

MPPU 1034: Application of Statistic in Educational Research

Hypothesis Testing

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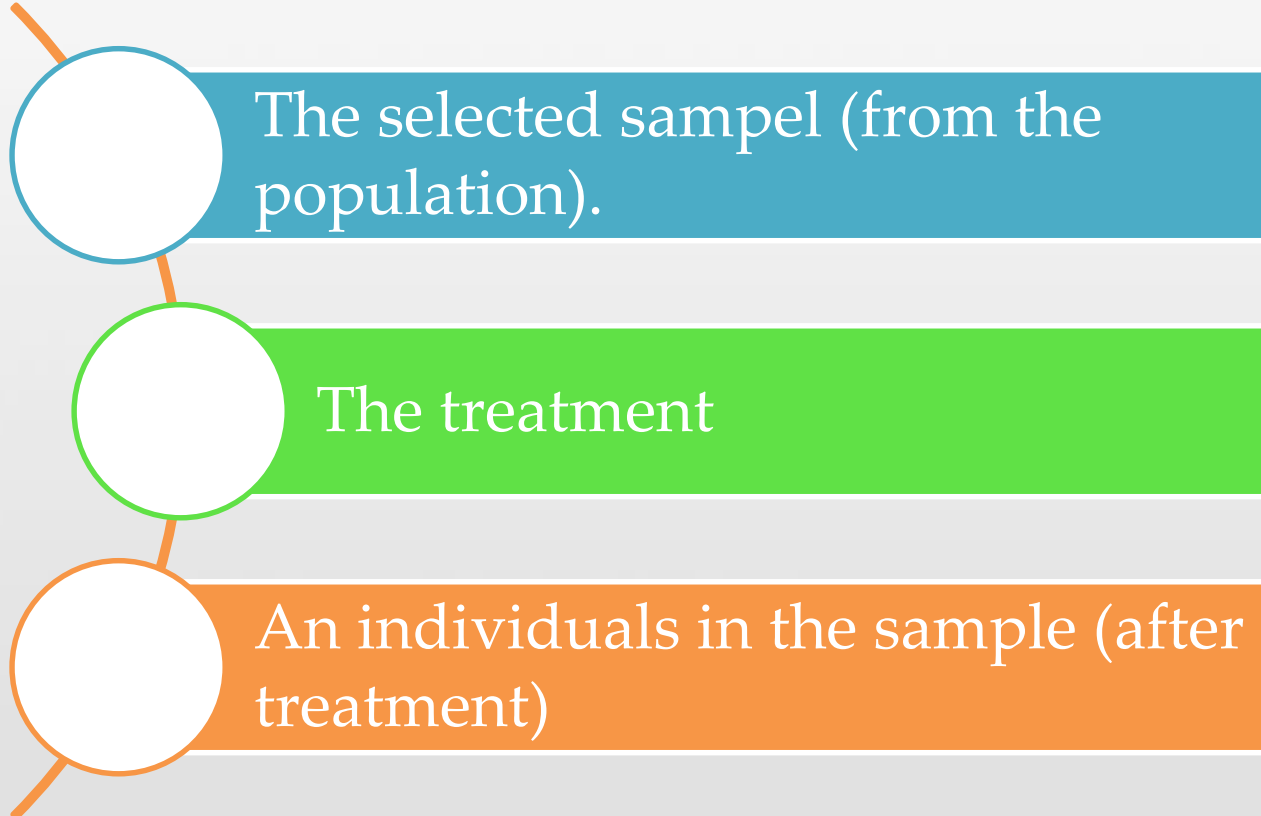
Dr. Megat Aman Zahiri Megat Zakaria

What is Hypothesis Testing?

- The aim of a hypothesis test is to find out the chance of results from a research study.
- Its refer a procedure to determine whether a treatment has an effect on the individuals in a population.

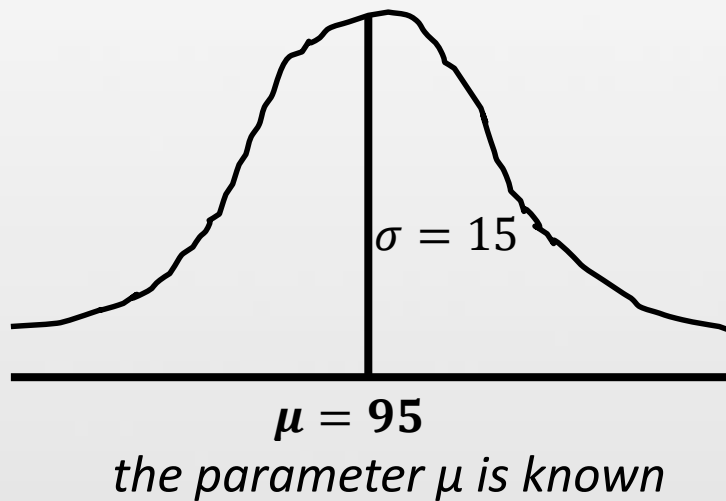
What is Hypothesis Testing?

It's used to assess the results from



Situation for hypothesis Testing

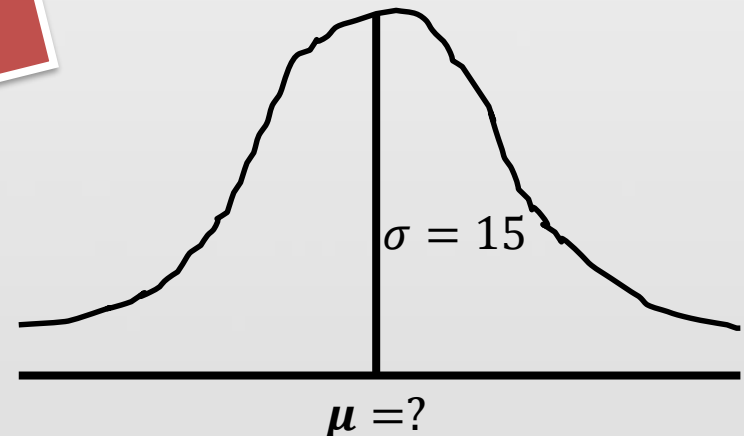
*before treatment
(known population)*



Is the treatment has an effect on the population mean?



*After treatment
(known population)*



Hypothesis Testing (cont.)

Is the treatment has an effect on the population mean?

yes

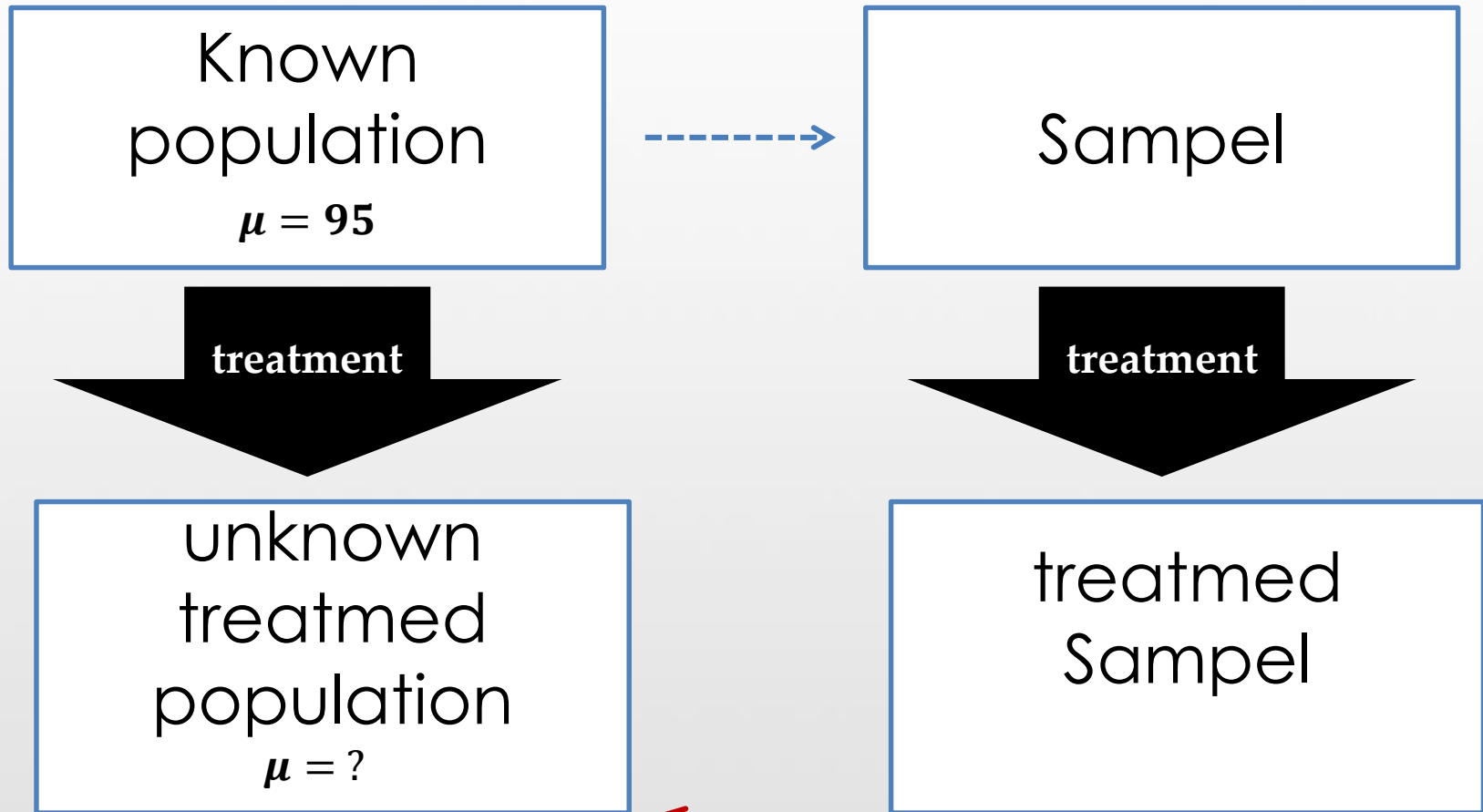
no

the treatment has an
effect.

the treatment has an
No effect.

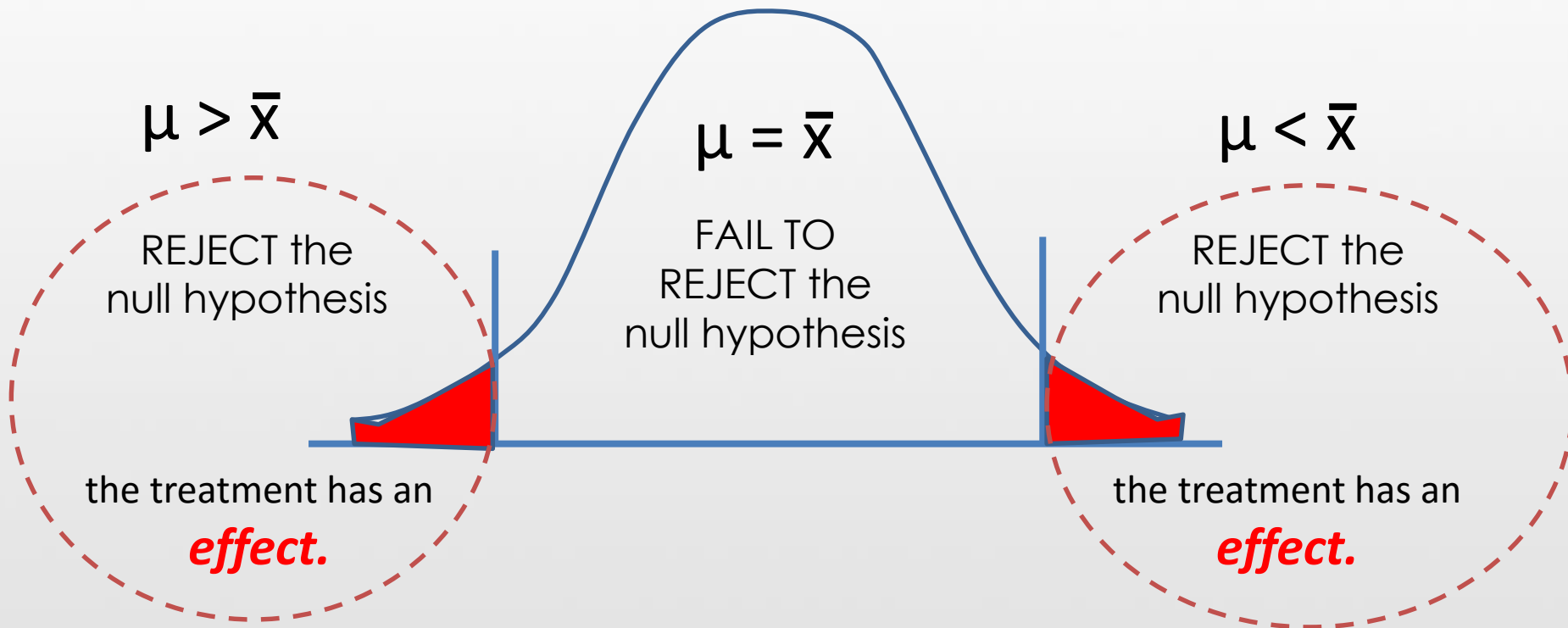
*It is also possible that the difference because of
sampling error*

the actual research study



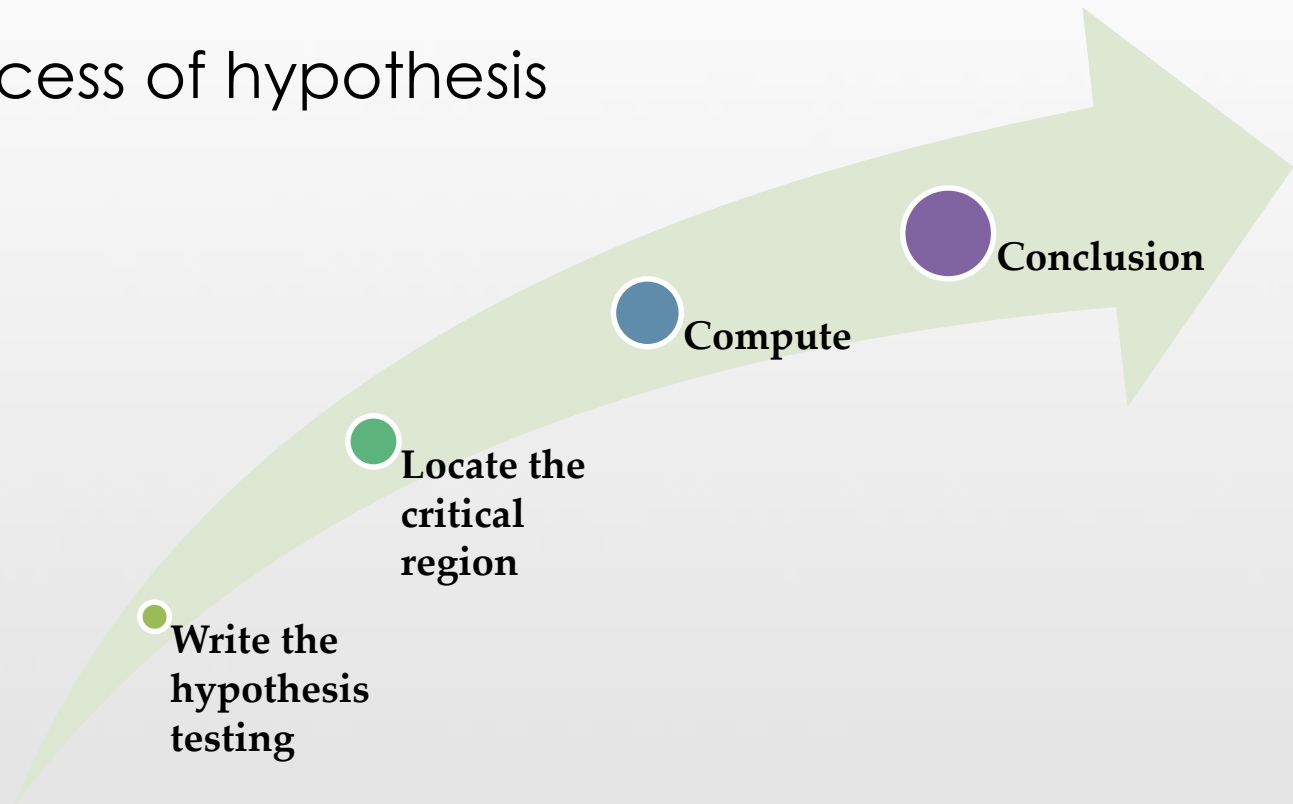
*the result is a treated sample
represents the treated
population.*

Hypothesis Testing (cont.)



The Test Statistic..

The process of hypothesis testing :



Step 1 : Write the hypothesis

$H_0: \mu_1 - \mu_2 = 0$ (treatment has no effect)

$H_1: \mu_1 - \mu_2 \neq 0$ (treatment has an effect)

Step 2 : Locate the critical region

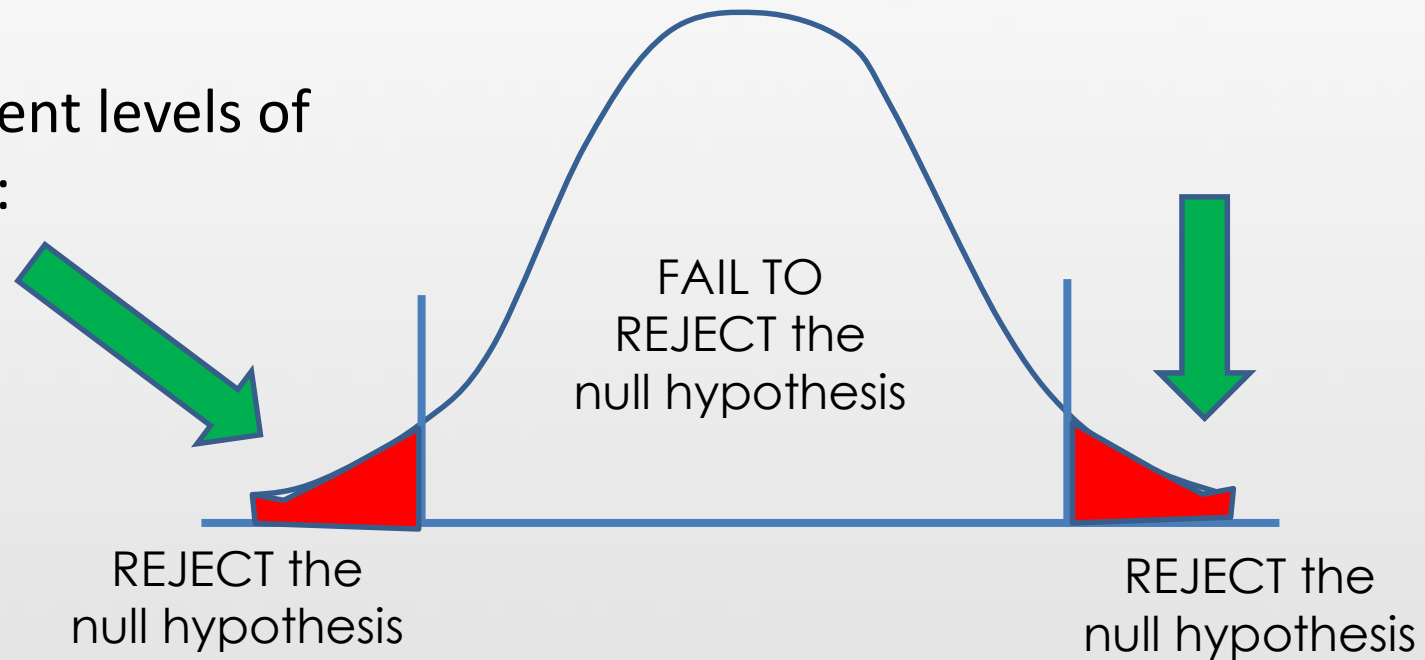
The critical region boundaries.

Three different levels of significance:

$\alpha = .05$, or

$\alpha = .01$, or

$\alpha = .001$



Step 3 : Compute

Compute the test statistic.

Step 4 : Conclusion

**Not
significant**
**FAIL TO
REJECT**
the null
hypothesis

significant
REJECT
the null
hypothesis

Some Examples of Null Hypothesis

- ✓ Mean (mark) of Group 1 is equal to mean (mark) of Group 2

$$H_0 : \mu_1 = \mu_2$$

- ✓ The standard deviation of Group A is the standard deviation of Group B

$$H_0 : \sigma_1 = \sigma_2$$

- ✓ The three population means are equal to each other

$$H_0 : \mu_1 = \mu_2 = \mu_3$$

- ✓ Sample mean is equal to the population mean

$$H_0 : \bar{x} = \mu$$