Larbi Ben M'hidi-Oum El Bouaghi University

Faculty of Exact Sciences and Natural and Life Sciences

Departement of Mathematics and Computer Science

First year Licence **Introduction to probability and descriptive statistics**

Series N°1 : Bacis concepts and statistical vocabulary

Exercise 01 : Classify each variable as qualitative (ordinal or nominol) or quantitative (discrete or continuous).

X_1 : number of accidents in a city

X_2 : eye color of people

X_3 : Age of people in years

X_4 : number of correct answers on a quiz

X_5 : Genders of newborns in a hospital

X_6 : scientific fields

X_7 : Nationality of the workers in a city

X_8 : level of studies

X_9 : Amount of maney spent by families

X_{10} : Lifetime of computers

X_{11} : Academic ranks of teachers

X_{12} : number of students in a classrooms

X_{13} : Rating scale of products (bad, good, or excellent)

X_{14} : Speed of cars

Exercise 02 : List all the **measurements** (observations) for the **data set** reprented by the following **data frequency table** :

Values x_i	31	32	33	34	35
Frequency n_i	1	5	6	4	2

Exercise 03 $\star$: Construct **the data frequency table** for the following **data set**

22 25 22 27 24 23 26 24 22 24 26

Exercise 04 $\star$: Let the following data set :

100 99 115 87 105 107 105 119 80 118

Grouping these measures in the following classes : $[80, 90[$, $[90, 100[$, and so on.

Exercise 05 : In a particular store, the weekly sales of a product for the last weeks are as follows :

15 17 19 17 15 17 15 19 17 15 19

19 15 15 17 15 17 17 19 15

1. What is the population of interest ? and determine the population size.
2. What is the variable of interest ? and determine its type.

3. Complete the following frequency table :

Number of products sold				$\sum$
Number of weeks				
Relative frequency $f_i = \frac{n_i}{n}$				
Percentage $p_i = f_i \times 100\ (\%)$				
Increasing Cumulative Frequency ICF $N_{x=x_i} \uparrow$				
Decreasing Cumulative Frequency DCF $N_{x=x_i} \downarrow$				
Increasing Cumulative Relative Frequency ICRF $F_{x=x_i} \uparrow$				
Decreasing Cumulative Relative Frequency DCRF $F_{x=x_i} \downarrow$				

Remark : write the formula mathematic of ICF, DCF, ICRF, and DCRF.

Exercise 06 : The revision time per week, in hours, of a group of students is given in increasing order as follows :

4 7 8 9 10 11 12 12 12 13 14 14 14 15 16 16 17 17 19 23

1. Determine the population studied, the population size, the variable studied, and its type.
2. Using Sturge's rule (or Yule's rule), grouping the measures of the previous data set.
3. Complete the table by calculating : Increasing Cumulative Frequency (ICF) and Increasing Cumulative Relative Frequency (ICRF).