

EXERCISE 1

a.

	SS	df	MS	F	sig
BETWEEN	80.533	2	40.267	38.968	.000
LINEAR	10	1	10	9.68	.009
QUAD.	70.533	1	70.533	68.258	.000
WITHIN	12.4	12	1.033		
TOTAL	92.933	14			

b. Both tendencies (in both cases, $sig < \alpha$)
0.09 0.05
0.000

	1 DOSE	2 DOSES	3 DOSES
1	-1	0	+1
2	-1	2	-1

EXERCISE 2

PART 1 : X=0; Y=3 e=2

PART 2 : X=6; Y=8 e=-1

a. $\hat{y}_1 = Y - e = 3 - 2 = 1$

$\hat{y}_2 = Y - e = 8 - (-1) = 9$

$\hat{y} = a + bX \rightarrow \begin{cases} 1 = a + b \cdot 0 \\ 9 = a + b \cdot 6 \end{cases} \rightarrow \begin{cases} a = 1 \\ 9 = 1 + 6b \\ 8 = 6b \end{cases}$

$1'333 = b$

$\hat{y} = 1 + 1'333X$

b. - When there's not anxiety, the average performance is 1.

- When anxiety increases 1 point, performance increases 1'333

SV	SS	df	MS	F
BETW.	86052.81	k-1=3-1 2	43026.405	25.18
WITH.	10254.01	k(n-1) 3(3-1)=6	1709.00	
TOTAL	96306.82	N-1=8		

	CC	MC	FC	
	643	469	484	
	655	427	456	
	702	525	402	
Σ	2000	1421	1342	4763

$$SS_{BET} = n \sum (\bar{y}_j - \bar{y}_{..})^2 = 3 [(666.67 - 529.22)^2 + (473.67 - 529.22)^2 + (447.33 - 529.22)^2] = 3 [(137.45)^2 + (-55.55)^2 + (-81.89)^2]$$

$$\bar{y}_{CC} = \frac{\Sigma Y_{CC}}{n_{CC}} = \frac{2000}{3} = 666.67$$

$$\bar{y}_{MC} = \frac{\Sigma Y_{MC}}{n_{MC}} = \frac{1421}{3} = 473.67$$

$$\bar{y}_{FC} = \frac{\Sigma Y_{FC}}{n_{FC}} = \frac{1342}{3} = 447.33$$

$$\bar{y}_{..} = \frac{\Sigma Y}{N} = \frac{4763}{9} = 529.22$$

$$= 3 [18892.5 + 3085.8 + 6705.97] =$$

$$= 3 [28684.27] = 86052.81$$

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$$SS_{WIT} = \sum (y_{ij} - \bar{y}_j)^2 = (643 - 666.67)^2 + (655 - 666.67)^2 + (702 - 666.67)^2 + (469 - 473.67)^2 + (427 - 473.67)^2 + (525 - 473.67)^2 + (484 - 447.33)^2 + (456 - 447.33)^2 + (402 - 447.33)^2 = (-23.67)^2 + (-11.67)^2 + 35.33^2 + (-4.67)^2 + (-46.67)^2 + 51.33^2 + 36.67^2 + 8.67^2 + (-45.33)^2$$

$$= 560.27 + 136.19 + 1248.21 + 21.81 + 2178.09 + 2634.77 + 1344.69 + 75.17 + 2054.81 = 10254.01$$

Temp $25.18 > 5.14$ $F_{\alpha}(k, k-1, k(n-1)) = F(0.05, 2, 6) = 5.14$ — The pressure is not equal for each type of car

b) $R^2 = \frac{SS_{BET}}{SS_T} = \frac{86052.81}{96306.82} = 0.89$ The effect probably exists

EXERCISE 4

a. Yes because $0.006 < 0.05$

b. $F(\alpha, k-1, k(n-1)) = F(0.05, 2, 6) = 5.14$

$37.2 > 5.14 - H_0$, so we have to continue with stage 2.

c) $F(0.05, 1, 3) = 10.13$

$37.2 > 10.13 - H_0$, so we can conclude that there are statistically significant differences in anxiety in the different moments