



2023/2024

Exercises Sheet n°05 (Statistical series with two characters)

Exercise 1. The following table is the result of a study on two characters X and Y:

X \ Y	Y₁ = 1	Y₂ = 2	Y₃ = 3	Y₄ = 4
X₁ = 0	3	5	6	2
X₂ = 1	6	5	4	3
X₃ = 3	1	0	8	7

1. Determine the marginal distributions of X and Y. (calculate the parameters).
2. Determine the conditional distribution of X for Y = 2. (calculate the parameters).
3. Calculate the covariance of X and Y.
4. Determine the equation of the regression line of Y en X.
5. Calculate the correlation coefficient of X and Y. What do you conclude?

Exercise 2. A survey of 100 households gave the following results for monthly expenses (denoted by X) and the monthly income (denoted by Y).

X \ Y	[4, 10[[10, 20[[20, 40[
[3, 5[20	10	0
[5, 15[10	20	10
[15, 35[0	10	20

1. Determine the marginal distributions of X and Y. (calculate the parameters).
2. Determine the conditional distribution of Y for X ∈ [15,35[(calculate the parameters).
3. Determine the equation of the regression line of X en Y.
4. Calculate the correlation coefficient of X and Y. What do you conclude?

Exercise 3 (additional exercise) On a sample of 10 employees of a company, the number of years of service (denoted by X) and the number of days of absence for medical reasons during the last year (denoted by Y) have been recorded in the following table.

X	2	5	7	8	11	13	14	16	20	24
Y	2	3	8	9	8	10	13	14	13	19

1. Determine the marginal distributions of X and Y. (calculate the parameters).
2. Determine the equation of the regression line of Y en X.
3. Estimate the number of days of absence of an employee in service from 27 years.