

企管二甲 A107270046 郭懿維

6.7 ①

$$1 - \alpha = 0.95, \frac{\alpha}{2} = 0.025$$

$$Z_{\frac{\alpha}{2}} = Z_{0.025} = 1.96$$

$$\mu \pm 95\% \text{ 信賴區間} \Rightarrow \bar{x} \pm Z_{\frac{\alpha}{2}} \frac{s}{\sqrt{n}} = 16.33 \pm 1.96 \frac{4.29}{\sqrt{36}} = 16.33 \pm 1.40$$

$$(14.93, 17.73)$$

②

$$1 - \alpha = 0.90, \frac{\alpha}{2} = 0.05, Z_{\frac{\alpha}{2}} = Z_{0.05} = 1.645$$

$$\mu \pm 90\% \text{ 信賴區間} \Rightarrow 16.33 \pm 1.645 \frac{4.29}{\sqrt{36}} = 16.33 \pm 1.18$$

$$(15.15, 17.51)$$

6.9

$$n=12, \bar{x} = 15291.67, s = \sqrt{\sum (x_i - \bar{x})^2 / (n-1)} = 191.52$$

$$1 - \alpha = 0.90, \frac{\alpha}{2} = 0.05 \quad \text{自由度 } 12-1=11$$

$$t_{0.05}(11) = 1.796 \quad \mu \pm 90\% \text{ 信賴區間}$$

$$\Rightarrow 15291.67 \pm 1.796 \frac{191.52}{\sqrt{12}}$$

$$(15189.26, 15394.08) = 15291.67 \pm 102.41$$

$\mu \pm 90\%$ 區間長度

$$15394.08 - 15189.26 = 204.82$$

6.17

$$1 - \alpha = 0.95 \quad Z_{\frac{\alpha}{2}} = Z_{0.025} = 1.96 \quad e = 0.01 \quad S = 0.05$$

$$n = \left(\frac{Z_{\frac{\alpha}{2}} S}{e} \right)^2 = \left(\frac{1.96 \times 0.05}{0.01} \right)^2 = 96.04$$

$n = 97 - 35 = 62 \Rightarrow$ 確保 μ 的估計誤差不超過 0.01kg 的機率為 0.95