
MuscleHub A/B Test Analysis

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Overview of A/B Test

Janet, the manager of MuscleHub, has hired me to run an A/B test. She believes that visitors who skip a fitness assessment and proceed directly to the membership application are more likely to purchase the membership than those who take a fitness test.

In this A/B test, we learn the differences between a sample group of visitors who take a fitness test versus another group who does not take a fitness and how that experience affects acquiring membership.

The key data gathering to interpret the difference in this test is shown in the following data summary slides.

Dataset Summary

Group A

- Group A are those who did the fitness test.
- Size: **2,504**
- Size percentage of total visitors: **50.04%**
- Number of people who filled out the app: **250**
- Percentage of group A who filled out the app: **9.98%**
- Number of people who purchased a membership: **200**
- Percentage of group A of the total people who filled out the app and eventually purchased a membership: **80%**
- Of the total number of visitors who did take the fitness test, **7.99%** purchased a membership.

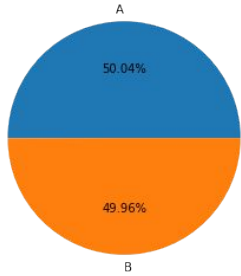
Group B

- Group B are those who did **not** the fitness test.
- Size: **2,500**
- Size percentage of total visitors: **49.96%**
- Number of people who filled out the app: **325**
- Percentage of group B who filled out the app: **13%**
- Number of people who purchased a membership: **250**
- Percentage of group B of the total people who filled out the app and eventually purchased a membership: **76.92%**
- Of the total number of visitors who did **not** take the fitness test, **10%** purchased a membership.

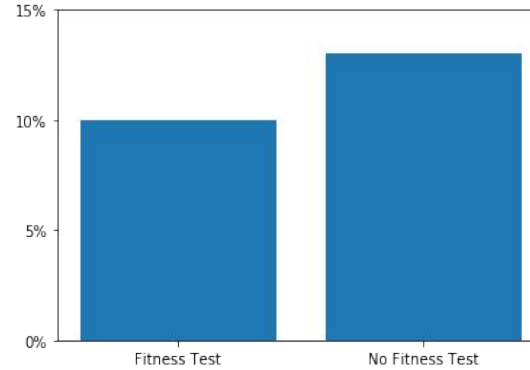
A versus B

- More people from group B turned in an application by a difference of +75.
- There is also a higher percentage in group B of those who filled out the application than group A. This means that the greater the people who are not given a fitness test, fill out more applications than the group A.
- More people from group B purchased a membership by a difference of +50.
- Although more people from group B purchased a membership, the percentage of those from group A who purchased a membership is higher. This means that those who did the fitness test (group A) are more likely to purchase a membership if they filled out an app. BUT looking deeper the percent difference is not noticeably higher so there is not much of a significance. Difference of about 4%.
- Of all visits those who do not take the fitness test are more likely to become members. In addition, there are more incumbents in this group (group B) of people who do not take the fitness who become members than those who do take the fitness test. In other words, group B has a higher count and a higher conversion percentage of total visitors who become members.

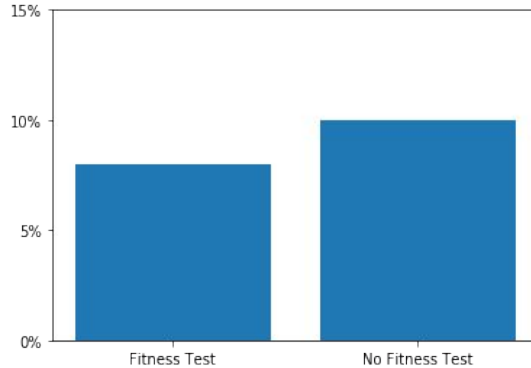
Dataset Summary Charts



Count of incumbents
in A and B

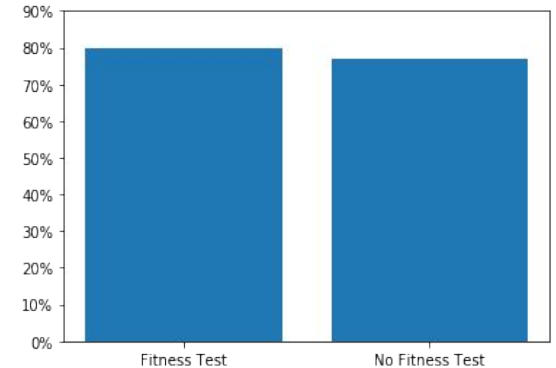


Visitors who fill out
application



Visitors who purchase
a membership

Applicants who purchase
a membership



Understanding: Hypothesis Test

The type of test used for all three hypothesis test was a Chi Square test. Chi Square test are appropriate here because it allows us to compare two or more categorical datasets. A Chi Square test allows us to compare the two categories: Fitness Test Takers vs Non-Fitness Test Takers. Unlike other tests that rely on numerical categories or have limitations of 2 categories, Chi Square test gives us the flexibility needed to run the hypothesis for our A/B test.

Below are the p-values generated from the Chi Square test. P-values tell us how confident we can be of a change or comparison in a hypothesis test.

Visitors who fill out an application (Hypothesis Test One)

- p-value: 0.000965
- Inference: at a 95% confidence level, there is a significance between group A and group B of those who fill out an application.

Applicants who purchase a membership (Hypothesis Test Two)

- p-value: 0.432586
- Inference: at a 95% confidence level, there is not a strong sign of significance between group A and group B of those who filled out an application and become members.

Visitors who purchase a membership (Hypothesis Test Three)

- p-value: 0.014724
- Inference: at a 95% confidence level, there is a significance difference in membership between group A and group B

Summary of the Interview

The interviews from the visitors is quite interesting as it gives us a qualitative perspective of what the visitors think about MuscleHub and fitness tests. There are very distinctive responsive that MuscleHub could learn from that a quantitative response would not deliver.

From the first interview with Cora we can draw that the fitness test is what made her purchase a membership because she is inspired to train hard and look like an Instagram model. Cora was most likely in group A.

In the interview with Jesse, we learn he hates fitness test because it seems more like a sells spill more than anything else. Jesse, not taking the fitness test is most likely in group B. He does not sign up nonetheless.

The last two interviews with Sonny and Shirley both reveal their preference to fitness tests, again, something that cannot be obtained without a qualitative survey. The more surveys gathered can help reveal the preference of the visitors in the A/B test.

Recommendation for MuscleHub

Based on the collection of data I would recommend MuscleHub to omit the fitness test prior to purchase of a membership and make it optional to new members after they have purchased a membership.

There is both a higher member purchase count and a higher membership conversion rate for those who do not take a fitness test. Based on the sample data gathered, about 2% of visitors more who do not take the test become members. For group A in our test (those who did the fitness test) only 200 became members versus 250 visitors in group B (those who did not take the test). We learn from our Chi Square that there is a significant difference from the p-value.

From the qualitative data we do learn that some visitors some visitors are not a huge fan of fitness test, so I would suggest, in effort to satisfy both lovers and haters of the fitness, is to offer the fitness test as an optional gift for visitors who become members. This may work greatly because from the visitors perspective it becomes an incentive to sign up for MuscleHub. The fitness class is added value for new members. It is also optional, so for members who prefer not to take it, they can gladly pass. In addition, it saves on cost for MuscleHub, running a fitness test cost (wage of trainer, space allotted for training session, queue of members that need to be trained, and so on. Making the fitness test optional for new members will cut cost per member who choose to utilize it.