MuscleHub A/B Test

Miles Craig
Intro to Data Analysis - Capstone Project
Feb 27, 2018 - May 22, 2018

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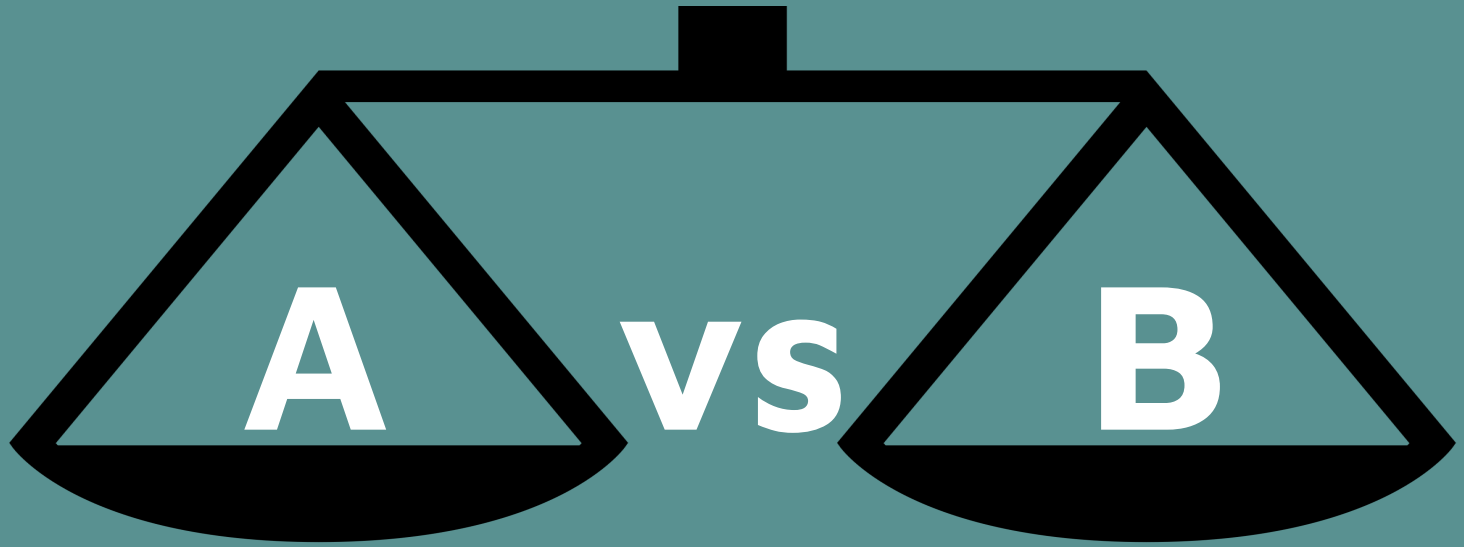
Table of Contents

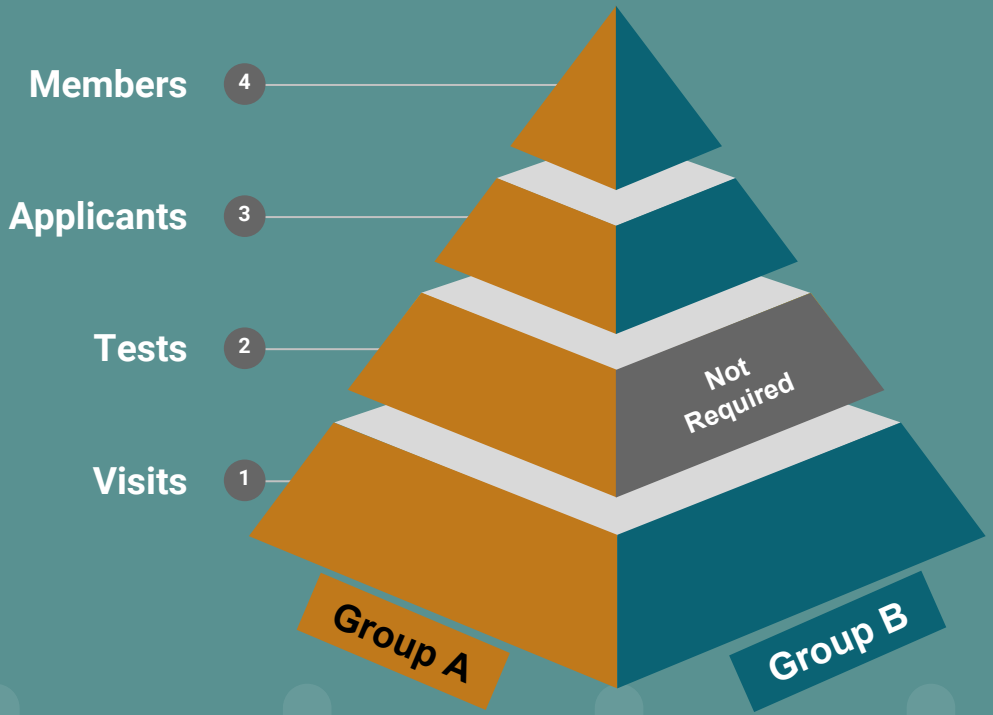
GitHub Project Link

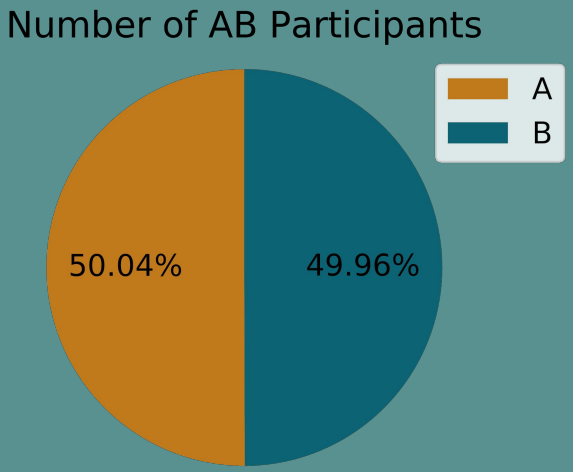
Section 1:
A/B Test Description

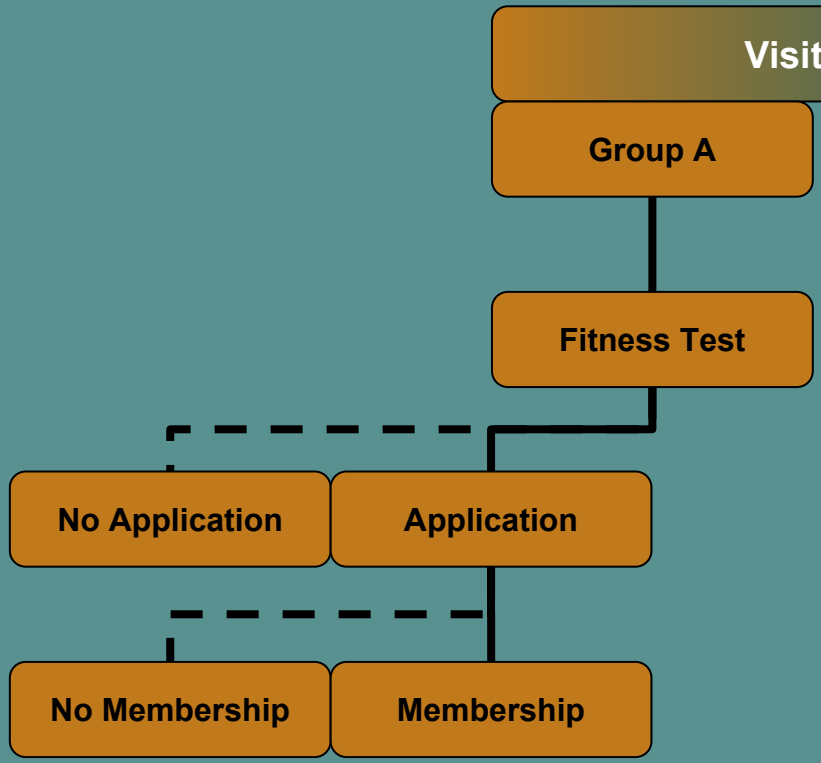


Does a fitness test affect the chances of a visitor becoming a member?

Membership Process

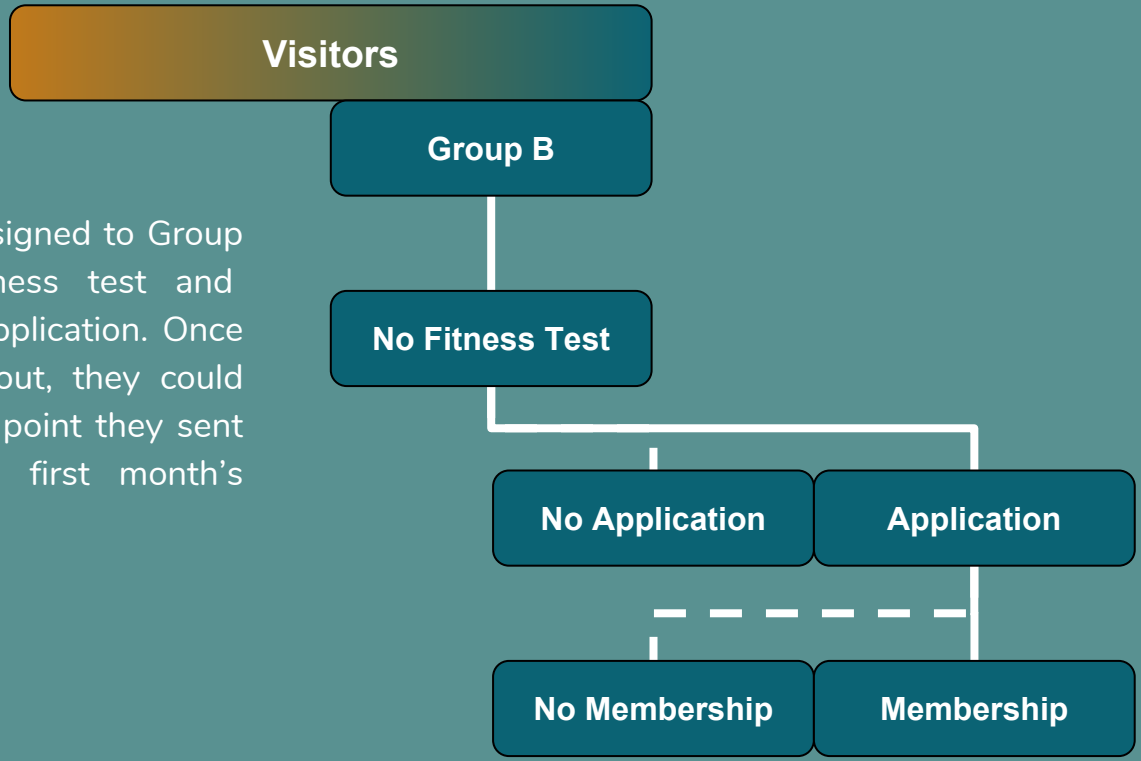


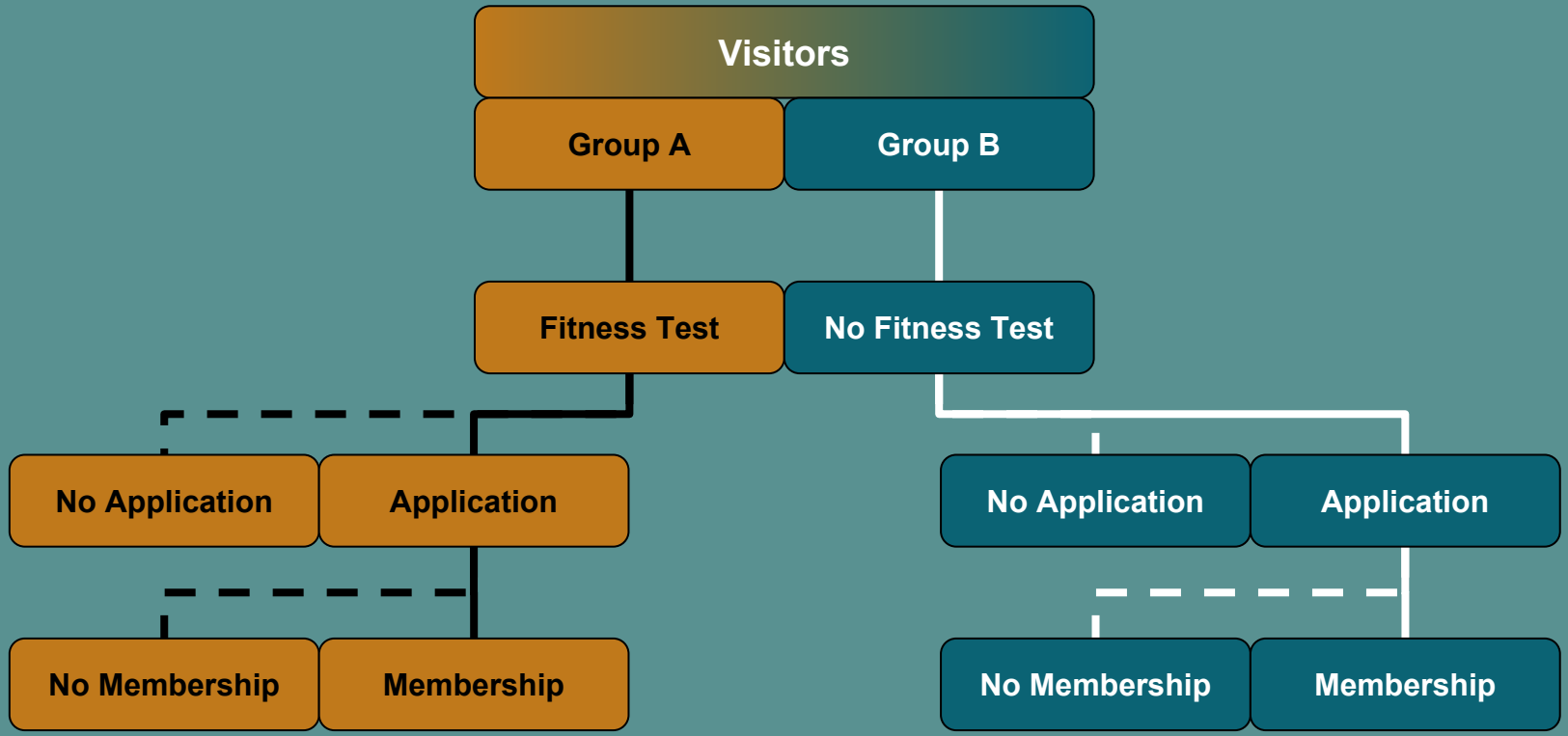




Half of the visitors were assigned to Group A. They were asked to **take** a fitness test with a personal trainer. Once completed, they could fill out the application form, and then they could become a member. At that point they sent in their payment for the first month's membership.

Half of the visitors were assigned to Group B. They **skipped** the fitness test and proceeded directly to the application. Once the application was filled out, they could become a member. At that point they sent in their payment for the first month's membership.




Visitors
Group A
Group B
Fitness Test
No Fitness Test
No Application
Application
No Application
Application
No Membership
Membership
No Membership
Membership

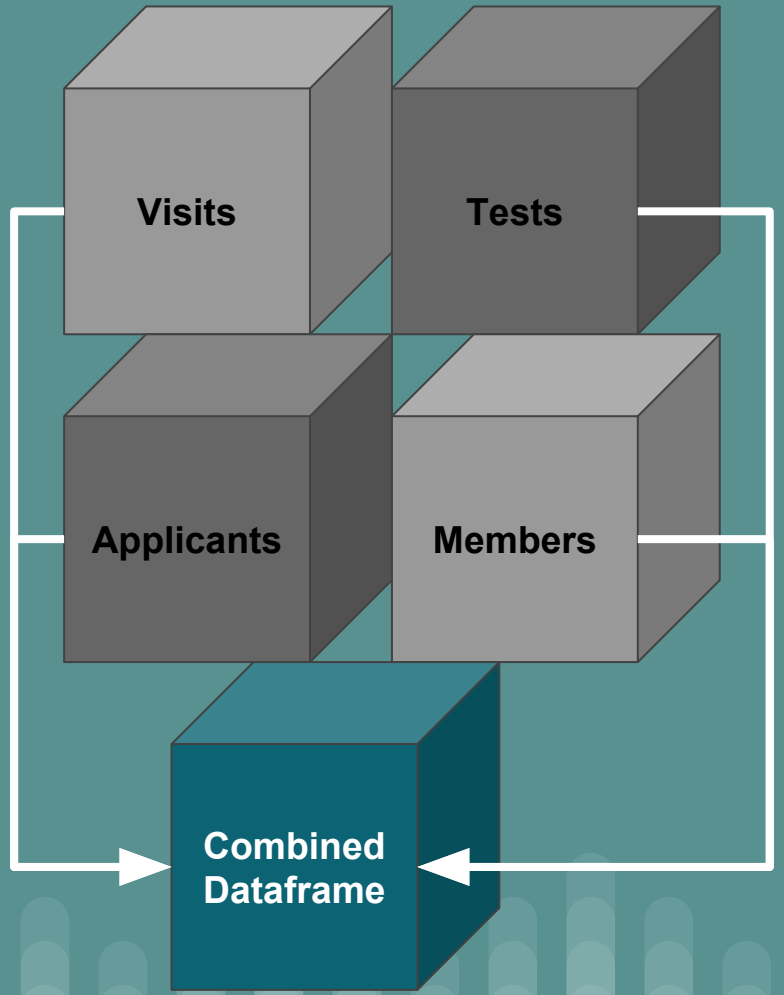
Section 2:
Dataset Summary

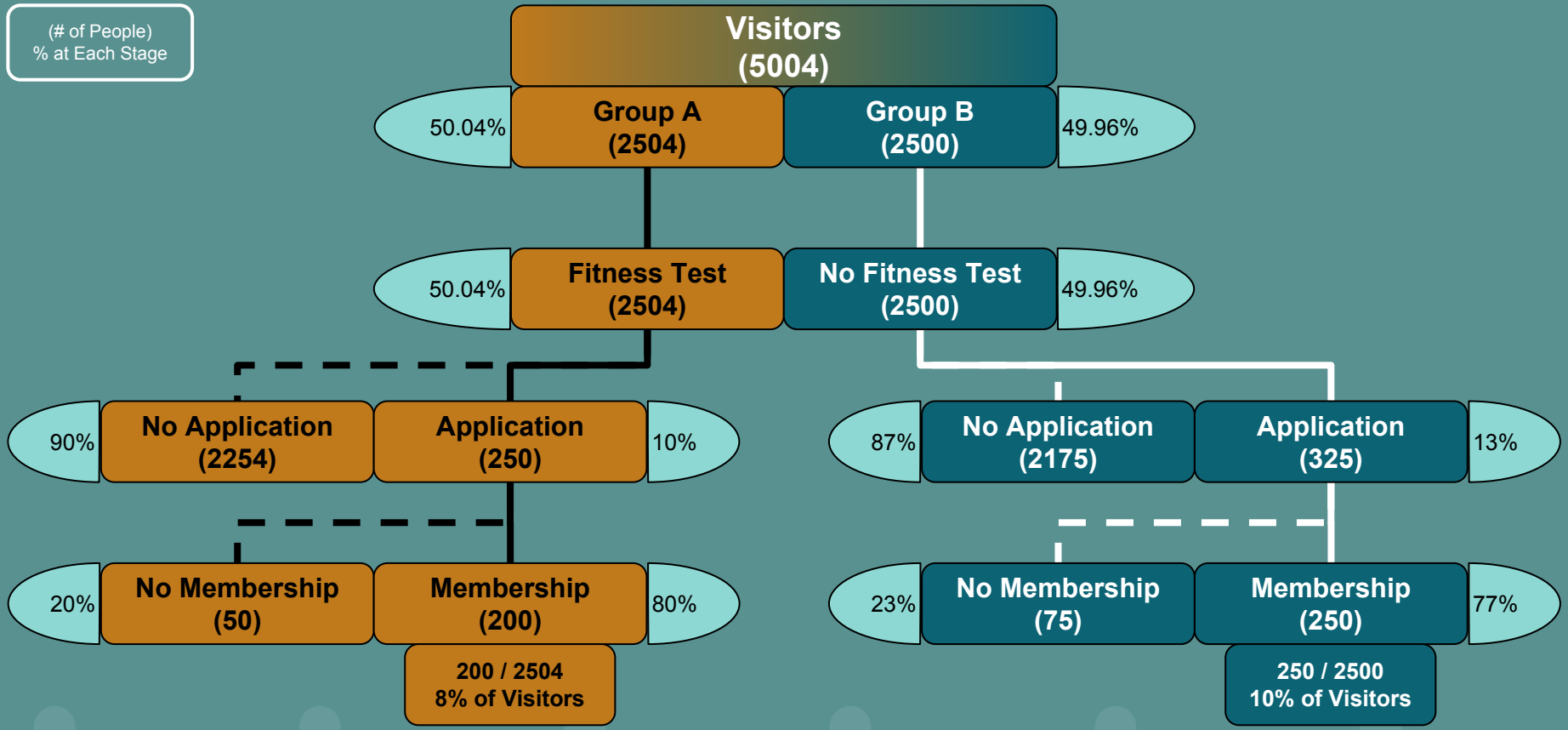
Data Processing

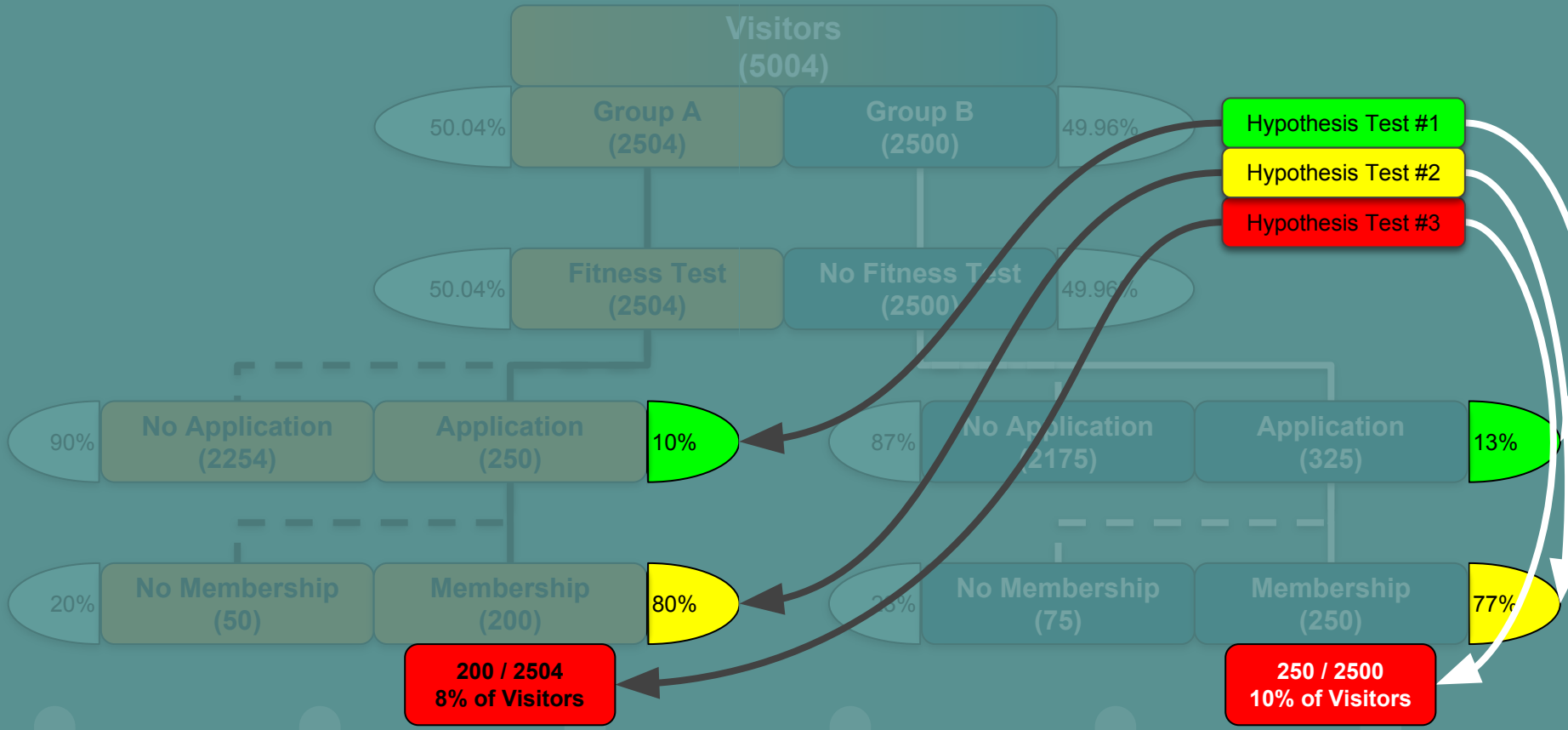
Data was collected from each person at each stage:

- First Name
- Last Name
- Email
- Gender
- Date

The four datasets were combined to create a single dataframe to complete the analysis. The next slide breaks down the numbers at each stage of the process for both groups.




(# of People)
% at Each Stage
Visitors
(5004)
50.04%
Group A
(2504)
Group B
(2500)
49.96%
50.04%
Fitness Test
(2504)
No Fitness Test
(2500)
49.96%
90%
No Application
(2254)
Application
(250)
10%
87%
No Application
(2175)
Application
(325)
13%
20%
No Membership
(50)
Membership
(200)
80%
200 / 2504
8% of Visitors
23%
No Membership
(75)
Membership
(250)
77%
250 / 2500
10% of Visitors


Visitors
(5004)
50.04%
Group A
(2504)
Group B
(2500)
49.96%
Hypothesis Test #1
Hypothesis Test #2
Hypothesis Test #3
50.04%
Fitness Test
(2504)
No Fitness Test
(2500)
49.96%
90%
No Application
(2254)
Application
(250)
10%
87%
No Application
(2175)
Application
(325)
13%
20%
No Membership
(50)
Membership
(200)
80%
No Membership
(75)
Membership
(250)
77%
200 / 2504
8% of Visitors
250 / 2500
10% of Visitors

Section 3: Hypothesis Tests

Hypothesis Test Info

An Hypothesis Test answers the question:

- What is the probability that the two population means are the same, and that the difference we observed in the sample means is just chance?

Hypothesis testing is a mathematical way of determining whether we can be confident that the null hypothesis is false. When there are **two or more** **categorical** datasets to be compared, a Chi Square Test should be used.

Was there a significant difference between Group A and Group B?

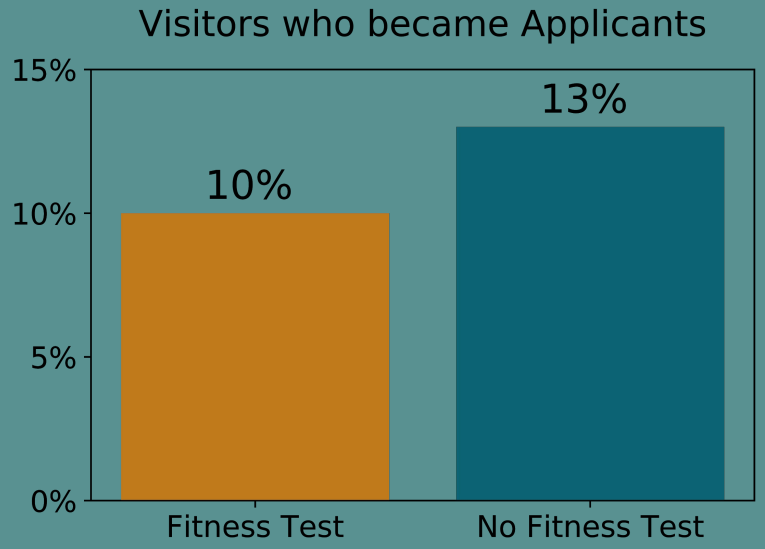
1. Visitors who became Applicants
2. Applicants who became Members
3. Visitors who became Members

P-Value < 0.05 → Reject the Null Hypothesis → Significant Difference

HT #1: Visitors who became Applicants

Results

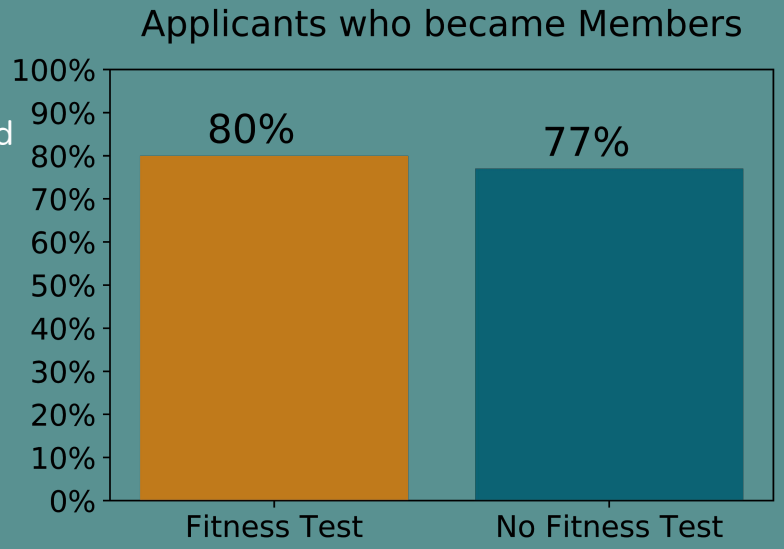
- P-Value = 0.001 < 0.05
- The null hypothesis was rejected
- There was a significant difference between Group A and Group B when Visitors became Applicants



HT #2: Applicants who became Members

Results

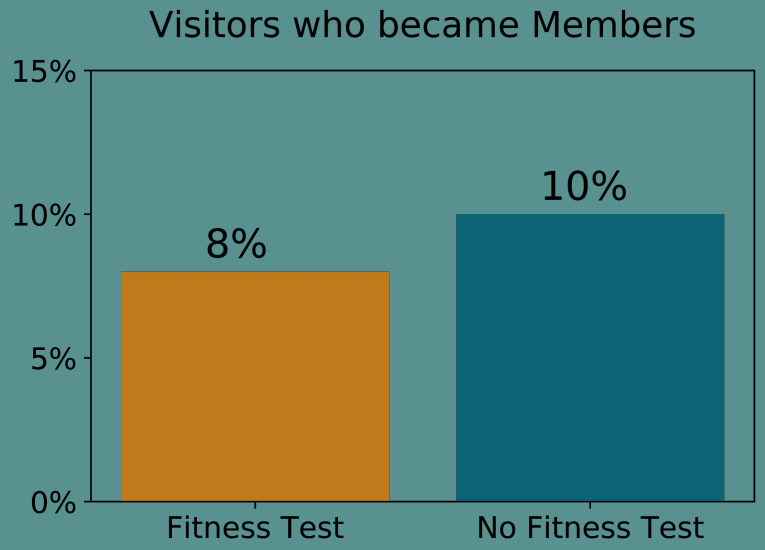
- P-Value = 0.433 > 0.05
- The null hypothesis was NOT rejected
- There was NOT a significant difference between Group A and Group B when Applicants became Members



HT #3: Visitors who became Members

Results

- P-Value = 0.015 < 0.05
- The null hypothesis was rejected
- There was a significant difference between Group A and Group B when Visitors became Members



Section 4:
Qualitative Data Summary

Client Feedback

Client feedback can give an inside look at some of the reasoning for the data analyzed:

- What factors contributed to the decisions made at each stage of the process?
- Was the study comprehensive enough?
- What changes can be implemented to improve the process?
- What further studies should be conducted?

Interviews: Group A

#1

Name: Cora
Age: 23
City: Hoboken

- Social Media / Beginner
- Test was Helpful
- Connection with Trainer

- What did they like about the Test?
- What about the Trainer created a good connection?

#3

Name: Sonny
Age: 26
City: Brooklyn

- Recommended by Friend
- Regretted the Test

- How is the Test explained to Visitors?
- How is the Test administered to Visitors?

Interviews: Group B

#2

Name: Jesse
Age: 35
City: Gowanes

- Liked going at your own pace
- Dirty Weight Machines
- Compared Gyms

- Outside reasons (not accounted for in the study) played a role in their decision to not purchase a membership
- Research competitor gyms

#4

Name: Shirley
Age: 22
City: Williamsburg

- Social Media / Beginner
- Friendly Trainers
- Quick and Easy Process
- Compared Gyms

- What about the Trainer created a good connection?
- If there is a Test, make sure it's quick and easy, or at least customized to the Visitor

Section 5:
MuscleHub Recommendation

MuscleHub Recommendation

This Case Study Recommendation

- There was a significant difference between Group A and Group B
- The Test affected Membership numbers
- To gain the most members, it is recommended to NOT have a Test

Recommended Future Studies

1. Which group tends to keep their membership longer? (Retention Rate)
2. Can we customize the Test to fit each Visitor better?
3. How consistent are the Tests administered?
4. How expensive are the Trainers and Equipment to provide the Tests?
    a. What is the ROI on the Tests?
5. What if the Tests were only required for Private Trainings as opposed to all Memberships?
6. Does the way the Visitor hear about MuscleHub affect whether they become a Member?
7. Can the weight machines be kept cleaner?

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THE END

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MuscleHub Review

Excellent job with the coding and the powerpoint presentation!

The powerpoint slides are exceptional, sequenced very well and communicated the information visually.

The matplotlib plots are neat with proper title, xlabel and ylabel defined. It's great to see that you explored the commands like "ax.text" for showing the value on the barplot.

The hypothesis test results are correct and the final recommendation is accurate. The "recommended future studies" are very good and well thought out.

Awesome work! KEEP IT UP!!
~Jaga Ramesh (May 22, 2018)
(GitHub Profile) (LinkedIn Profile)

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