

MuscleHub A/B Test

INTRODUCTION TO DATA ANALYSIS
FINAL PRESENTATION

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Project details

Perform an A/B test to see whether requiring visitors to take a fitness test with a personal trainer or skip the test will result in higher gym application rates.

Hypothesis is that visitors not required to take the test are more likely to purchase a membership at MuscleHub

Dataset Summary

The dataset is kept in a SQL database as 4 separate tables showing visits information, application information, fitness test information and purchase information.

This data was imported into python and then combined into a single dataframe containing visitor names, email addresses, visit date, fitness test date, application date and purchase date.

Visitors were split into 2 test groups, A and B, based on whether they received a fitness test on their initial visit after 7-1-17.

Test Used

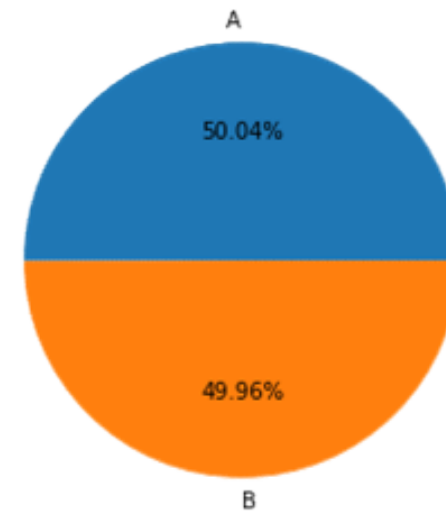
A Chi-squared test was used to test whether there was a significant difference between the 2 datasets. The test measures whether there is a difference in expected vs observed frequencies in one or more categories and is thus appropriate for determining whether there is difference in application or membership rates for MuscleHub visitors when receiving a fitness test.

A/B test

In order to test whether requiring gym visitors to take a personal fitness test results in a higher application rate, 5004 visitors split into 2 groups.

Group A if they visited after 7-1-17 and received a fitness test

Group B if they visited after 7-17 and did not receive a fitness test.



A/B test

The total number of applications for each group was then determined along with their application rate.

- In Group A, 250 (or 9.98%) filled out applications
- In Group B, 325 (or 13.00%) filled out applications

Running these numbers against a Chi-squared test shows that there is a statistically significant difference between the 2 test groups with a p-value of 0.0009 (less than 0.05)

Additional testing

Following the application rate test, further testing was done to see whether people who did pick up applications after their visit resulted in significantly higher membership rates.

In Group A, out of 250 that picked up applications 200 became members.

In Group B, out of 325 that picked up applications 250 became members.

These were input into a Chi-squared test and was shown that there was not a significant difference between the 2 groups with a p-value of 0.43 (not less than 0.05).

Additional testing

From there, we looked at the percent of all visitors that purchased memberships

In Group A, 200 out of 2504 visitors became members.

In Group B, 250 out of 2500 visitors became members.

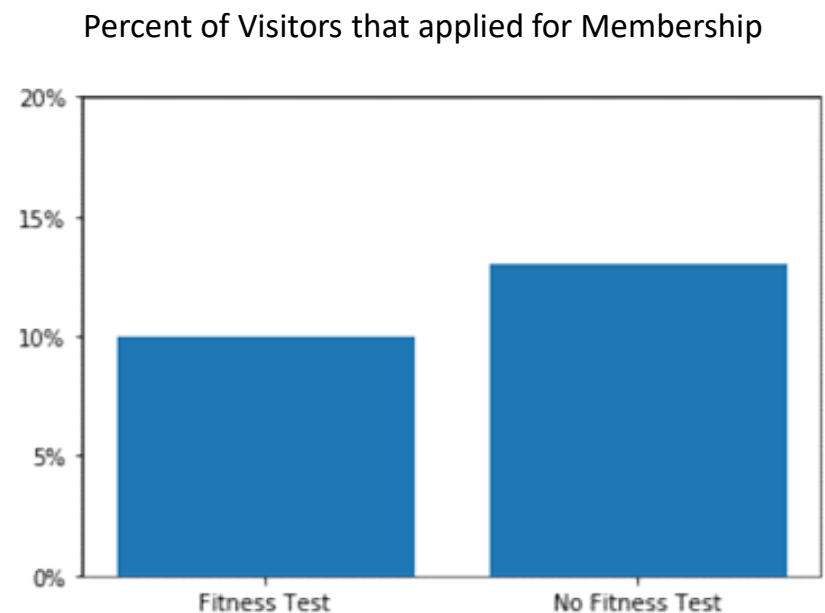
These were input into a Chi-squared test and was shown that there is a statistically significant difference between the 2 groups with a p-value of 0.014 (less than 0.05).

Summary of the qualitative data

The first A/B test showed a significant difference in visitors that applied for membership based on whether they received a fitness test on their visit

Visitors not receiving a fitness test were more likely to apply for membership

The bar chart on the right shows the percentage difference in the 2 groups

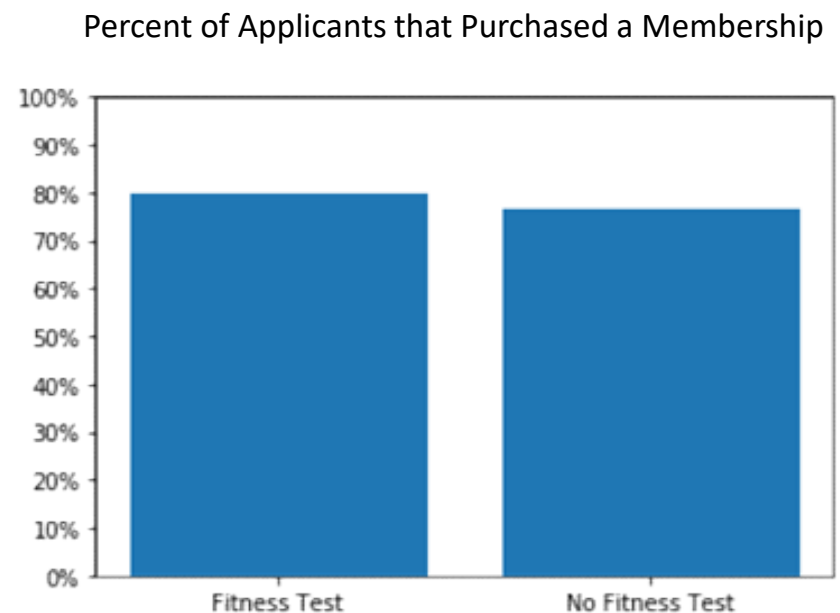


Summary of the qualitative data

The second A/B test did not show a significant difference in applicants who eventually purchased a membership based on whether they received a fitness test on their visit

The sample size in this test was smaller than the other two tests (250-325 population) and percent differences were smaller.

The bar chart on the right shows very little difference in the 2 groups

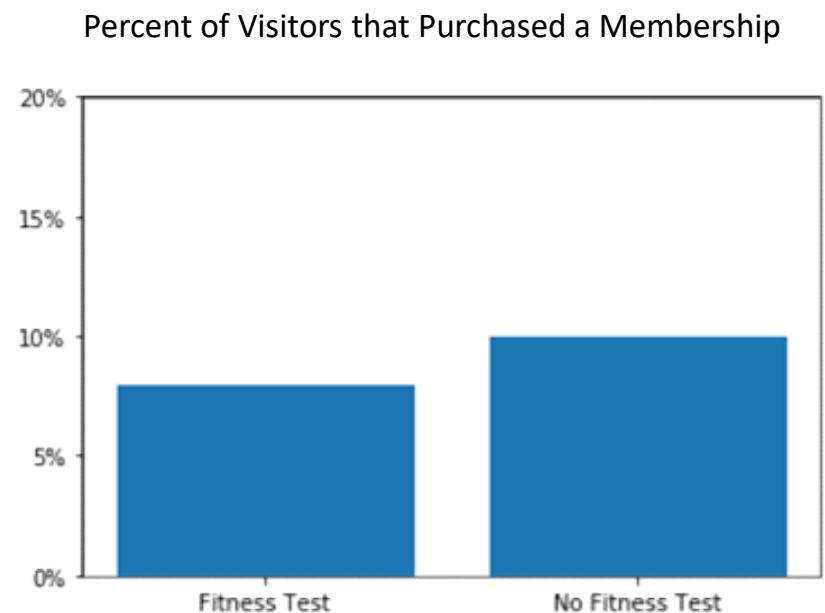


Summary of the qualitative data

The final A/B test showed a significant difference in visitors that purchased a membership based on whether they received a fitness test on their visit.

Visitors not receiving a fitness test were more likely to purchase for membership with 10% eventually purchasing in group B vs 7.9% purchasing in group A.

The bar chart on the right shows the percentage difference in the 2 groups



Recommendation

My recommendation is for MuscleHub to remove the mandatory fitness test during the initial visit.

With this they will see a significant uptick in applications for membership and eventual purchases of membership

However, based on anecdotal evidence collected from visitor interviews I would leave the fitness test as optional as it seems that many people find value in it.