Margin of Error

MARGIN OF ERROR

- "cushion" around a statistic

- Margin of Error =

$$\frac{1}{\sqrt{n}}$$

Margin of Error - Example

Suppose that 900 American teens were surveyed about their favorite event at the Winter Olympics. Ski jumping was the favorite for 20% of those surveyed. This result can be used to predict the true interval of the proportion of American teens who favor ski jumping.

Margin of Error = $\dfrac{1}{\sqrt{900}}$ = ± 0.033

Interval for those who favor ski jumping = 0.20 $\pm$ 0.033

= (0.167, 0.233)

If your sample size is 400 and you wish to cut the margin of error in half, what will your new sample size be?

Solution

Margin of Error = $\dfrac{1}{\sqrt{400}}$ = 0.05 = 5%

1/2 of this Margin of Error = .5(0.05) = 0.025

Set the desired Margin or Error equal to the formula and solve for n:

$0.025 = \dfrac{1}{\sqrt{n}}$ $\qquad \sqrt{n} = \dfrac{1}{0.025} = 40$

$n = 40^2 = 1600$

If you want a margin of error to be 8%, what sample size will you need?

Margin of Error = $0.08 = \dfrac{1}{\sqrt{n}}$

Solve for n:

$\sqrt{n} = \dfrac{1}{0.08} = 12.5$

$n = (12.5)^2 = 156.25$

Sample Size is **ALWAYS** rounded up!!!

The sample size would be 157

Classwork

In Packet!

Homework

Unit 1 Day 7 HW on Weebly