MuscleHub A/B Test Report

Codecamey Pro Introduction to Data Analysis
Capstone Project

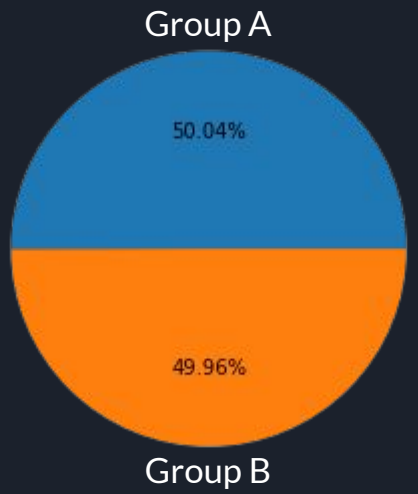
Zach Goldberg

A/B Test Background and set-up

- MuscleHub, a high-end gym, currently requires all prospective members to take a fitness test before they apply and purchase a membership
- Janet, MuscleHub's manager, has a hypothesis that the fitness test is intimidating some prospective members and is therefore limiting potential membership purchases
- In order to understand the effect of the fitness test on a prospective member's likelihood to make a purchase, an A/B test was set up where:
    - Group A will be asked to take a fitness test, as per current policy
    - Group B will not take a fitness test and will be able to fill out an application imemdiately

Dataset summary

- Data for MuscleHub is stored in in four tables:
  - visits - potential members who have visited MuscleHub, including date of visit
  - fitness_tests - potential members who were given a fitness test, including the date of the test
  - application - potential members who filled out an application, regardless of whether they completed a fitness test, including the application date
  - purchases - potential members who purchases a membership, including date of purchase
- The four tables were joined based on potential members' identifying information and limited to visits that ocurred after the start of the A/B test on July 1, 2017
- During the time period of the A/B test, 5004 potential members visited MuscleHub, with a roughly 50/50 split into groups A and B

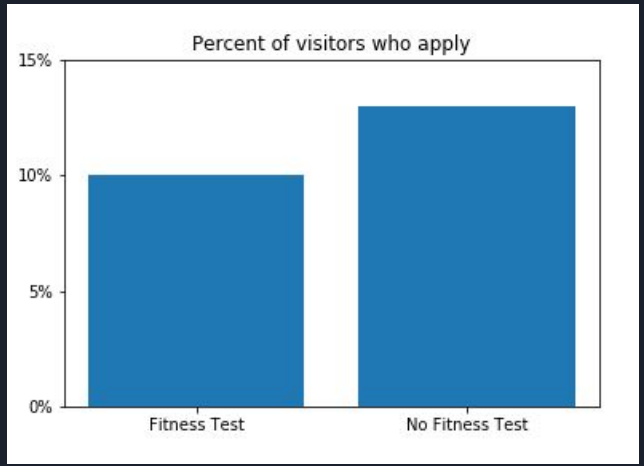


Hypothesis Assessment Methodology

- Differences between Groups A and B were assessed across three points in the membership/sales funnel:
  - Percent of visitors who apply
  - Percent of applicants who purchase a membership
  - Percent of visitors who purchase a membership
- As the data contains multiple sets of categorical data, a Chi Square test was determined to be most appropriate to test null hypothesis that the difference between the two groups in each of the categories was not significant

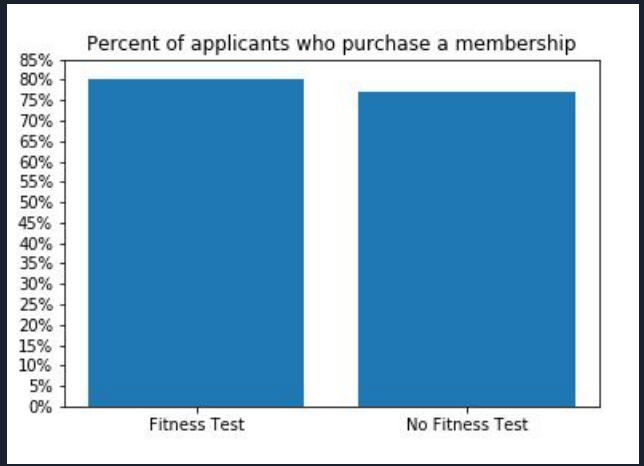
Hypothesis Test #1: Visitors who Apply

- The first hypothesis test run with the data was to assess whether or not requiring a fitness test impacts the number of visitors to MuscleHub who decide to apply
- Approximately 10% of those who took a fitness test (Group A) chose to apply, while 13% of those who did not take the fitness test (Group B) applied
- With a p value of 0.00096, the null hypothesis is rejected and can say that the **increased application rate of visitors who did not take a fitness test is significant**



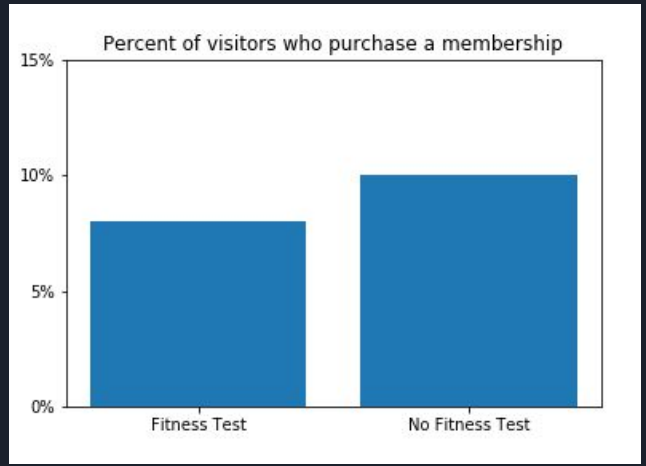
Hypothesis Test #2: Applicants who Purchase

- The second hypothesis test run with the data assessed whether or not requiring a fitness test impacts the number of applicants to MuscleHub who decide to purchase a membership
- Approximately 80% of those who took a fitness test (Group A) and applied became members, while 77% of those who did not take the fitness test (Group B) and applied became members
- With a p value of 0.43259, we cannot reject the null hypothesis and say that the **increased purchase rate of visitors who took a fitness test is not significant**



Hypothesis Test #3: Applicants who Purchase

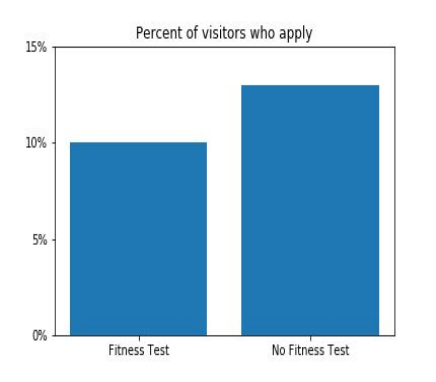
- The final hypothesis test run with the data assessed whether or not requiring a fitness test impacts the number of visitors to MuscleHub who decide to purchase a membership
- Approximately 10% of those who took a fitness test (Group A) purchased a membership, while 8% of those who did not take the fitness test (Group B) became members
- With a p value of 0.01472, we can reject the null hypothesis and say that **the increased membership purchase rate of visitors who did not take a fitness test is significant**

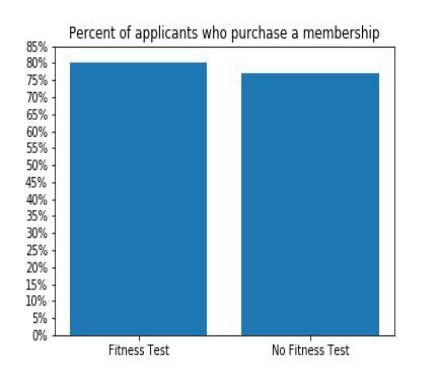


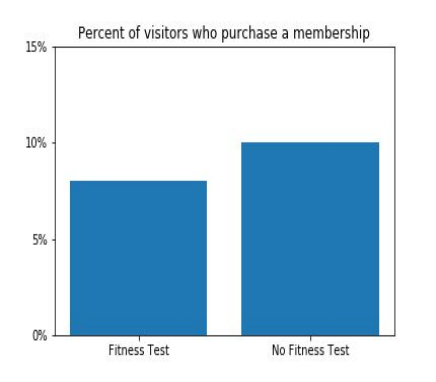
Summary of results

Based on the outcome of the quantitative analyses and hypothesis tests it can be said that:

- Visitors are **significantly more likely** to apply if they are not required to take a fitness test
- Visitors are **significantly more likely** to purchase a membership if they are not required to take a fitness test
- There is **no significant difference** in applicants purchasing a membership whether or not they take a fitness test







Summary of qualitative data

- Of the sample of visitor interviews conducted to support this analysis, a majority of respondents reacted negatively to the idea of a fitness test, either at MuscleHub or one of its competitors. For example:
  - “I took the MuscleHub fitness test because my coworker Laura recommended it. Regretted it.”
  - “I tried to sign up for LiftCity last year, but the fitness test was way too intense”
- For some visitors, the fitness test may help draw them to purchase a membership, despite the data saying that the opposite is more likely. This implies that further analysis is required to understand the potential positives of some version of a fitness test.
  - “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!”

Recommendation:

The data suggest that MuscleHub should no longer require a fitness test for new applicants

Recommendation details

- As per the analyses of the data and hypotheses, new visitors who do not have to take a fitness test are more likely to submit an application and more likely to purchase a membership. Therefore, **MuscleHub should not require a fitness test for new visitors in order to increase membership purchases.**
- The quantitative analysis implies that the critical gate to acquiring new members is getting visitors to apply, and those who do not have to take a fitness test tend to be more likely to submit an application. This also suggests that further investigations of ways to increase application submission could be valuable to increase membership purchases.
- Lastly, further analyses should be conducted to investigate any potentially positive aspects of a fitness test before completely removing it as an option as this analysis only presents one possible cause of increased membership purchases.