

Starter 2/20

p. 483 #21-24

What z^* would be used in a 95% confidence interval?

8.2b 4 Step process for Confidence Intervals

1. State - parameter and C-level
2. Plan - what method, check conditions
3. Do - calculate the C.I.
4. Conclude - interpret the C.I.

ex: What proportion of U.S. teens have an online profile?
An SRS of 487 U.S. teens was taken and 385 of them have an online profile. Construct a 95% Confidence Interval for p .

1. We'll estimate the true proportion of U.S. teens who have an online profile at a 95% Confidence level
2. Use a 1-Sample Z Interval for population proportion

Conditions: Random
Normal
Independent

} check them!

$$3. \hat{p} \pm z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$$\hat{p} = .79$$

$$n = 487$$

$$(.754, .827)$$

Stat → tests → A: 1-prop Z Int

385 = x = # of successes

487 = n = sample size

.95 = C-level

4. We are ...

Choosing Sample Size (for a desired margin of error)

$$z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \leq ME$$

ex.: What proportion of students at BHS like to ski? Determine n needed to estimate p within 10% (with a 95% c-level)

$$ME = .1$$

$$z^* = 1.96$$

\hat{p} = use an estimate or 0.5

$$1.96 \sqrt{\frac{.5(1-.5)}{n}} \leq 0.1 \sqrt{n}$$

$$\left(\frac{1.96 \sqrt{.5(.5)}}{.1} \right)^2 \leq \left(\frac{0.1 \sqrt{n}}{.1} \right)^2$$

$$\frac{1.96^2 (.5)(.5)}{(0.1)^2} \leq n$$

$$96.04 \leq n$$

*Always round up

Sample at least 97 people