

### Inferential Statistics: Required Sample Sizes

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To find the required sample size ( $n$ ) when the observed proportion ( $\hat{p}$ ) is known to estimate a population proportion, we use the formula:

$$n = \frac{[Z_{\alpha/2}]^2 \cdot \hat{p}\hat{q}}{E^2}$$

To find the required sample size ( $n$ ) when the observed proportion ( $\hat{p}$ ) is not known to estimate a population proportion, we use the formula:

$$n = \frac{[Z_{\alpha/2}]^2 \cdot .25}{E^2}$$

To find the required sample size ( $n$ ) when the population standard deviation ( $\sigma$ ) is known, to estimate a population mean, we use the formula:

$$n = \left[ \frac{Z_{\alpha/2} \cdot \sigma}{E} \right]^2$$

Round off Rule: *If any of these calculations result in a decimal, round up to the next integer.*