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**



# Marginal Distributions: Discrete Example - Quiz

Bookmark this page

## 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
- b. Sum up the probabilities over all possible values of Y, given that X=x ✔
- 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.

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.

| Possible values of Y \ Possible values of X | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 0 | 1/8 | 1/8 | 1/4 |
| 2 | 1/8 | 1/4 | 1/8 | 0 |

$f_x(1) = A$

$f_x(2) = B$

$f_x(3) = C$

$f_x(4) = D$

*Please input the answer in decimal form and do not round*

Marginal Probability of A:

1/8 ✔ **Answer:** 0.125

$\frac{1}{8}$

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:

$$f_x(1) = \frac{1}{8} = 0.125$$

$$f_x(2) = \frac{3}{8} = 0.375$$

$$f_x(3) = \frac{1}{4} = 0.25$$

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

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

Show Discussion Add A Post


Download on the
App Store
ANDROID APP ON
Google play