

Week 4 作業

習題

7. 解: (1) 估計  $p$  之點估計為  $\hat{p} = \frac{45}{80} = 0.56$ .

(2)  $p$  之 95% 誤差界限為

$$\begin{aligned} z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} &= z_{0.025} \sqrt{\frac{0.56 \times 0.44}{80}} \\ &= 1.96 \times 0.06 \\ &= 0.12. \end{aligned}$$

(3)  $p$  之 90% 信賴區間為

$$\begin{aligned} \hat{p} \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} &= 0.56 \pm z_{0.05} \sqrt{\frac{0.56 \times 0.44}{80}} \\ &= 0.56 \pm 1.645 \times 0.06 \\ &= 0.56 \pm 0.10. \end{aligned}$$

即  $(0.46, 0.66)$ .