

# MuscleHub A/B Test Capstone Project

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Codecademy: “Introduction to Data Analysis”

# Overview

This A/B Test analysis comes from a gym called MuscleHub.

Typical sign-up process for new members is as follows:

1. Take a fitness test with a personal trainer
2. Fill out an application for the gym
3. Send in their payment for their first month's membership

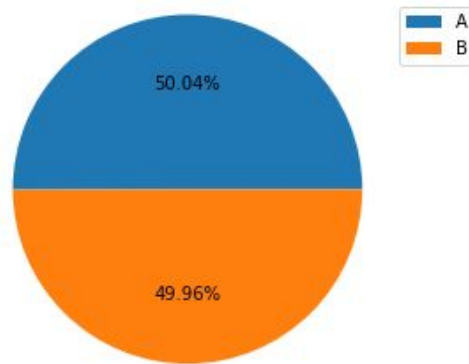
# **Project objective:**

Determine whether or not the initial fitness test was impacting the follow-through rate of visitors.

# Dataset Procedure

MuscleHub owner Janet separated new visitors into two roughly equally sized groups:

- Group A - takes the personal fitness test with a trainer
- Group B - skips the fitness test and proceeds straight to application



# Analysis

Dataset was analyzed in three hypothesis tests:

1. Percentage of visitors who apply in each group
  2. Percentage of applicants who purchase a membership in each group
  3. Percentage of visitors who purchase a membership in each group
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# Analysis

Percentages are then analyzed with a Chi Square test:

- Chi Square test is used because data is Categorical and comes from 2 datasets
    - “Purchased Membership” vs. “Not Purchased Membership”, “Applied” vs. “Not Applied”
    - 2 datasets are Group A and Group B
  - Resultant P-Value from Chi Squared weighed against 5% threshold to reject null hypothesis
    - $P\text{-Value} < 5\%$  → Rejected null hypothesis
    - $P\text{-Value} > 5\%$  → Null hypothesis not rejected
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# Hypothesis Test 1: Percentage of Visitors Who Apply

## Findings

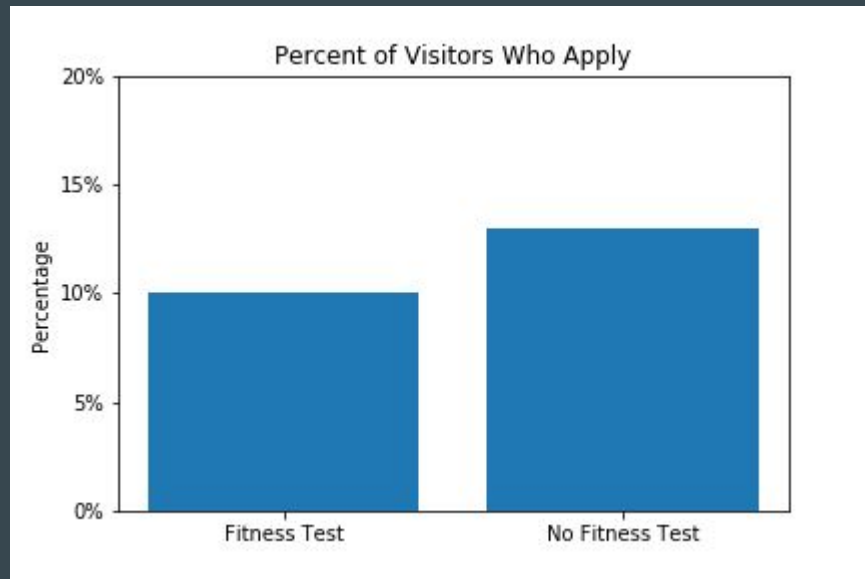
- Group A Visitor Percentage Applied: 9.98%
- Group B Visitor Percentage Applied: 13.00%

## Null Hypothesis:

- There is no significant difference between group A visitors and group B visitors in application percentage
- P-Value threshold: 5%

## Hypothesis Test (Chi Square Analysis):

- Contingency values:
  - A: [250, 2254]
  - B: [325, 2275]
- Resulting P-Value: 0.096%



# Hypothesis Test 1 Insight:

Null hypothesis rejected.

Separation of A and B visitors has resulted in a significant difference in application percentage.

B visitors are reliably more likely to apply.



# Hypothesis Test 2: Percentage of Applicants Who Purchase Membership

## Findings

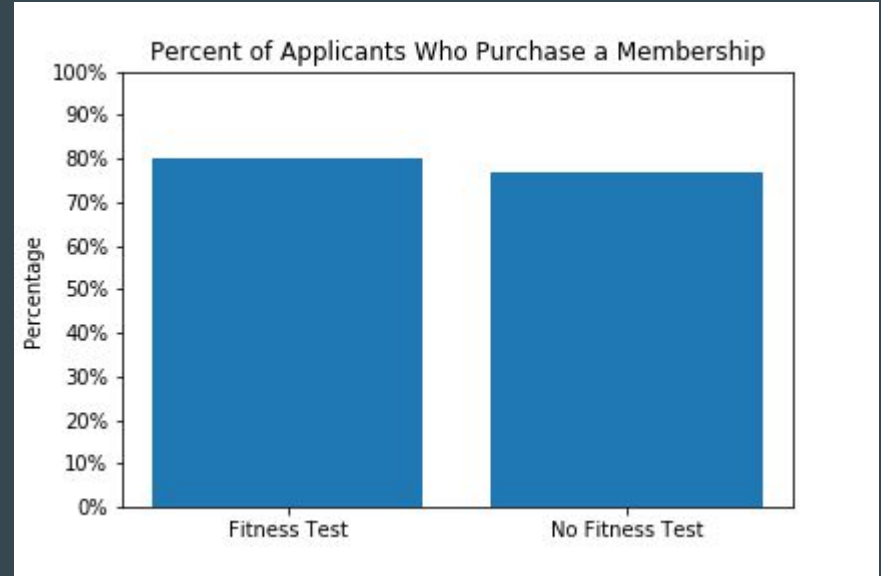
- Group A Applicant Percentage Purchased: 80.00%
- Group B Applicant Percentage Purchased: 76.92%

## Null Hypothesis:

- There is no significant difference between group A applicants and group B applicants in membership purchase percentage
- P-Value threshold: 5%

## Hypothesis Test (Chi Square Analysis):

- Contingency values:
  - A: [200, 50]
  - B: [250, 75]
- Resulting P-Value: 43.26%



# Hypothesis Test 2 Insight:

Null hypothesis not rejected.

Separation of A and B applicants has not resulted in a significant difference in membership purchase percentage.

B applicants are not reliably less likely to purchase.

# Hypothesis Test 3: Percentage of Visitors Who Purchase Membership

## Findings

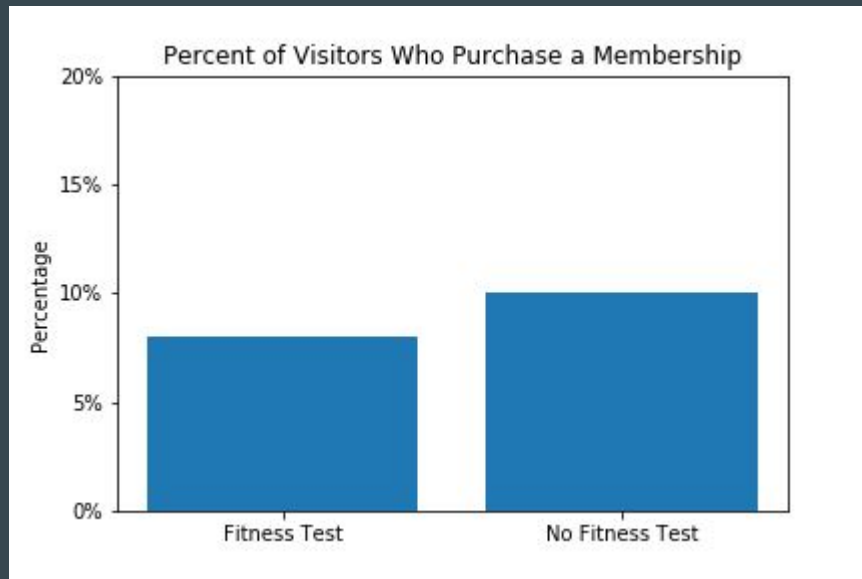
- Group A Visitor Percentage Purchased: 7.99%
- Group B Visitor Percentage Purchased: 10.00%

## Null Hypothesis:

- There is no significant difference between group A visitors and group B visitors in membership purchase percentage
- P-Value threshold: 5%

## Hypothesis Test (Chi Square Analysis):

- Contingency values:
  - A: [200, 2304]
  - B: [250, 2250]
- Resulting P-Value: 1.47%



# Hypothesis Test 3 Insight:

Null hypothesis rejected.

Separation of A and B visitors has resulted in a significant difference in membership purchase percentage.

B visitors are reliably more likely to purchase memberships.

# Overall Conclusions

Removing the fitness test from the signup process has yielded significant results for two key scenarios:

1. Increase in visitors who decide to apply
2. Increase in visitors who decide to purchase

Testing did not show any difference in percent of applicants who purchase, meaning once visitors apply, there is no effect from the fitness test.

# Qualitative Context

I always wanted to work out like all of the shredded people on the fitness accounts I see on Instagram, but I never really knew how to start. MuscleHub's introductory fitness test was super helpful for me! After taking the fitness test, I had to sign up and keep coming back so that I could impress my trainer Rachel with how much I was improving! - Cora, 23, Hoboken

When I walked into MuscleHub I wasn't accosted by any personal trainers trying to sell me some mumbo jumbo, which I really appreciated. Down at LiftCity they had me doing burpees 30 seconds after I walked in the door and I was like "woah guys slow your roll, this is TOOOO much for Jesse!" I still ended up not signing up for a membership because the weight machines had all those sweat stains on them and you know, no thanks. - Jesse, 35, Gowanes

I took the MuscleHub fitness test because my coworker Laura recommended it. Regretted it. - Sonny "Dad Bod", 26, Brooklyn

I saw an ad for MuscleHub on BookFace and thought I'd check it out! The people there were suuuuuper friendly and the whole sign-up process took a matter of minutes. I tried to sign up for LiftCity last year, but the fitness test was way too intense. This is my first gym membership EVER, and MuscleHub made me feel welcome. - Shirley, 22, Williamsburg

# Recommendation

## Remove the fitness test from the signup process

Visitors have reported that the fitness test is intimidating and overwhelming.

Further testing:

- Revise the fitness test program to be less intense and demanding
- Alternate advertising strategies - prepare new visitors for what to expect from the fitness test