$

Please input the answer in decimal form and do not round

Marginal Probability of A:

✓ Answer: 0.125 1/8

Marginal probability of B:

3/8 **✓ Answer:** 0.375

 $\frac{3}{8}$

Marginal probability of C:

1/4

✓ Answer: 0.25

 $\frac{1}{4}$

Marginal probability of D:

1/4

✓ Answer: 0.25

 $\frac{1}{4}$

Explanation

The relevant probabilities are calculated by summing up over the possible values of Y for each X=x. Filled in, the marginal probabilities are as below:

$$f_x(1) = rac{1}{8} = 0.125$$

$$f_x(2) = rac{3}{8} = 0.375$$
 $f_x(3) = rac{1}{4} = 0.25$

$$f_x(3)=rac{1}{4}=0.25$$

 $f_4(4) = \frac{1}{4} = 0.25$

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You have used 1 of 2 attempts

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