

$$n = 325$$

$$df = 325 - 1 = 324$$

$$\bar{x} = 75.3$$

$$s = 12.8$$

$$\alpha = 0.2\%$$

$$\alpha/2 = 0.1\% = 0.001$$

$$t_{\alpha/2, df} = t_{0.001, 324} = 3.1161$$

$$\begin{aligned} C.I. &= \left( \bar{x} \pm t_{\alpha/2} \frac{s}{\sqrt{n}} \right) \\ &= \left( 75.3 \pm 3.1161 \cdot \frac{12.8}{\sqrt{325}} \right) \\ &= (75.3 \pm 2.2125) \\ &= (73.0875, 77.5125) \\ C.I. &\approx (73.09, 77.51) \\ \alpha &= 5\% \\ \alpha/2 &= 2.5\% \\ Z_{\alpha/2} &= 1.96 \\ &= 0.025 \\ d &= 3\% \\ d &= 0.03 \\ n &\geq \frac{Z_{\alpha/2}^2}{4d^2} \\ &= \frac{(1.96)^2}{4(0.03)^2} \\ n &\geq 1067.1 \\ n &= 1068 \end{aligned}$$