4/7. 實習課習題.

3. $n=10$ $\bar{x}=13.63$ $S=6.06$

$n-1=9$. $1-\alpha=0.98$ $\frac{\alpha}{2}=0.01$

$\bar{x} \pm t_{\frac{\alpha}{2}}(n-1)\frac{S}{\sqrt{n}} = 13.63 \pm t_{0.01}(9)\frac{6.05}{\sqrt{10}}$

$= 13.63 \pm 2.821 \times 1.91$

$= 13.63 \pm 6.39$

$= (8.24, 19.02)$

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

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

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

$= 0.33 \pm 0.03$

$= (0.30, 0.36)$

14. (1) $n=16$ $\bar{x}=1.73$. $S=0.8$

$1-\alpha=0.95$ $t_{\frac{\alpha}{2}}(n-1)$

$= t_{0.025}(14) = 2.145$

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

$= 1.73 \pm 2.145 \times \frac{0.8}{\sqrt{15}}$

$= 1.73 \pm 0.44$

(2) $n=820$ $x=650$ $\hat{p}=\frac{650}{820}$

$=0.79$

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

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

$= 0.79 \pm 1.96 \times 0.014$

$= 0.79 \pm 0.03$

$= (0.76, 0.82)$

(2) $1.73 \pm t_{0.10}(14)\frac{0.8}{\sqrt{15}}$

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

$= 1.73 \pm 0.28$

$= (1.45, 2.01)$

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