

# DISCRETE RANDOM VARIABLES: PRACTICE 3: POISSON DISTRIBUTION\*

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## Abstract

This module provides further practices and exercises on Poisson Distribution in statistics.

## 1 Student Learning Outcomes

- The student will analyze the properties of a Poisson distribution.

## 2 Given

On average, eight teens in the U.S. die from motor vehicle injuries per day. As a result, states across the country are debating raising the driving age. (Source: [http://www.cdc.gov/Motorvehiclesafety/Teen\\_Drivers/teendrivers\\_factsheet.html](http://www.cdc.gov/Motorvehiclesafety/Teen_Drivers/teendrivers_factsheet.html))

## 3 Interpret the Data

### Exercise 1

Assume the event occurs independently in any given day. In words, define the Random Variable  $X$ .

### Exercise 2

$X \sim$  \_\_\_\_\_

(Solution on p. 3.)

### Exercise 3

What values does  $X$  take on?

(Solution on p. 3.)

### Exercise 4

For the given values of the random variable  $X$ , fill in the corresponding probabilities.

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$x$	$P(x)$
0	
4	
8	
10	
11	
15	

**Table 1****Exercise 5***(Solution on p. 3.)*

Is it likely that there will be no teens killed in the U.S. from motor vehicle injuries on any given day? Justify your answer numerically.

**Exercise 6***(Solution on p. 3.)*

Is it likely that there will be more than 20 teens killed in the U.S. from motor vehicle injuries on any given day? Justify your answer numerically.

## Solutions to Exercises in this Module

**Solution to Exercise (p. 1)**

$P(8)$

**Solution to Exercise (p. 1)**

$0, 1, 2, 3, 4, \dots$

**Solution to Exercise (p. 2)**

No

**Solution to Exercise (p. 2)**

No