

EXERCISE 1

$n = 226$

$\bar{x} = 110$

$s = 20$

LC = 99%  $\rightarrow z = 2.58$

a.  $E = z_{\alpha/2} \cdot \sigma_{\bar{x}} = 2.58 \cdot 1.33 = 3.43$

$\sigma_{\bar{x}} = \frac{s}{\sqrt{n-1}} = \frac{20}{\sqrt{226-1}} = \frac{20}{15} = 1.33$

b.  $\bar{x} \pm E = 110 \pm 3.43 \begin{cases} 113.43 \\ 106.57 \end{cases}$

EXERCISE 2

- Independent variable  $\begin{cases} \text{qualitative} \\ 2 \text{ groups} \end{cases}$
- Dependent variable - quantitative
- Assumptions NO accepted

$\Rightarrow$  Mann-Whitney U

GROUP A	GROUP B
135 (2)	131 (1)
139 (5)	138 (3.5)
142 (8)	138 (3.5)
144 (11)	141 (6)
158 (14)	142 (8)
165 (15)	142 (8)
171 (17)	143 (10)
178 (18)	145 (12)
244 (21)	156 (13)
245 (22)	167 (16)
256 (23)	191 (19)
267 (24)	230 (20)
268 (25)	
289 (26)	
$\Sigma R$	231   120

$U = n_1 \cdot n_2 + \frac{n_1(n_1+1)}{2} - \Sigma R_1$

$U = 14 \cdot 12 + \frac{14 \cdot 15}{2} - 231 = 168 + \frac{210}{2} - 231 = 42$

$U = n_1 \cdot n_2 + \frac{n_2(n_2+1)}{2} - \Sigma R_2$

$U = 14 \cdot 12 + \frac{12 \cdot 13}{2} - 120 = 168 + \frac{156}{2} - 120 = 126$

We choose the lowest U = 42

$U(\alpha, n_2, n_1) = U(0.05, 12, 14)$

$42 < 45 \rightarrow$  (opposite than usual)

~~H0~~ There are statistically significant differences between groups. The anesthetic influence

in relaxation time, with a level of confidence of 95%

### EXERCISE 3

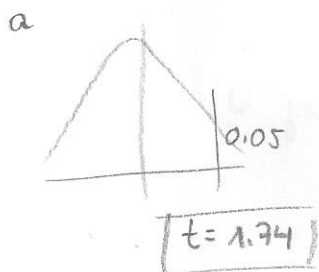
(a) sig.  $\alpha$   
 $0.037 < 0.05$  — ~~no~~ — relationship statistically significant

(b)  $r^2 = 0.33^2 = 0.11 < 0.18$  → low effect size

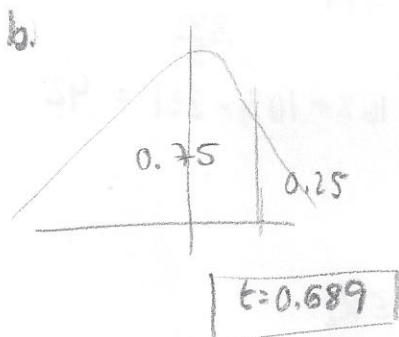
NO, because the statistical significance can be due to an excessively high statistical power

(c)  $1 - r^2_{xy} = 1 - 0.11 = 0.89$  → 89% of variability in height (Y) is not explained by weight (X)

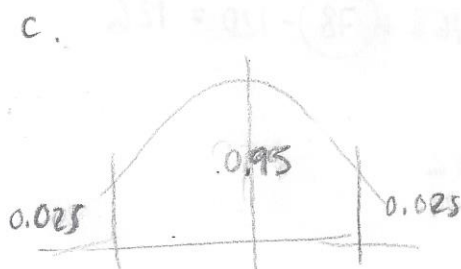
### EXERCISE 4



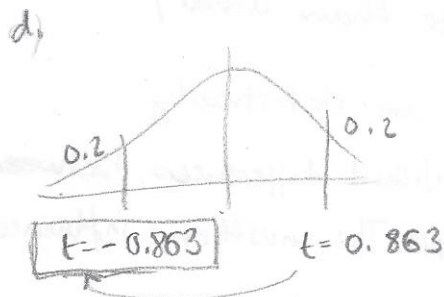
- Using the table of Student t, value of  
df = 17  
one-tail = 0.05



- Using the table of Student t, value of  
df = 17  
one-tail = 0.25



- Using the table of Student t, value of  
df = 17  
two tails 0.05 =  $\begin{cases} 2.11 \\ -2.11 \end{cases}$



- Using the table of Student t, value of  
df = 17  
one tail 0.2 = 0.863 → in negative = -0.863