



UNIVERSITY OF  
MICHIGAN

## **This or That?** **Language and Notation**



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# ICE CREAM FLAVOR

Vanilla



**OR**

Chocolate



Results: \_\_\_\_\_ % (or short list of names under each side?)

# PERFORM IT RIGHT NOW

Roll Over



**OR**

Cartwheel



Results: \_\_\_\_\_ % (or short list of names under each side?)

# Population Mean Parameter

$$\mu \quad (\bar{m})$$

# Notation for Sample Mean

$\hat{\mu}$  (mū – hat) **OR**  $\bar{x}$  (x-bar)

Results: \_\_\_\_\_ % (or short list of names under each side?)

# Population Standard Deviation Parameter

$\sigma$  (sigma)

# Population Standard Deviation Parameter

$\sigma$  (sigma)

**The SIGMA Story**  
**By Brady West**

# Notation for Sample Standard Deviation

$\hat{\sigma}$  (sigma – hat) **OR**  $s$

Results: \_\_\_\_\_ % (or short list of names under each side?)



# Notation for Proportions

$\pi$  and  $\hat{\pi}$       **OR**       $p$  and  $\hat{p}$

Results: \_\_\_\_\_ % (or short list of names under each side?)

# Confidence Interval Idea

**Best Estimate  $\pm$  Margin of Error**  
(or Statistic)

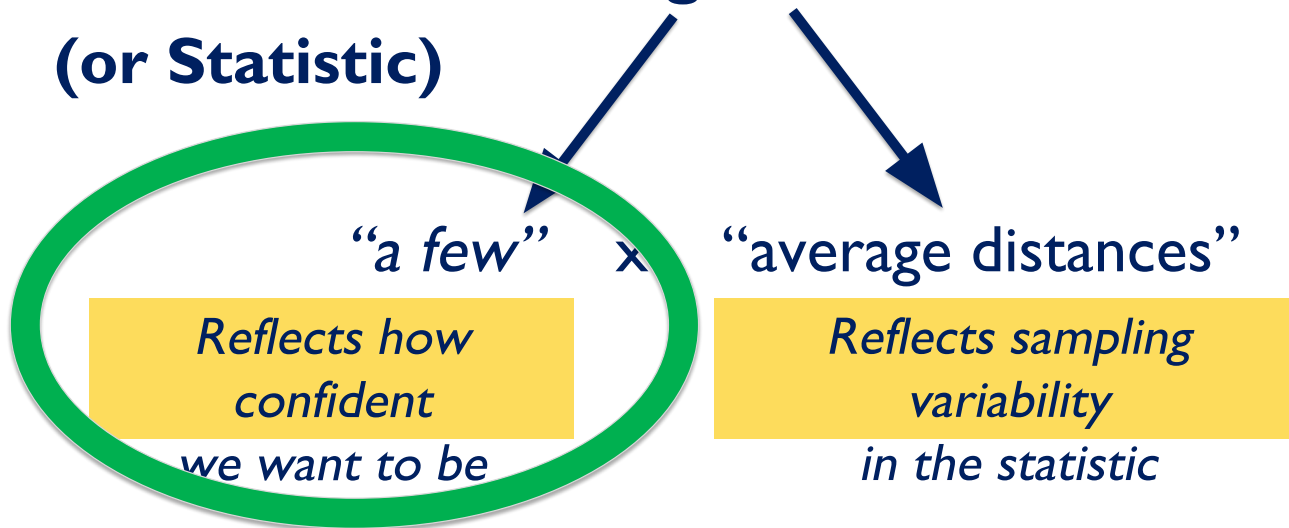
“a few” x “average distances”

*Reflects how  
confident  
we want to be*

*Reflects sampling  
variability  
in the statistic*

# Confidence Interval Idea

**Best Estimate  $\pm$  Margin of Error  
(or Statistic)**



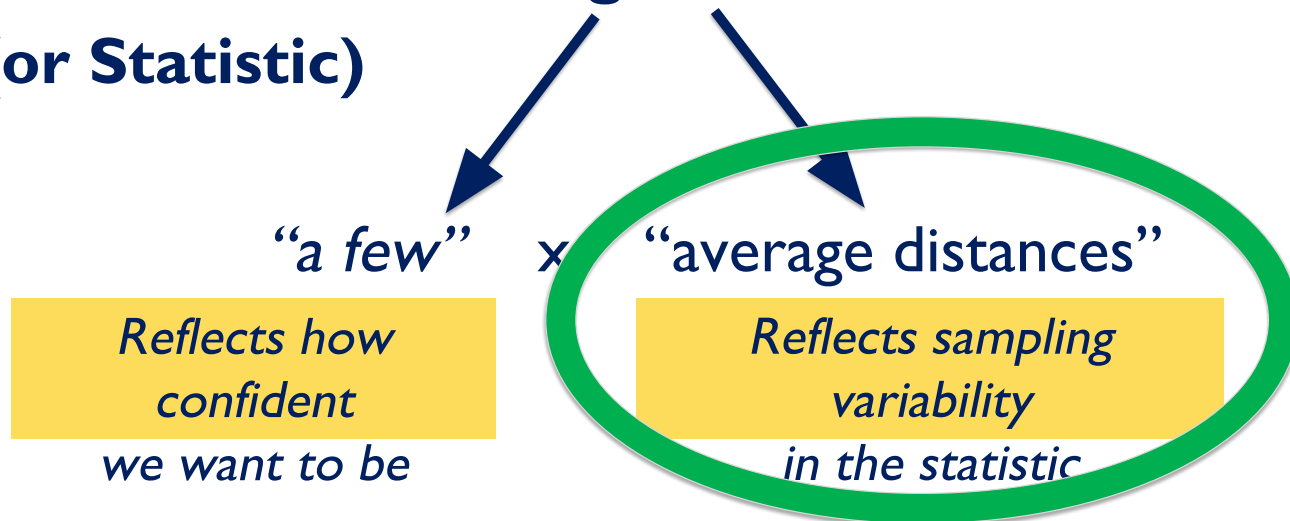
# “Few” Multiplier for 95% confidence

**1.96                      OR                      2**

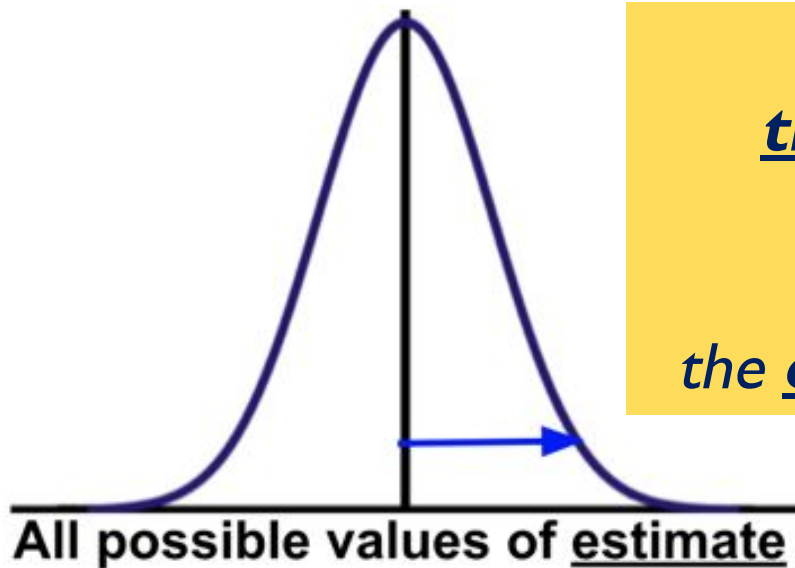
Results: \_\_\_\_\_ % (or short list of names under each side?)

# Confidence Interval Idea

**Best Estimate  $\pm$  Margin of Error  
(or Statistic)**



# Sampling Variability of the Estimate (Statistic)



*What do we call this  
**true variability measure?***

*AND*

*What is the name for  
the **estimate** of this variability?*

# 1) True Variability and 2) its Estimate

1) Standard Error  
of the statistic  
and

2) Estimated Standard Error  
of the statistic

**OR**

1) Standard Deviation  
of the statistic  
and

2) Standard Error  
of the statistic

Results: \_\_\_\_\_ % (or short list of names under each side?)

# 1) True Variability and 2) its Estimate

use this convention  
in this course

1) Standard Error  
of the statistic  
and

2) Estimated Standard Error  
of the statistic

OR

1) Standard Deviation  
of the statistic  
and

2) Standard Error  
of the statistic

Results: \_\_\_\_\_ % (or short list of names under each side?)



# Statistical Notation and Terminology

- Not everyone may agree  
but consistency with definitions ☐ **ok**
- Helpful for efficiency and understanding statistical  
output and technical reports
- Using words, being able to provide appropriate  
interpretations ☐ **most important**