

Problem 87

X : difference between true and reported age

$$X \sim \text{Uniform}[-2.5, 2.5]$$

$$E(X) = \frac{1}{2} \cdot [2.5 + (-2.5)] = 0$$

$$V(X) = \frac{1}{12} \cdot [2.5 - (-2.5)]^2 = 2.083$$

\bar{X} : mean of the differences

$$n = 48$$

$$E(\bar{X}) = 0$$

$$V(\bar{X}) = \frac{1}{48} \cdot (2.083) = .0434$$

$$P(-.25 \leq \bar{X} \leq .25)$$

$$P\left(\frac{-.25 - 0}{\sqrt{.0434}} \leq Z \leq \frac{.25 - 0}{\sqrt{.0434}}\right)$$

CLT

$$P(-1.2 \leq Z \leq 1.2)$$

Standardizing

$$P(Z \leq 1.2) - P(Z \leq -1.2) = \underline{\underline{.77}}$$

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