

Abdelhafid Boussouf University – Mila
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Institute of Natural and Life Sciences
Department of SNV

Course: Biostatistics

Specialty: L2 SNV (SB + EC)

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Exercise Series No. 03

Exercise 1

In a family, the probability of the birth of a left-handed child is $\frac{1}{5}$.
It is known that this family has **9 children**.

1. What is the probability distribution followed by the random variable X : number of left-handed children.
2. What is the probability of having exactly **2 left-handed children** in this family.
3. What is the probability of having **at least 2 left-handed children**.
4. Determine $E(X)$, $V(X)$ and δ_x .

Exercise 2

On a highway there are on average **two accidents per week**. Let X denote the number of accidents per week.

1. What is the probability distribution followed by the random variable X .
2. What is the probability that there will be **five accidents during a week-end**.
3. What is the probability of having **at most 3 accidents**.
4. Determine $E(X)$, $V(X)$ and δ_x .

Exercise 3

A researcher studied the average age at which the first vocabulary words appear in children.

A study conducted on **1000 children** shows that the first words appear, on average, at **2 months** with a **standard deviation of 1.5 months**.

Knowing that the distribution of ages is **normal**, we want to:

1. Evaluate the proportion of children who acquired their first words **before 5 months**.
2. Evaluate the proportion of children who acquired their first words **after 6 months**.
3. Evaluate the proportion of children who acquired their first words **between 3 and 5 months**.