

6.7

* 大樣本，母體未知 $\rightarrow (\bar{x} - Z_{\frac{\alpha}{2}} \frac{s}{\sqrt{n}}, \bar{x} + Z_{\frac{\alpha}{2}} \frac{s}{\sqrt{n}})$
 樣本平均數 = 16.33 樣本標準差 = 4.29

① 95% 信賴區間

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

$$\begin{aligned}\bar{x} \pm Z_{\frac{\alpha}{2}} \frac{s}{\sqrt{n}} &= 16.33 \pm Z_{0.025} \frac{4.29}{\sqrt{36}} \\ &= 16.33 \pm 1.96 \frac{4.29}{6} \\ &= 16.33 \pm 1.4014\end{aligned}$$

$$\rightarrow (14.9286, 17.7314)$$

② 90% 信賴區間

$$1-\alpha = 0.9 \quad \frac{\alpha}{2} = 0.05$$

$$\begin{aligned}\bar{x} \pm Z_{\frac{\alpha}{2}} \frac{s}{\sqrt{n}} &= 16.33 \pm 1.645 \frac{4.29}{\sqrt{36}} \\ &= 16.33 \pm 1.176175\end{aligned}$$

$$\rightarrow (15.153825, 17.506175)$$

真皆與尹速

然之質。此言萬物雖皆有
差，但

Week
例 6.9 P.200 小樣本，母體 σ 未知 $\Rightarrow (\bar{x} - t_{\frac{\alpha}{2}}(v) \frac{s}{\sqrt{n}}, \bar{x} + t_{\frac{\alpha}{2}}(v) \frac{s}{\sqrt{n}})$

點估計？90% 信賴區間？區間長度：

$$(1) \bar{x} = 15291.67$$

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{\sum (x_i - 15291.67)^2}{12-1}} \\ = 197.52$$

$$(2) 1 - \alpha = 0.9$$

$$\frac{\alpha}{2} = 0.05$$

$$v = n-1 = 12-1 = 11$$

$$\bar{x} \pm t_{\frac{\alpha}{2}}(n-1) \frac{s}{\sqrt{n}} \\ = 15291.67 \pm t_{0.05}(11) \frac{197.52}{\sqrt{12}} \\ = 15291.67 \pm 102.41$$

$$\rightarrow (15189.26, 15394.08)$$

$$(3) 15394.08 - 15189.26 = 204.82$$

Week 3

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6.19

母体 6 未知

$$1 - \alpha = 0.95$$

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

$$\epsilon = 0.01$$

$$\varsigma = 0.05$$

$$n = \left(\frac{\frac{Z_{\alpha/2} \varsigma}{2}}{\epsilon} \right)^2$$

$$= \left(\frac{1.96 \times 0.05}{0.01} \right)^2$$

$$= \left(\frac{0.098}{0.01} \right)^2$$

$$= 96.04 \approx 97$$

已觀察 335 袋

需再增 $97 - 35 = 62$ 袋