MuscleHub: Member Acquisition Funnel Analysis A/B Test

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Background

Context

Janet, manager of the Musclehub Gym, has a hypothesis that the inclusion of a preliminary fitness test in their current acquisition funnel is preventing some visitors from following through with a membership purchase to the gym. We want to investigate this hypothesis.

Current Membership Acquisition Funnel

Currently, when a visitor to MuscleHub is considering buying a membership, he or she goes through the following steps:

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

Janet, the manager of MuscleHub, thinks that the fitness test intimidates some prospective members, so she has set up an A/B test to test an alternative funnel with no fitness test.

A/B Test

A/B Test: Set-Up

Janet, the manager of MuscleHub, thinks that the fitness test intimidates some prospective members, so she has set up an A/B test:

Visitors will randomly be assigned to one of two groups:

- Group A (control) will still be asked to take a fitness test with a personal trainer
- Group B (variable) will skip the fitness test and proceed directly to the application

Janet's hypothesis is that visitors assigned to Group B will be more likely to eventually purchase a membership to MuscleHub.

A/B Test: Data Overview

There were a total of 5,004 visitors to Musclehub Gym that we have data points to run our analysis with.

Breakdown of potential customers for our A/B test groups:

Group A (Fitness Test): 2,504

Group B (No Fitness Test): 2,500

A/B Test: Analysis + Methods

From the data we collected, we looked at the conversion rates for each A/B Test group at 3 states of the process:

1. **Visit --> Application Submission**

   Who picks up and submits an application for membership after visiting Musclehub*?*

2. **Application Submission --> Membership Purchase**

   Of those who submitted an application, who purchases a membership?

3. **Visit --> Membership Purchase**

   Of those who visited Musclehub, who purchases a membership?

A/B Test: Analysis + Methods

For each of states of the process we analyzed, we compared the conversion rates between Group A and Group B. To make sure that insight we draw from the comparison of our data is *statistically significant*, we use a Binomial Test for each state of the process.

Why a Binomial Test?

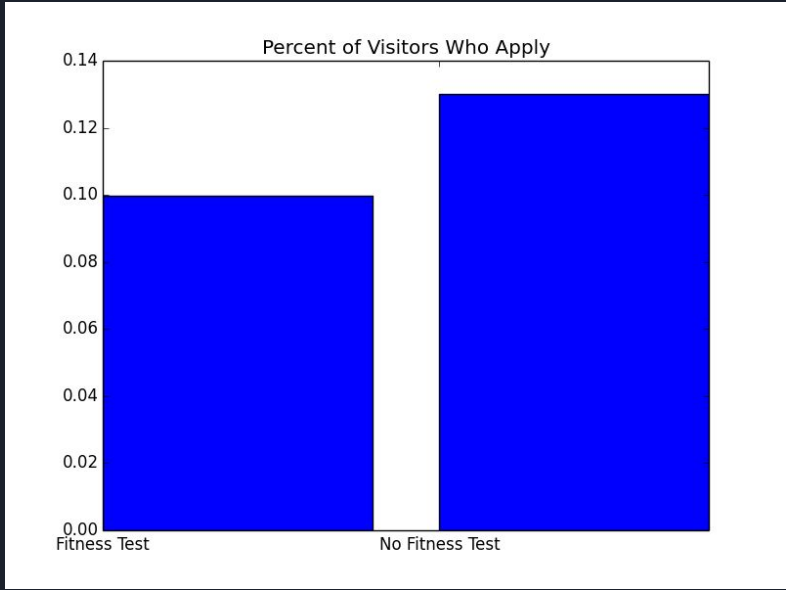
Since our data is divided into two discrete categories, "made a purchase" and "did not make a purchase" - categories instead of numbers - we must use a particular method in analyzing this dataset. With two different possibilities for entries, we can use a Binomial Test.

A Binomial Test compares a categorical dataset to some expectation.

Performing the analysis with this test will statistically reinforce the conclusions we make with the results we obtain from the test.

A/B Test Results

Results: Who submits an application?



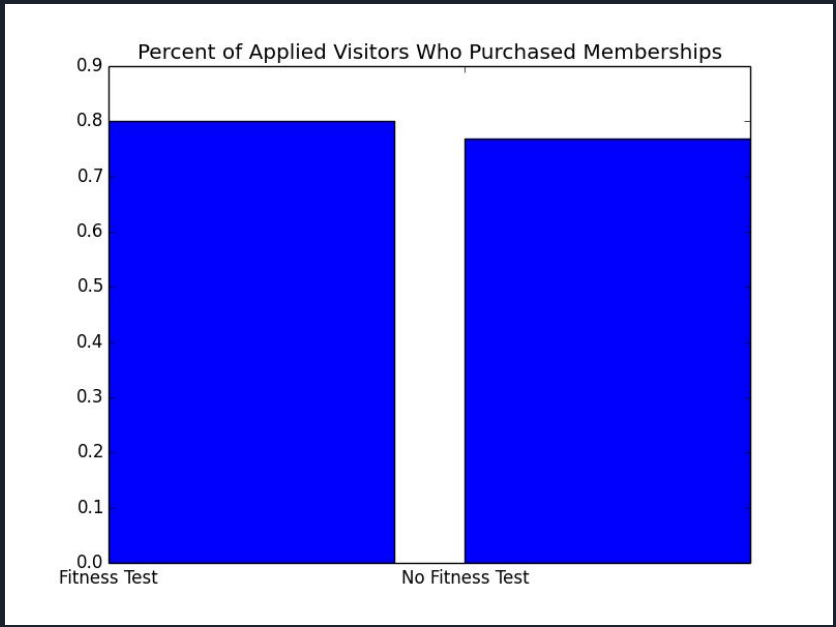
Here, we consider all visitors to Musclehub and the percentage of visitors who picked up and submitted an application for membership. Our results show:

Group A (Fitness Test): 10% submission rate

Group B (No Fitness Test): 13% submission rate

The Binomial Test performed for these results showed statistical significance (p-val < 0.05) - meaning, visitors in Group B (No Fitness Test) had a statistically higher percentage of application submission than Group A (Fitness Test).

Results: Of those applied, who purchases?



Here, we consider visitors who submitted an application and decided to purchase a membership. Our results show:

Group A (Fitness Test): 80% purchase rate

Group B (No Fitness Test): 77% purchase rate

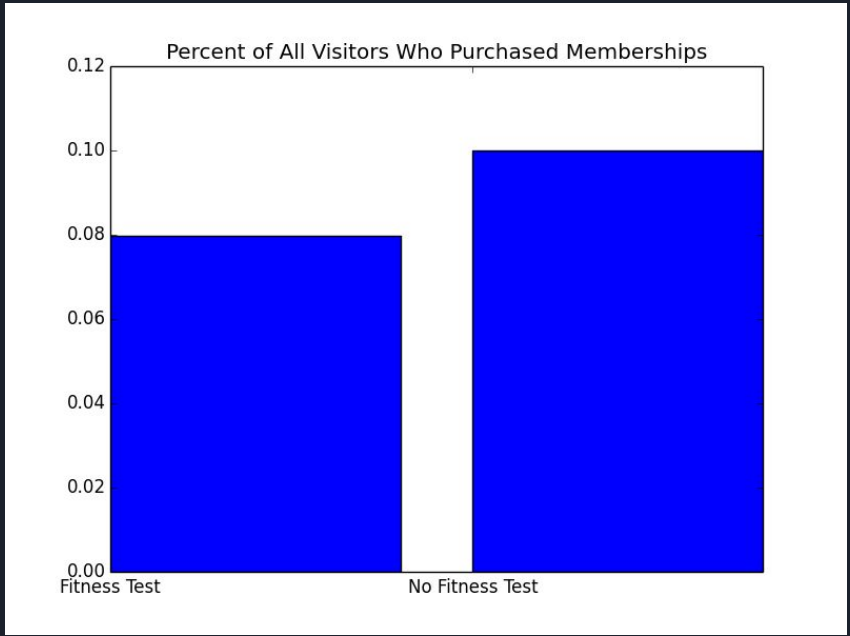
The Binomial Test performed for these results, however, showed no statistical significance (p-val > 0.05) - meaning, we cannot conclude with confidence that of those who applied, participants in Group B (No Fitness Test) showed a statistically lower percentage of membership purchase than Group A (Fitness Test).

Previously, we looked at what percent of people who picked up applications purchased memberships. However, what we really care about is what percentage of all visitors who purchased memberships.

Which brings us to the last state within the process that we reviewed and analyzed.

Visit --> Membership Purchase

Results: Of those visited, who purchases?



Here, we consider all visitors to Musclehub who decided to purchase a membership. Our results show:

Group A (Fitness Test): 8% purchase rate

Group B (No Fitness Test): 10% purchase rate

The Binomial Test performed for these results showed statistical significance (p-val < 0.05) - meaning, of all those who visited Musclehub, those in Group B (No Fitness Test) showed a statistically higher percentage of membership purchase than Group A (Fitness Test).

Conclusion & Recommendations

Conclusion: Who submits an application?

To review, we considered all visitors to Musclehub and the percentage of visitors who picked up and submitted an application for membership.

Visit --> Application Submission

Our results showed statistical significance with:

Group A (Fitness Test): 10% submission rate

Group B (No Fitness Test): 13% submission rate

This result tells us that the funnel with no fitness test involved will result in a higher application submission rate. A high application submission is great, but in the end, we care about conversation - how many people are actually following through and purchasing a membership? This result does not tell us anything about that. What it does illustrate for us (albeit, nothing surprising) is that the fitness test does one of two things: weeds out those who has had a taste for Musclehub's services and didn't like it or completely deters those who did not want to put in the effort for the application process -- both leading to a lower application submission rate.

Overall, nothing that provides us with how the fitness test affects purchase rate.

Conclusion: Who purchases?

To review, we considered all visitors to Musclehub and the percentage of visitors who purchased a membership (we forego discussing the results from the 2nd state within the process, Application -> Purchase, as the results were not statistically significant and as explained previously, we only care about percentage of all visitors who purchased memberships) :

Visit --> Membership Purchase

Our results showed statistical significance with:

Group A (Fitness Test): 8% purchase rate

Group B (No Fitness Test): 10% purchase rate

Here, we have the results to back up Janet's initial hypothesis! Our results show that Group B (No Fitness Test) had a purchase rate of 10%, which was tested with a Binomial Test to confirm that it is a rate that is statistically higher than that of Group A (Fitness Test).

From this result, we can conclude with confidence that Group B - the funnel forgoing the fitness test within the acquisition funnel - will yield a higher conversion rate for membership purchase than a funnel with a fitness test.

Recommendation

Overall recommendation based on results on our funnel analysis is to remove the fitness test as a requirement within the membership application process.

Though this will decrease the volume of application submissions, the change in the application funnel will ultimately produce a higher yield in membership purchases overall.