Testing in R

Hello there!

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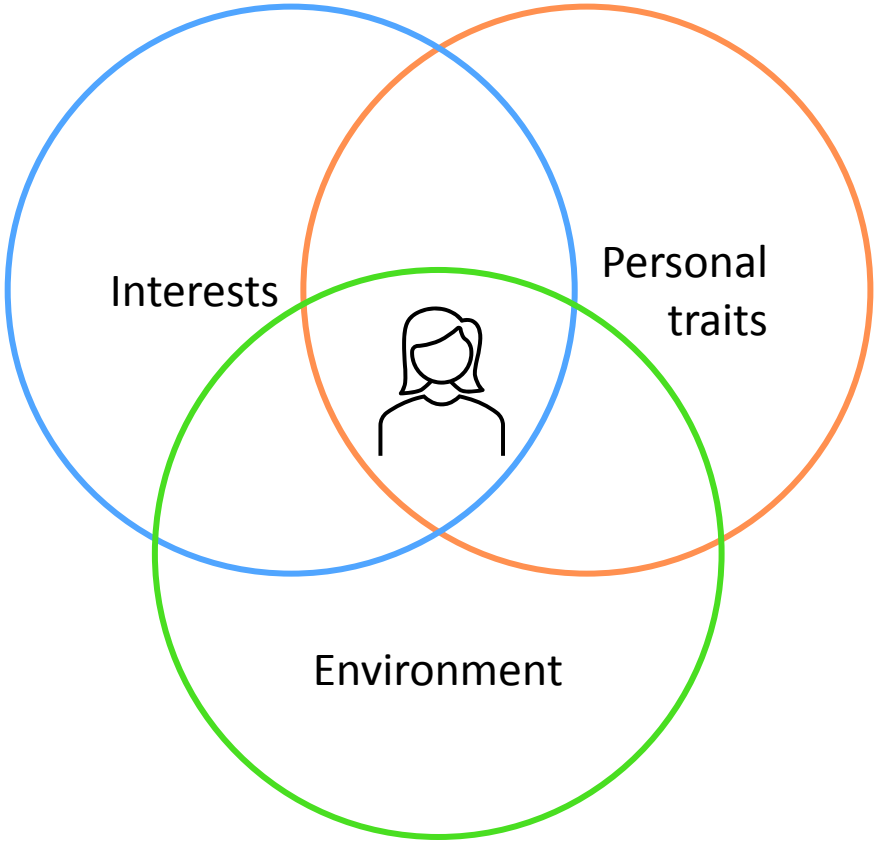
Agenda

- Introduction
- A/B Testing Phases
- R Example
- Final tips
- Q&A

Introduction

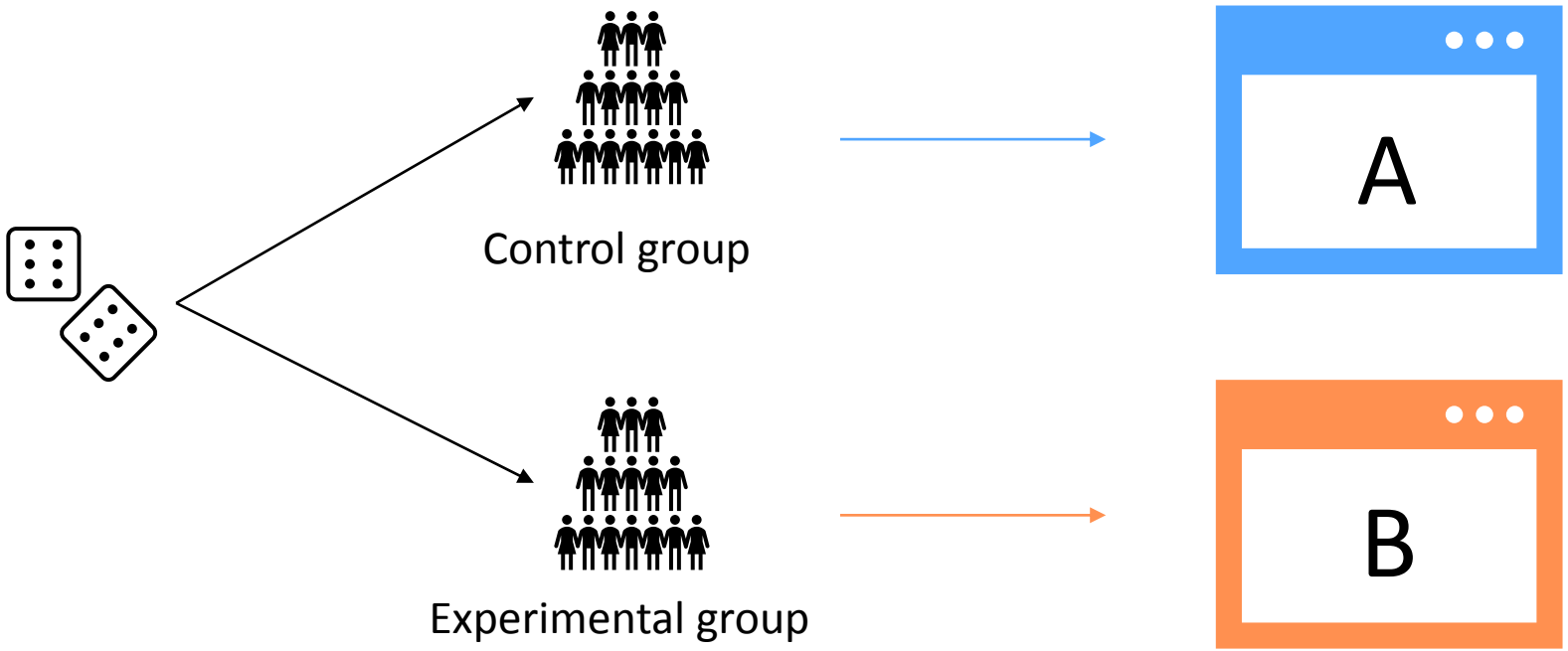
Introduction

Introduction



Introduction

What is A/B Testing



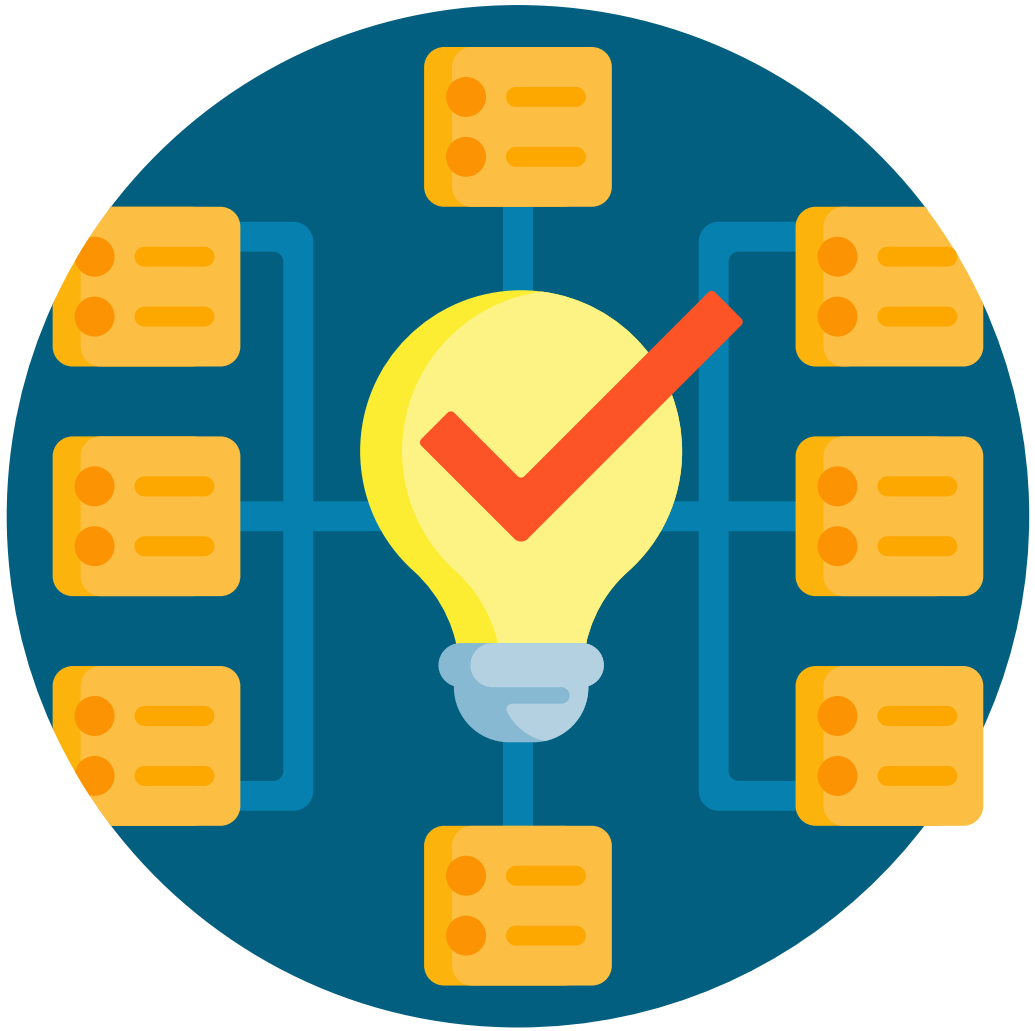
Introduction

Phases of A/B Testing

Definition

Execution

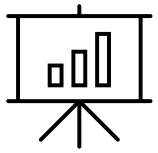
Analysis



A/B Test Phases: Definition

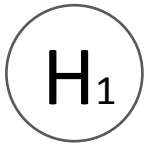
Definition phase

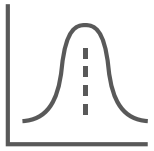
1. Define the goal



2. Choose the metrics

3. Set the hypothesis



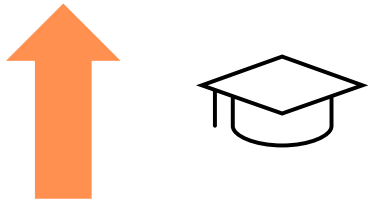


4. Calculate the sample

Definition phase

Define the goal	Choose the metrics	Set the hypothesis	Calculate the sample

coursera

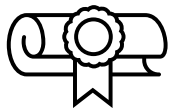


Increase number of students getting certification

Definition phase

Define the goal	**Choose the metrics**	Set the hypothesis	Calculate the sample

Key metric



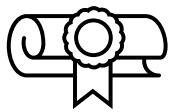
certifications / # students

Definition phase

Define the goal	**Choose the metrics**	Set the hypothesis	Calculate the sample

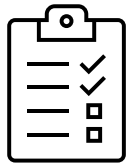
coursera

Key metric



certifications / # students

Proxy metric



completed tests / # students

Definition phase

Define the goal	Choose the metrics	**Set the hypothesis**	Calculate the sample

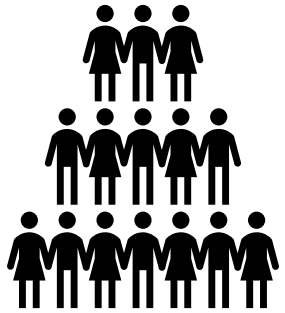
p = # Completed Tests / # Total Students

H_0: pA = pB

H_1: pA < pB

Definition phase

Define the goal	Choose the metrics	Set the hypothesis	**Calculate the sample**



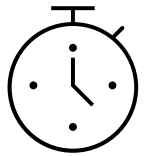
Sample size

depends on

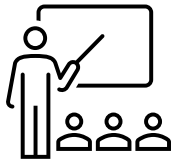
- Expected difference between the groups
- Variance of the measure in both groups
- Significance threshold (α)
- Power (1 - β)

A/B Test Phases: Execution

Execution Phase



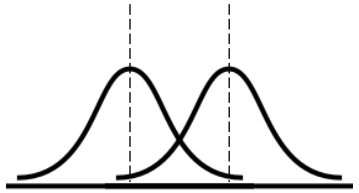
Duration of the experiment



Learning effect

A/B Test Phases: Analysis

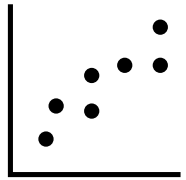
Analysis Phase



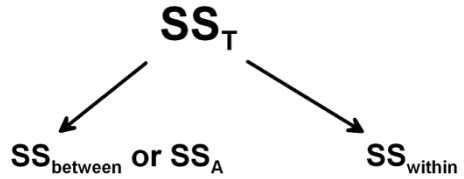
t-test

χ^2

Chi-squared

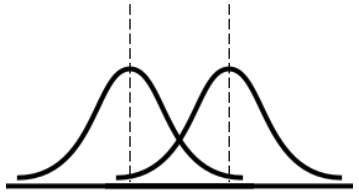


Linear regression



ANOVA

Analysis Phase



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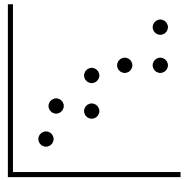
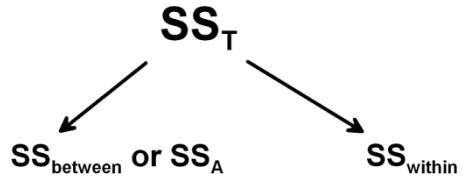


Linear regression

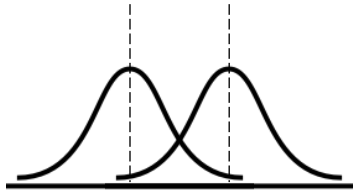


ANOVA

p-value < 0.05

~~H_0~~

Analysis Phase



t-test

χ^2

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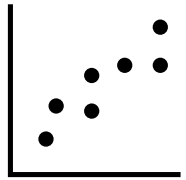
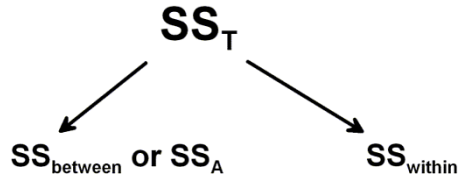
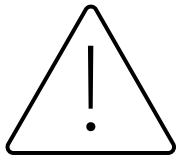


Linear regression



ANOVA



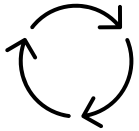
p-value is not the absolute truth!

R Example

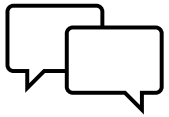
Final tips

Final tips

Not only science, also a creative process



Iterative process, any step can be revisited



Conversation between the product and the users

Final tips

- Designing with Data. Rochelle King, Elizabeth R. Churchill & Caitlin Tan
- Análisis de datos en ciencias de la salud II. Antonio Pardo, Rafael San Martín
- Udacity A/B Testing Course
- https://uc-r.github.io/multivariate_inference
- https://towardsdatascience.com/the-art-of-a-b-testing-5a10c9bb70a4
- https://www.slideshare.net/alisarrafi3/ab-testing-at-spotify
- https://www.slideshare.net/dj4b1n/ab-testing-pitfalls-and-lessons-learned-at-spotify-31935130
- https://www.slideshare.net/RJMetrics/4-steps-toward-scientific-ab-testing
- https://www.optimizely.com/sample-size-calculator/

Thank you!

Questions?

Reach me out!

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