STAT 1910 - Winter 2022

Assignment - IV

CHAPTER 5

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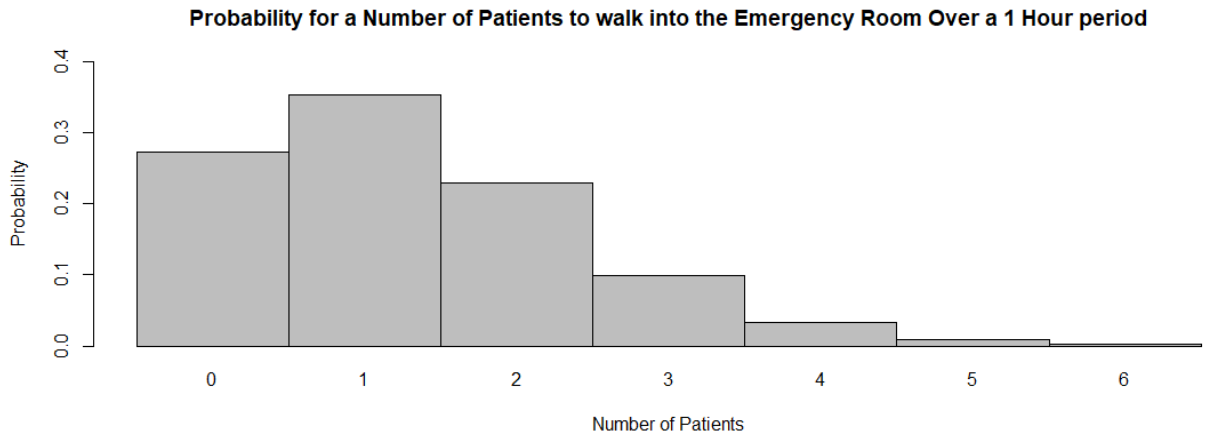
MARKS: 6

Question 1. (2.0 marks)

A review of emergency room records at rural Millard Fellmore Memorial Hospital was performed to determine the probability distribution of the number of patients entering the emergency room during a 1-hour period. The following table lists this probability distribution.

Patients per hour	0	1	2	3	4	5	6
Probability	.2725	.3543	.2303	.0998	.0324	.0084	.0023

a) Make a histogram for this probability distribution. **(1.0 mark)**



b) Determine the probability that the number of patients entering the emergency room during a randomly selected 1-hour period is

i. Two or more **(0.25 mark)**
0.3732

ii. Exactly 5 **(0.25 mark)**
0.0084
iii. Fewer than 3 **(0.25 mark)**
0.8571
iv. At most 1 **(0.25 marks)**
0.6268

Question 2. (1.5 marks)

Let x be the number of houses sold per month by a real estate agent. The following table lists the probability distribution of x.

x	0	1	2	3	4	5
$P(x)$	.08	.12	.32	.28	.12	.08

a) Calculate the mean and standard deviation of this probability distribution. **(1.0 mark)**
Mean = 2.48
Standard Deviation = 1.30

b) Give a brief interpretation of the value of the mean. **(0.5 mark)**
The average or expected number of houses to be sold by a real estate agent per month would be about 2.48 houses. This would round up to 3 as you can't sell a portion of a house.

Question 3. (1.0 marks)

According to a recent survey released on January 28, 2022, found that 20.5% of adults do not believe in COVID 19 vaccination in a particular population. Assume that this result is true for the current population of adults. A sample of 60 adults is randomly selected. Let *x* be the number of adults in this sample who do not believe in COVID 19 vaccination.

Find the mean and standard deviation of the probability distribution of *x*.
Mean = 12.3
Standard Deviation = 3.13

Question 5. (1.5 marks)

A vending machine in a supermarket breaks down an average of four times per month. Using the Poisson probability distribution formula, find the probability that during the next month this machine will have

(a) Exactly two breakdowns **(0.75 mark)**
0.147

(b) At most one breakdown **(0.75 mark)**

0.091