

Corrige -type

Exercice 01

8,6	9,4	7,4	7	6,5	8,1	5,9
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$$\bar{x} = \frac{1}{N} \sum n_i x_i = \frac{1}{7} (52,9) = 7,55. \quad v_x = \left[\frac{1}{N} \left(\sum (x_i)^2 \right) \right] - (\bar{x})^2 = \left[\frac{1}{7} (408,7) \right] - (7,55)^2 = 1,39.$$

$$\sigma_e = \sqrt{v_x} = \sqrt{1,39} = 1,17.$$



$$c.v = \frac{\sigma_e}{\bar{x}} \times 100\% = 15,49\% < 20\%.$$



$$\sigma \text{ inconnu et } N < 30. \quad Ic = \left[\bar{x} - T_{(\alpha;N-1)} \frac{\hat{\sigma}}{\sqrt{N}}, \bar{x} + T_{(\alpha;N-1)} \frac{\hat{\sigma}}{\sqrt{N}} \right]. \quad T_{(0,05;6)} = 2,447.$$

$$\hat{\sigma} = \sqrt{\frac{N}{N-1}} \times \sigma_e = 1,26. \quad Ic = [6,39; 8,71].$$

Exercice 02

$$N_1 = 30. \quad \bar{x}_1 = 22,25. \quad \sigma_{e_1} = 2,5. \quad N_2 = 35. \quad \bar{x}_2 = 21,9. \quad \sigma_{e_2} = 2,2.$$



$$\begin{cases} H_0: \mu_1 = \mu_2 \\ H_1: \mu_1 \neq \mu_2 \end{cases} \quad \alpha = 0,05. \quad \text{Test T : Comparaison entre deux moyennes}$$

$$\sigma_1 \text{ et } \sigma_2 \text{ sont inconnus, } N_1, N_2 \geq 30 \text{ et } \sigma_1 = \sigma_2 \quad \epsilon_{cal} = \frac{|\bar{x}_1 - \bar{x}_2|}{\sqrt{\frac{(\hat{\sigma}_{e_1})^2}{N_1} + \frac{(\hat{\sigma}_{e_2})^2}{N_2}}}$$

$$\hat{\sigma}_{e_1} = \sqrt{\frac{N_1}{N_1-1}} \times \sigma_{e_1} = 2,54 \Rightarrow (\hat{\sigma}_{e_1})^2 = 6,64. \quad \hat{\sigma}_{e_2} = \sqrt{\frac{N_2}{N_2-1}} \times \sigma_{e_2} = 2,23 \Rightarrow (\hat{\sigma}_{e_2})^2 = 4,94.$$

$$\epsilon_{cal} = \frac{|22,5 - 21,9|}{\sqrt{\frac{6,64}{30} + \frac{4,94}{35}}} = 0,59. \quad \epsilon_{cal} < \epsilon_{0,05} = 1,96. \quad H_0 \text{ est acceptée.}$$

Exercice 02

$$N_1 = 7. \quad N_2 = 7. \quad N_3 = 7. \quad K = 2.$$

$$S_1 = 84. \quad S_2 = 75. \quad S_3 = 60. \quad S_1^2 = 1036. \quad S_2^2 = 843. \quad S_3^2 = 528.$$



$$\begin{cases} H_0: \mu_1 = \mu_2 = \mu_3 \\ H_1: \end{cases} \quad \alpha = 0,05. \quad \text{Analyse de la variance à un facteur}$$

$$S = S_1^2 + S_2^2 + S_3^2 - \frac{(S_1+S_2+S_3)^2}{N} = 123,12. \quad B = \frac{[S_1]^2}{N_1} + \frac{[S_2]^2}{N_2} + \frac{[S_3]^2}{N_3} - \frac{(S_1+S_2+S_3)^2}{N} = 42. \quad W = S - B = 81,12.$$

$$\text{Tableau de variance : } F = 4,66. \quad F = 4,66 > F_{(0,05;18;2)} = 3,555. \quad H_0 \text{ est rejetée.}$$