Date . . No. Lab work 3. Statistics

Ex 1.

- Level of confidence is 85%

⇒ $\alpha = 15\%$ ⇒ $\alpha/2 = 7,5\% = 0,075$

⇒ $z_{\alpha/2} = 1,44$

- level of confidence is 97%

⇒ $\alpha = 3\%$ ⇒ $\alpha/2 = 1,5\% = 0,015$

⇒ $z_{\alpha/2} = 2,15$

Ex 3.

TBC	
Sample_size	2407
Sample_mean	6,67
Sample_std	0,5

Interval Confidence with 90% confidence: $z_{\alpha/2} = 1,6$

$$\left[6,67 - 1,65 \cdot \frac{0,5}{\sqrt{2407}} ; 6,67 + 1,65 \cdot \frac{0,5}{\sqrt{2407}} \right]$$

Ex 4. # $n = 16$; $\sigma = 0,48$; $\bar{P} = 2,84$

With 90% interval confidence ⇒ $z_{\alpha/2} = 1,65$

⇒ Interval Confident:

$$\left[2,84 - 1,65 \cdot \frac{0,48}{\sqrt{16}} ; 2,84 + 1,65 \cdot \frac{0,48}{\sqrt{16}} \right]$$

Date . . . No.

Ex5.

Giới tính	
Nam	419
Nữ	1988
Total	2407

$\hat{p} = \frac{1988}{2407} \approx 0,83$

With 95% confidence interval $\Rightarrow z_{\alpha/2} = 1,96$

$\Rightarrow$ Interval

$$\left[1,96\ 0,83 \mp 1,96 \sqrt{\frac{0,83(1-0,83}{2407}} : 0,83 + 1,96 \sqrt{\frac{0,83(1-0,83)}{2407}} \right.$$

Ex6.

98% confidence interval $\Rightarrow z_{\alpha/2} = 2,33$

~~$E = 0,25$~~

$$E = z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}}$$

$$\Leftrightarrow 0,25 = 2,33 \cdot \frac{1,35}{\sqrt{n}}$$

$$\Leftrightarrow \sqrt{n} = \frac{2,33 \cdot 1,35}{0,25}$$

$$\Leftrightarrow n = \left(\frac{2,33 \cdot 1,35}{0,25} \right)^2 \approx 158,3$$

$\Rightarrow$ minimum $n = 159$.

HONGHA

Date . . . No. Labwork (3) (continue)

Ex7:

$$E = z \cdot \frac{\sigma'}{\sqrt{n}}$$

$E = 2000\$$

With 90% confidence interval $\Rightarrow z = 1,645$

$\sigma' = 8000\$$

$$\Rightarrow \sqrt{n} = \frac{z \cdot \sigma}{E}$$

$$\Leftrightarrow n = \left(\frac{z \cdot \sigma}{E}\right)^2 = \left(\frac{1,645 \cdot 8000}{2000}\right)^2$$

$\Leftrightarrow n = 43,3$

$\Rightarrow$ Minimum need 44

Ex8:

$E = 0,26$.

With 95% confidence interval $\Rightarrow z = 1,96$

$$E = z \cdot \sqrt{\frac{p(1-p)}{n}}$$

With P unknown: Assume $p = 0,5$

$$\Leftrightarrow n = \frac{z^2 \cdot p(1-p)}{E^2}$$

$$\Leftrightarrow n = \frac{1,96 \cdot 0,5 \cdot 0,5}{0,26^2} \approx 14,2$$

$\Rightarrow$ Minimum need = 15

With $p = 0,15$

$$\Rightarrow n = \frac{1,96^2 \cdot 0,15 \cdot 0,85}{0,26^2} \approx 7,2$$

$\Rightarrow$ Minimum need = 8.