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8.4

b. Ta có: $(1-\alpha)\ 100\% = 95\% \Rightarrow \alpha = 0,05$

$P(Z < z_{1-\alpha/2}) = 1 - \frac{\alpha}{2} = 0,975 \Rightarrow z_{1-\alpha/2} \approx 1,96$

Vậy $\bar{x} - z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}} \le \mu \le \bar{x} + z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}}$

$\Rightarrow 1000 - 1,96\frac{20}{\sqrt{25}} \le \mu \le 1000 + 1,96\frac{20}{\sqrt{25}}$

$\Rightarrow 992,16 \le \mu \le 1007,84$

c. Ta có: $(1-\alpha)\ 100\% = 99\% \Rightarrow \alpha = 0,01$

$P(Z < z_{1-\alpha/2}) = 1 - \frac{\alpha}{2} = 0,995 \Rightarrow z_{1-\alpha/2} = 2,576$

Vậy $\bar{x} - z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}} \le \mu \le \bar{x} + z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}}$

$\Rightarrow 1000 - 2,576\frac{20}{\sqrt{10}} \le \mu \le 1000 + 2,576\frac{20}{\sqrt{10}}$

$\Rightarrow 983,71 \le \mu \le 1016,28$

d. $(1-\alpha)\ 100\% = 99\% \Rightarrow \alpha = 0,01$

$P(Z \le z_{1-\alpha/2}) = 1 - \frac{\alpha}{2} = 0,995 \Rightarrow z_{1-\alpha/2} = 2,576$

Vậy $\bar{x} - z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}} \le \mu \le \bar{x} + z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}}$

$\Rightarrow 1000 - 2,576\frac{20}{\sqrt{25}} \le \mu \le 1000 + 2,576\frac{20}{\sqrt{25}}$

$\Rightarrow 989,7 \le \mu \le 1010,3$

e. Khi cỡ mẫu tăng thì khoảng tin cậy ngày càng giảm.

8.9 $\sigma = 0,01$; $\bar{x} = 1,5054$ (inch); khoảng tin cậy 99%; $n = 10$

Ta có: $(1-\alpha)\ 100\% = 99\% \Rightarrow \alpha = 0,01$

$P(Z < z_{1-\alpha/2}) = 1 - \frac{\alpha}{2} = 0,995 \Rightarrow z_{1-\alpha/2} = 2,576$

Vậy $\bar{x} - z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}} \le \mu \le \bar{x} + z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}}$

$\Rightarrow 1,5054 - 2,576\frac{0,01}{\sqrt{10}} \le \mu \le 1,5054 + 2,576\frac{0,01}{\sqrt{10}}$

$\Rightarrow 1,499 \le \mu \le 1,5135$

8.10 $\sigma^2 = 1000$; $n = 12$; $\bar{x} = 3250$

a. Khoảng tin cậy 95%: $(1-\alpha)\ 100\% = 95\% \Rightarrow \alpha = 0,05$

$P(Z \le z_{1-\alpha/2}) = 1 - \frac{0,05}{2} = 0,975 \Rightarrow z_{1-\alpha/2} \approx 1,96$

Vậy $\bar{x} - z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}} \le \mu \le \bar{x} + z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}}$

$\Rightarrow 3250 - 1,96\frac{\sqrt{1000}}{\sqrt{12}} \le \mu \le 3250 + 1,96\frac{\sqrt{1000}}{\sqrt{12}}$

$\Rightarrow 3232,11 \le \mu \le 3267,89$

b. $(1-\alpha)\cdot 100\% = 99\% \Rightarrow \alpha = 0,01$

$P(Z \le z_{1-\alpha/2}) = 1 - \frac{0,01}{2} = 0,995 \Rightarrow z_{1-\alpha/2} \approx 2,576$

Vậy $\bar{x} - z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}} \le \mu \le \bar{x} + z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}}$

$3250 - 2,576\frac{\sqrt{1000}}{\sqrt{12}} \le \mu \le 3250 + 2,576\frac{\sqrt{1000}}{\sqrt{12}}$

$\Rightarrow 3226,48 \le \mu \le 3273,52$

c. Sai số không vượt quá 15psi

$\Rightarrow z_{1-\alpha/2}\frac{\sigma}{\sqrt{n}} = 15$

Mà $(1-\alpha)\cdot 100\% = 99\% \Rightarrow \alpha = 0,01 \Rightarrow z_{1-\alpha/2} \approx 2,576$

$\Rightarrow 2,576\frac{\sqrt{1000}}{\sqrt{n}} = 15 \Leftrightarrow n \approx 30$

8.15 $\bar{x} = 185,055$; $\sigma^2 = 225,03$

8.16 $\bar{x} = 231,64$; $\sigma^2 = 1,825536$

8.18 $\bar{x} = 2,902$; $\sigma^2 = 9,0902 \cdot 10^{-3}$

8.19 $\bar{x} = 12,21$; $\sigma^2 = 0,0109$ s^2=0.102

8.20 $\bar{x} = 156,204$; $\sigma^2 = 36,283$ s^2=37.68

8.21 $\bar{x} = 225,85$; $\sigma^2 = 123,66$ s^2=175.81

8.22 $\bar{x} = 132,83$; $\sigma^2 = 19,81$

8.23 $\bar{x} = 1391,41$; $\sigma^2 = 545,35,52$

8.28 $\bar{x} = 21,4125$; $\sigma^2 = 0,0836$ s^2=0.896

9.29 $\bar{x} = 325,496$; $\sigma^2 = 38052,14$

9.30 $\bar{x} = 98,664$; $\sigma^2 = 0,2231$

9.31 $\bar{x} = 129,242$; $\sigma^2 = 0,0297$

9.32 $\bar{x} = 123,236$; $\sigma^2 = 138,41$

9.33 $\bar{x} = 0,9856$; $\sigma^2 = 4,2864 \cdot 10^{-4}$

9.34 $\bar{x} = 15,4$; $\sigma^2 = 3,36$

9.35 $\bar{x} = 2,639$; $\sigma^2 = 3,286$

10.13 Mẫu 1: $\bar{x} = 9,92$; $\sigma^2 = 0,1601$

2: $\bar{x} = 10,4$; $\sigma^2 = 0,048$

10.17 80°C: $\bar{x} = 0,0964$; $\sigma^2 = 2,1162 \cdot 10^{-3}$

60°C: $\bar{x} = 0,1286$; $\sigma^2 = 2,2851 \cdot 10^{-3}$

10.18 Ctg 1: $\bar{x} = 92,4$; $\sigma^2 = 63,04$

Ctg 2: $\bar{x} = 110$; $\sigma^2 = 782,857$

10.19 Không khuất: $\bar{x} = 0,9158$; $\sigma^2 = 0,094$

Khuất: $\bar{x} = 0,92625$; $\sigma^2 = 0,1341$

10.20 Thạm 1: $\bar{x} = 9892,5$; $\sigma^2 = 581292,43$

2: $\bar{x} = 4120,83$; $\sigma^2 = 56356,07$

10.21 Vỏ Radial: $\bar{x} = 5,25$; $\sigma^2 = 1,0158$

Vỏ bố xiên: $\bar{x} = 5,6083$; $\sigma^2 = 0,906$