

习题4

$$(1) n=1200 \quad \hat{p}=0.33 \quad 1-\alpha=0.98$$

$$0.33 \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$$= 0.33 \pm 2.327 \times \sqrt{\frac{0.33 \times 0.67}{1200}}$$

$$= 0.33 \pm 0.3 = (0.30, 0.36)$$

$$(2) n=820 \quad X=650 \quad 1-\alpha=0.95 \quad \frac{\alpha}{2}=0.025$$

$$\hat{p} = \frac{X}{n} = \frac{650}{820} = 0.79$$

$$\alpha=0.05$$

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

$$0.79 \pm 1.96 \sqrt{\frac{0.79 \times 0.21}{820}}$$

$$= 0.79 \pm 1.96 \times 0.014$$

$$= 0.79 \pm 0.03 = (0.76, 0.82)$$

$$(14) (1) n=15$$

$$\sum x_i^2 = 1+4+9+4+1+9+9+4+4+1+1+4+1+1 = 54$$

$$\bar{x} = \frac{26}{15} = 1.73$$

$$s = \sqrt{\frac{\sum x_i^2 - n\bar{x}^2}{n-1}}$$

$$= \sqrt{\frac{54 - 15 \times 1.73^2}{14}}$$

$$= \sqrt{0.651} = 0.8$$

$$1-\alpha=0.95 \quad t_{\frac{\alpha}{2}}(n-1) = t_{0.025}(14) = 2.145$$

$$1.73 \pm t_{0.025}(14) \frac{0.8}{\sqrt{15}} = 1.73 \pm 2.145 \frac{0.8}{\sqrt{15}} = 1.73 \pm 0.44$$

$$= (1.29, 2.17)$$

$$(2) 1-\alpha=0.8 \quad \frac{\alpha}{2}=0.1$$

$$\alpha=0.2$$

$$1.73 \pm t_{0.1}(14) \frac{0.8}{\sqrt{15}}$$

$$= 1.73 \pm 1.345 \frac{0.8}{\sqrt{15}}$$

$$= 1.73 \pm 0.28$$

$$(1.45, 2.01)$$