DAD 1

PARTIAL 2, TYPE B

JUNE, 2016

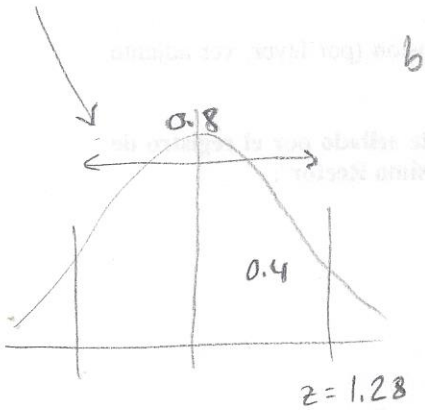
## EXERCISE 1

$n = 347$

$\bar{X} = 220$

$S = 40$

LC = 80%




a. $\epsilon = z_{\alpha/2} \cdot \sigma_{\bar{x}} = 1{,}28 * 2.15 =$

$\sigma_{\bar{x}} = \frac{S}{\sqrt{n-1}} = \frac{40}{\sqrt{346}} = 2.15$

18.6

b. $\bar{X} \pm \epsilon = 220 \pm 2.752$ → 222.752, 217.248

## EXERCISE 2

a) Yes because sig. $< \alpha = 0.01$ – Null hypothesis is rejected.

b) $R^2 = 0.917^2 = 0.84 > 0.67$ → High effect size, Significant effect } The relationship probably exists

c) $1 - R^2 = 1 - 0'84 = 0.16$ → 16% of the variability weight decrease is not explained by kilometers running

## EXERCISE 3

a) Yes because in Levene's test sig = 0.871 $> \alpha = 0.01$ → There is homoscedarticity

b) yes because in t-tes, sig = 0.006 $< \alpha = 0.01$ → Null hypothesis is rejected.

EXERCISE 4

| | LIBERAL | CENTRAL | CONSERVATIVE | |
|---|---|---|---|---|
| men | 20 $(16.6)^1$ | 50 $(44.1)^2$ | 10 $(19.3)^3$ | 80 |
| women | 10 $(13.4)^4$ | 30 $(35.9)^5$ | 25 $(15.7)^6$ | 65 |
| | 30 | 80 | 35 | 145 |

$$\chi^2 = \sum \frac{(O-E)^2}{E} = \frac{(\overbrace{20-16.6}^{3.4})^2}{16.6} + \frac{(\overbrace{50-44.1}^{5.9})^2}{44.1} + \frac{(\overbrace{10-19.3}^{-9.3})^2}{19.3} + \frac{(\overbrace{10-13.4}^{-3.4})^2}{13.4} + \frac{(\overbrace{30-35.9}^{-5.9})^2}{35.9} + \frac{(\overbrace{25-15.7}^{9.3})^2}{15.7} =$$

$$= \frac{11.56}{16.6} + \frac{34.81}{44.1} + \frac{86.49}{19.3} + \frac{11.56}{13.4} + \frac{34.81}{35.9} + \frac{86.49}{15.7} = 0.7 + 0.79 + 4.48 + 0.86 + 0.97 + 5.51$$

$$= 13.31$$

$$E = \frac{\text{row} \times \text{column}}{N}$$

$$E^1 = \frac{80 \cdot 30}{145} = 16.6 \qquad E^4 = \frac{65 \cdot 30}{145} = 13.4$$

$$E^2 = \frac{80 \cdot 80}{145} = 44.1 \qquad E^5 = \frac{65 \cdot 80}{145} = 35.9$$

$$E^3 = \frac{80 \cdot 35}{145} = 19.3 \qquad E^6 = \frac{65 \cdot 35}{145} = 15.7$$

$$df = (\text{rows} - 1) \cdot (\text{columns} - 1) = (2-1) \cdot (3-1) = 1 \cdot 2 = 2$$

$$\chi^2_{(0.01,2)} = 9.21$$

$\chi^2$ 13.31 $>$ $\chi^2_{tcal}$ 9.21 — ~~H0~~ There are statistically significant differences in political preferences depending on gender