MuscleHub A/B Test

Who Purchases a Gym Membership?

The Path to Membership

Currently, the process to become a member of MuscleHub is as follows:

- Take a fitness test with a trainer
- Fill out an application for the gym
- Send in the payment for the first month's membership

***The hypothesis that we are testing, is that visitors who <u>do not</u> take the fitness test will be more likely to eventually purchase a membership. Let's see what happened with the test groups!

Group A- took the fitness test with a personal trainer.

Group B- did not take the fitness test, and proceeded to the application process.

A/B Test Groups, What Happened.

We had a total sample size of 5004 people, who were then randomly assigned to either Group A or Group B. We used the "groupby" method to determine the breakdown.

Group A- took the fitness test with a personal trainer.

Group B- did not take the fitness test, and proceeded

to the application process.

	ab_test_group	first_name
0	A	2504
1	B	2500

A

50.04%

49.96%

B
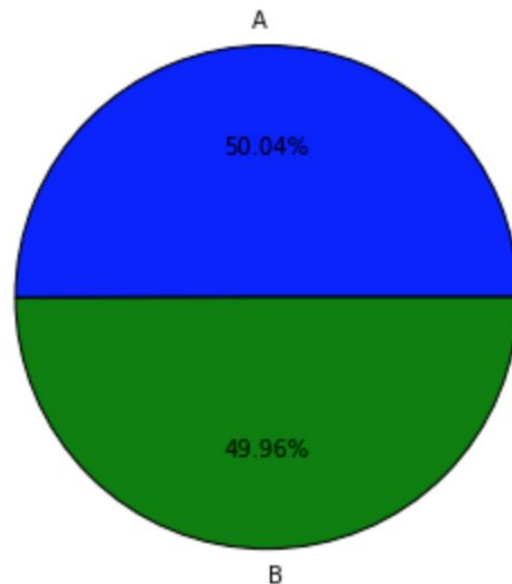
A/B Testing Hypothesis Testing

There were three parts to the hypothesis testing that we wanted to look at:

1. The percent of visitors who submit an application;
2. The percent of applicants who purchase a membership;
3. The percent of all visitors who purchase a membership

We also used a Chi-Square test afterward, because we are dealing with two categorical datasets (Group A & Group B), even though the data is numerical. Chi-Square is a contingency test used to determine if there is a statistically significant difference between the datasets. Ideally, we are looking for a p-value of less than 0.05 and if we get one, then we can reject the null hypothesis; that there is no difference between the two groups.

A/B Results

At a glance, we found that :

1.)Percent of visitors who completed an application: 10% (A), 13% (B).

2.)Percent of applicants who purchased a membership: 80% (A), 77% (B)

3.)Percent of all visitors who purchase a membership: 8%(A), 10% (B)

What does this all mean? What we need to determine is, is the difference between the two groups statistically significant in each case? Let's break it down for each test.

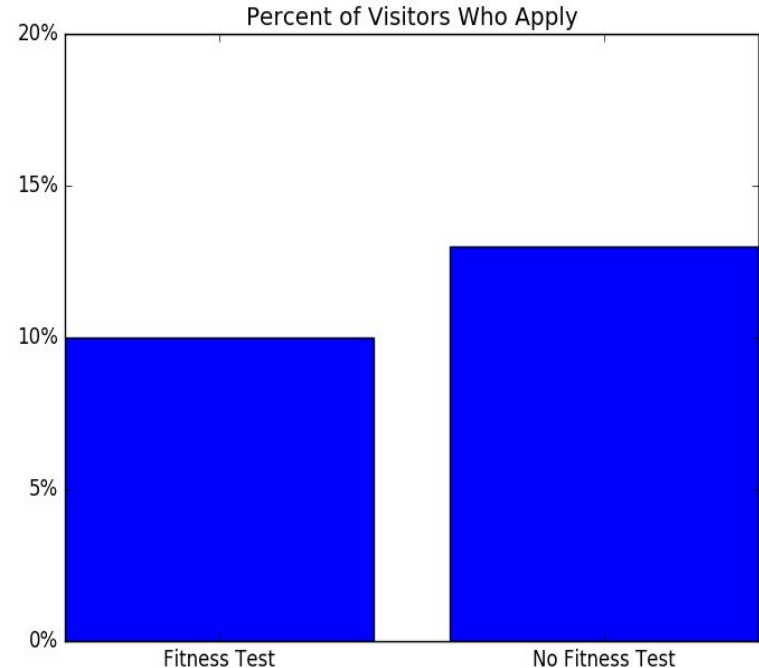# 1st Test- Percent of Visitors Who Submit an Application

A-~10%, B-13%

In **Group A**, the total was 2504.

- 250 submitted an application
- 2254 did not.

In **Group B**, the total was 2500.

- 325 submitted an application
- 2175 did not.

Percent of Visitors Who Apply

1st Test - Results

When we ran the test, App vs. No App, with the following contingency table, the p-val was 0.0009647827, which is statistically significant. More people in Group B submitted an application and we rejected the null hypothesis (that there is no significant difference between the groups).
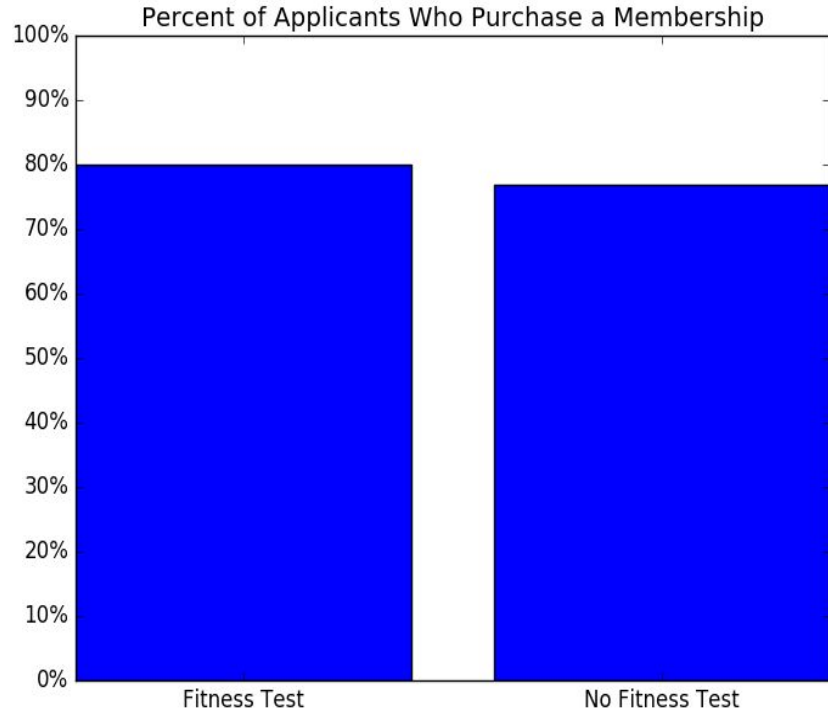
contingency = [[250, 2254], [325, 2175]]

chi2, pval, dof, expected = chi2_contingency(contingency)

ab_test_group	Application	No Application	Total	Percent with Application
A	250	2254	2504	0.09984
B	325	2175	2500	0.13000

2nd Test- Percent of Applicants Who Buy a Membership

A- 80%, B- 77%

The *second item* we tested was what

was the percent of applicants who

bought a membership?

Percent of Applicants Who Purchase a Membership

2nd Test- Results

It looks like people who took the test were more likely to become members if they had already picked up an application. But, is the difference statistically significant? We ran a Chi-Square test for the groups and Member/Not Member and got a p-value of 0.432586460511. This is not a significant difference between the two groups.
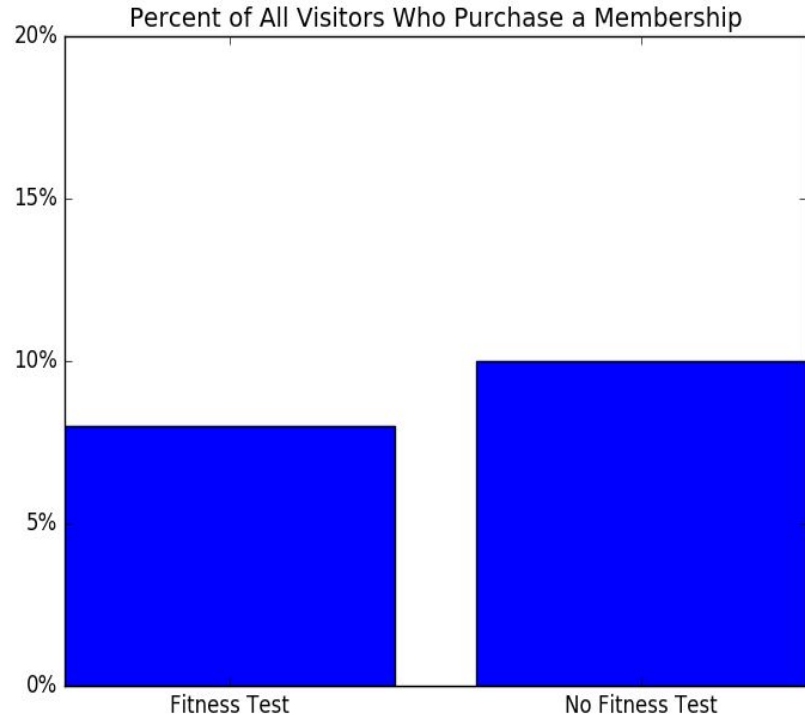
contingency = [[200, 50], [250, 75]]

chi2, pval, dof, expected = chi2_contingency(contingency)

ab_test_group	Member	Not Member	Total	Percent Purchase
A	200	50	250	0.800000
B	250	75	325	0.769231

3rd Test- Percent of All Visitors Who Buy a Membership

A- 8%, B- 10%

The *third item* we tested was

what percent of all visitors buy

a membership?

3rd Test- Results

It appears that out of all the visitors to the gym, people in group B were more likely to purchase a membership. So, again, using a Chi-Square test, is the difference between the two groups Member/Not Member below significant? The p-value is 0.0147241146, which is less than 0.05, so, yes, it is statistically significant.

contingency = [[200, 2304], [250, 2250]]

chi2, pval, dof, expected = chi2_contingency(contingency)

is_member	ab_test_group	Member	Not Member	Total	Percent Purchase
0	A	200	2304	2504	0.079872
1	B	250	2250	2500	0.100000

So? What Does it All Mean?

After the hypothesis testing we found that two out of three tests had statistically significant differences:

1.)Percent of visitors who completed an application.

3.)Percent of all visitors who purchase a membership.

Summary of Interviews

Additionally, we also reviewed some of the submitted interviews. We found:

- 1 person who intended on signing up anyway, found the fitness test to be very helpful.
- 1 person who wasn't interested in being harassed by trainers and didn't want to be pushed to sign up, who, would have signed up, but, in the end did not sign up because he was turned off by the lack of cleanliness of machines.
- 1 person who took the fitness test and regretted it.
- 1 person who saw an ad and signed up/got a membership. Was intimidated by competitor gym's fitness test.

Recommendations

There are those types of people who are bound and determined to join a gym, and will join, fitness test or not. There are also those types of people who just want to join without being pressured or hassled into purchasing a membership. After reading some of the interviews and out of the three hypothesis tests we ran here, we found that two had results that were significant, the 1st and 3rd tests. The percent of applicants who buy a membership and the percent of total visitors who buy a membership, respectively.

Recommendation: Get rid of the fitness test as a step to becoming a member of MuscleHub.

Also, the next round of testing I'd do, is see how many members actually use their membership and renew their memberships after a year.