DATA-437 IN-CLASS ASSIGNMENT SEPTEMBER 15, 2021

1. The following table correspond to Rodger's touch-down passes career regular season statistics for the games he started through the 2012 season.

x	$P(X = x)$
0	0.10
1	0.25
2	0.25
3	0.25
4	0.10
5	0.05

(a) (4 points) Compute the expected number of touch-down passes.

$$\begin{aligned} E(X) &= 0P(X=0) + 1P(X=1) + 2P(X=2) + 3P(X=3) + 4P(X=4) + 5P(X=5) \\ &= 0(0.10) + 1(0.25) + 2(0.25) + 3(0.25) + 4(0.10) + 5(0.05) \\ &= 2.15 \end{aligned}$$

(b) (4 points) Compute the median number of touch-down passes.

The media is 2.

(c) (4 points) What can you conclude about the distribution of Rodger's touch-down passes?

Since the median and the mean are close to each other, the distribution is symmetric.

2. Lionel Messi is one of the most popular athletes in the world. He spend 21 years playing for Barcelona FC. Let B denote the event that Barcelona wins a home match. Let M denote the event the Messi scores 2 or more goals in a home game. We have that

$$P(B) = 0.65 \quad P(B \cap M) = 0.35 \quad P(M) = 0.45$$

(a) (4 points) Compute $P(B|M)$.

$$P(B|M) = \frac{P(B \cap M)}{P(M)} = \frac{0.35}{0.45} = \frac{7}{9}$$

(b) (4 points) Compute $P(M|B)$.

$$P(M|B) = \frac{P(B \cap M)}{P(B)} = \frac{0.35}{0.65} = \frac{7}{13}$$