

PSYCHOMETRICS

2016, NOVEMBER, PARTIAL 1, TYPE A

EXERCISE 1

Ordering columns:

	2	1	3	4
A	0	0	0	1
B	1	1	1	1
C	1	1	1	1
D	0	1	1	0
E	0	0	0	1
F	1	1	1	1

Ordering lines

	2	1	3	4	
F	1	1	1	1	4
B	1	1	1	1	4
C	1	1	1	1	4
D	0	1	1	0	2
E	0	0	0	1	1
A	0	0	0	1	1
	3	4	4	5	

a) $CR = 1 - \frac{E}{P \times I} = 1 - \frac{2}{24} = 1 - 0.08 = 0.92$

Yes $\rightarrow 0.92 > 0.8$

b) 4

EXERCISE 2

a) $\bar{X}_{P-U} = \frac{8 \cdot 1 + 15 \cdot 2 + 12 \cdot 3 + 40 \cdot 4 + 25 \cdot 5 + 35 \cdot 6 + 15 \cdot 7}{150} = \frac{8 + 30 + 36 + 160 + 125 + 210 + 105}{150} = 4.49$

$\bar{X}_{C-A} = \frac{15 \cdot 1 + 10 \cdot 2 + 20 \cdot 3 + 30 \cdot 4 + 25 \cdot 5 + 40 \cdot 6 + 10 \cdot 7}{150} = \frac{15 + 20 + 60 + 120 + 125 + 240 + 70}{150} = 4.33$

$\bar{X}_{W-S} = \frac{12 \cdot 1 + 20 \cdot 2 + 20 \cdot 3 + 30 \cdot 4 + 23 \cdot 5 + 35 \cdot 6 + 10 \cdot 7}{150} = \frac{12 + 40 + 60 + 120 + 115 + 210 + 70}{150} = 4.16$

$FS = \frac{4.49 + 4.33 + 4.16}{3} = \frac{12.96}{3} = 4.33$

b) $\bar{X}_{C-A} = 4.33$

c) - The concept POLITICAL is slightly powerful aggressive

EXERCISE 3

a)

	IT2	X	X-i	(X-i) ²
A	0	2	2	4
B	1	3	2	4
C	1	4	3	9
D	0	2	2	4
E	0	1	1	1
F	1	4	3	9
			13	31

$$r_{pb} = \frac{\bar{X}_i - \bar{X}_T}{S_x} \sqrt{\frac{p}{q}} = \frac{2.67 - 2.17}{0.68} \sqrt{\frac{0.5}{0.5}} = \frac{0.5}{0.68} = 0.73$$

$$\bar{X}_i = \frac{2+3+3}{3} = \frac{8}{3} = 2.67$$

$$\bar{X}_T = \frac{13}{6} = 2.17$$

$$S_x = \sqrt{\frac{\sum X^2}{N} - \bar{X}^2} = \sqrt{\frac{31}{6} - 2.17^2} = \sqrt{5.17 - 4.71} = \sqrt{0.46} = 0.68$$

b) $0.73 > 0.4 \rightarrow$ The item discriminates very well.

EXERCISE 4

a) Item 1 is slightly easy, item 2 slightly difficult and item 3 quite difficult
 Items 1 and 2 discriminate well ($0.3 \leq D \leq 0.39$). Item 3 is useless
 ($D < 0.1$)

b) ITEM 1: alternative 3 because the proportion is lower than 0.1 (0.08)
 ITEM 2: everything is ok
 ITEM 3: alternative 2 because its R_{bis} should be positive (it is the correct answer) and alternative 4 because its R_{bis} should be negative.