DATE

7. (1) $\hat{p}=\frac{45}{80}=0.56$

(2) P为95%误差界限为

$Z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}=Z_{0.025}\sqrt{\frac{0.56\times0.44}{80}}$

$=1.96\times0.06$

$=0.12$

(3) P为90%信赖区间为.

$\hat{p}\pm Z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}=0.56\pm Z_{0.05}\sqrt{\frac{0.56\times0.44}{80}}$

$=0.56\pm1.645\times0.06$

$=0.56\pm0.1$

即(0.46, 0.66)

8.

$\hat{p}_1=\frac{55}{100}=0.55$ $\hat{p}_2=\frac{60}{100}=0.60$

P_1-P_2 为95%信赖区间

$(\hat{p}_1-\hat{p}_2)\pm Z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1}+\frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$

$=(0.55-0.6)\pm Z_{0.025}\sqrt{\frac{0.55\times0.45}{100}+\frac{0.60\times0.40}{100}}$

$=(-0.05)\pm1.96\times0.07$

$=(-0.05)\pm0.14$

即(-0.19, 0.09).

21. (1) $\hat{p} = \frac{105}{250} = 0.42$ $1-\alpha = 0.90$ $Z_{\frac{\alpha}{2}} = Z_{0.05} = 1.645$

P为90%信赖区间为

$0.42 \pm Z_{0.05}\sqrt{\frac{0.42 \times 0.58}{250}} = 0.42 \pm 1.645 \times 0.03$

$= 0.42 \pm 0.05$

即P(0.37, 0.47)

(2) $e = 0.03$ $1-\alpha = 0.95$ $Z_{\frac{\alpha}{2}} = Z_{0.025} = 1.96$

a. $n = (\frac{1.96}{0.03})^2 (0.3)(0.7) = 896.37$

即 $n = 897$

b. $\hat{p} = \frac{105}{250} = 0.42$

$n = (\frac{1.96}{0.03})^2 (0.42)(0.58) = 1039.79$

即 $n = 1040$

c. $p = 0.5$

$n = (\frac{1.96}{0.03})^2 (0.5)(0.5) = 1067.11$

$n = 1068$.

2. (1) $\sigma=3$ $1-\alpha=0.95$ $\alpha=0.05$ $\frac{\alpha}{2}=0.025$

$Z_{\frac{\alpha}{2}}=Z_{0.025}=1.96$ $e=0.5$

$n=\left(\frac{Z_{\frac{\alpha}{2}}\sigma}{e}\right)^2=\left(\frac{1.96\times3}{0.5}\right)^2=138.3$

$n=139$

(2) $\sigma=0.2$ $1-\alpha=0.90$ $\alpha=0.1$ $\frac{\alpha}{2}=0.05$ $Z_{\frac{\alpha}{2}}=Z_{0.05}=1.645$

$e=0.03$

$n=\left(\frac{Z_{\frac{\alpha}{2}}\sigma}{e}\right)^2=\left(\frac{1.645\times0.2}{0.03}\right)^2=120.27$

$n=121$

(3) $\sigma=0.05$ $1-\alpha=0.99$ $\alpha=0.02$ $\frac{\alpha}{2}=0.01$ $Z_{\frac{\alpha}{2}}=Z_{0.01}=2.327$

$e=0.02$

$n=\left(\frac{Z_{\frac{\alpha}{2}}\sigma}{e}\right)^2=\left(\frac{2.327\times0.05}{0.02}\right)^2=33.8$

$n=34$.

6. $n=120$, $\bar{x}=1250$ $S=140$ $1-\alpha=0.95$. $\frac{\alpha}{2}=0.025$

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

μ 95% 信赖区间

$\bar{x}\pm Z_{\frac{\alpha}{2}}\frac{\sigma}{\sqrt{n}}=1250\pm Z_{0.025}\frac{140}{\sqrt{120}}$

$=1250\pm 25.09$

即 $P(1224.95, 1275.05)$

10. (1) $\bar{x}-\bar{y}=85-78=7$.

(2) $1-\alpha=0.9$ $\frac{\alpha}{2}=0.05$ $Z_{0.05}=1.645$

$\mu_1-\mu_2$ 之 90% 信赖区间为.

$$(\bar{x}-\bar{y})\pm Z_{\frac{\alpha}{2}}\sqrt{\frac{\sigma_1^2}{n_1}+\frac{\sigma_2^2}{n_2}}=(85-78)\pm 1.645\sqrt{\frac{154}{50}+\frac{146}{40}}$$

$$=7\pm 1.645\times 2.59$$

$$=7\pm 4.26$$

即 P(2.74, 11.26).