

**What am I learning today?**

**Main Ideas/ Questions**

Sampling Review

**Notes**

**What are the two biased sampling methods?**

**What are the three non-biased sampling methods?**

Bias and Variability

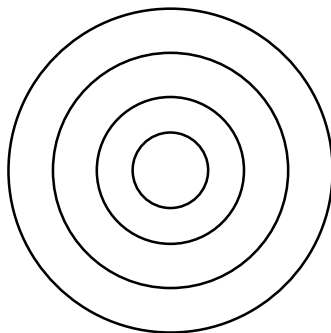
**Bias** – Consistent, repeated \_\_\_\_\_ of the sample statistic from the population parameter

**Variability** – Describes how \_\_\_\_\_ out the values of the sample statistic are

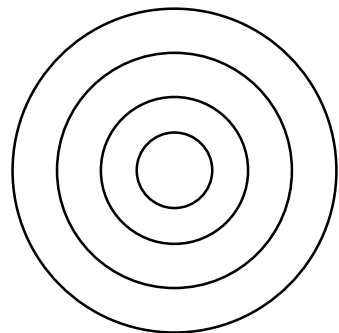
\*\*\*Smaller sample → \_\_\_\_\_ variability

\*\*\*Larger sample → \_\_\_\_\_ variability

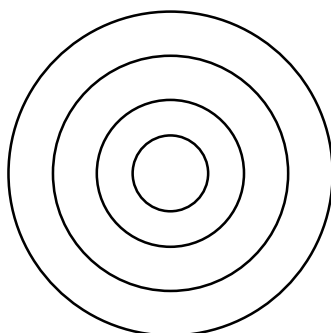
\*\*A good sampling method has both small bias and small variability\*\*



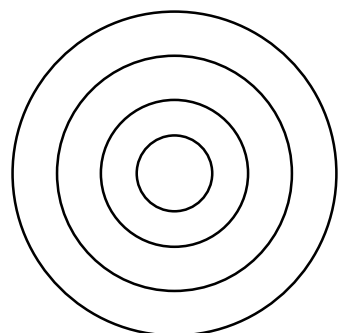
High bias, low variability



Low bias, high variability



High bias, high variability



Low bias, low variability

**Main Ideas/  
Questions**

Margin of Error

**Notes**

**Margin of Error (M.O.E.)** – The maximum expected difference between the true population parameter and sample statistic

**Calculation:**  $\frac{1}{\sqrt{n}}$  n = sample size

Sample Size	Margin of Error
144	
400	
1000	
2000	
3000	

**What happens to the margin of error as we increase the sample size?**

The \_\_\_\_\_ the margin of error, the more \_\_\_\_\_ the results will be.

\*\*\*For this class, we only use a 95% confidence statement\*\*

**Confidence Statement** – A **confidence statement** has two parts: a margin of error and a level of confidence. The level of confidence says what percent of all possible samples will satisfy the margin of error.

\*\*\*Confidence statement ALWAYS describe the \_\_\_\_\_\*\*\*

Example

**Example 1:** In a survey of 800 people, 160 said they get a haircut once per month.

- a) What is the margin of error for the survey?
- b) Find the interval with the margin of error.
- c) Write a confidence statement for this data.
- d) Do you think this provides accurate results? Why or Why not?