

DATE   

習 17

$$p \pm 100(1-\alpha)\% \text{ 信頼区間} = \hat{p} \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$$\text{誤差界限} = z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$$1) \text{ 估計 } p \text{ の点估計 } \hat{p} = \frac{45}{80} = 0.56 \#$$

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

$$\begin{aligned} 3) \text{ 信頼区間 } \hat{p} \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} &= 0.56 \pm z_{0.025} \sqrt{\frac{0.56 \times 0.44}{80}} \\ &= 0.56 \pm 1.645 \times 0.06 \\ &= 0.56 \pm 0.10 \\ &= (0.45, 0.66) \# \end{aligned}$$