

Musclehub's A/B Test

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Description

MuscleHub Gym

An A/B test was done in order to determine if the gym's fitness test is impacting the potential customers' chance of actually purchasing a gym membership.

The test measured discrete data on the way people went through the purchasing process



Customers' opinion

I always wanted to work out like all of the shredded people on the fitness accounts I see on Instagram, but I never really knew how to start. MuscleHub's introductory fitness test was super helpful for me! 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!

- Cora, 23, Hoboken

When I walked into MuscleHub I wasn't accosted by any personal trainers trying to sell me some mumbo jumbo, which I really appreciated. Down at LiftCity they had me doing burpees 30 seconds after I walked in the door and I was like "woah guys slow your roll, this is T0000 much for Jesse!" I still ended up not signing up for a membership because the weight machines had all those sweat stains on them and you know, no thanks.

- Jesse, 35, Gowanes

I took the MuscleHub fitness test because my coworker Laura recommended it. Regretted it.

- Sonny "Dad Bod", 26, Brooklyn

I saw an ad for MuscleHub on BookFace and thought I'd check it out! The people there were suuuuuper friendly and the whole sign-up process took a matter of minutes. I tried to sign up for LiftCity last year, but the fitness test was way too intense. This is my first gym membership EVER, and MuscleHub made me feel welcome.

- Shirley, 22, Williamsburg

Opinion's resume

Intensity

The intensity of the test is pretty high.

The majority of customers don't like this

Accessibility

There are ads on BookFace and word is spreading from person to person.

The signup process is very easy.

Friendliness

People's opinion on the gym and its trainers is quite good overall .

SQL Database

Information is stored on four separate databases. Each database holds the same values throughout:

| Index | first_name | last_name | email | gender |
|---------|------------|-----------|--------|--------|
| integer | string | string | string | string |

While each database holds each a different piece of information with two different inputs:

| visit_date |
|-------------|
| String/none |

| fitness_test_date |
|-------------------|
| String/none |

| application_test_date |
|-----------------------|
| String/none |

| purchase_date |
|---------------|
| String/none |

There are 5004 pieces of data in total.

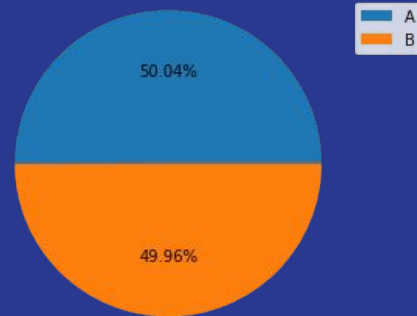
SQL Database

Using SQL commands we get the following database:

| | first_name | last_name | gender | email | visit_date | fitness_test_date | application_date | purchase_date |
|---|------------|-----------|--------|------------------------|------------|-------------------|------------------|---------------|
| 0 | Kim | Walter | female | KimWalter58@gmail.com | 7-1-17 | 2017-07-03 | None | None |
| 1 | Tom | Webster | male | TW3857@gmail.com | 7-1-17 | 2017-07-02 | None | None |
| 2 | Edward | Bowen | male | Edward.Bowen@gmail.com | 7-1-17 | None | 2017-07-04 | 2017-07-04 |
| 3 | Marcus | Bauer | male | Marcus.Bauer@gmail.com | 7-1-17 | 2017-07-01 | 2017-07-03 | 2017-07-05 |
| 4 | Roberta | Best | female | RB6305@hotmail.com | 7-1-17 | 2017-07-02 | None | None |

Hypothesis testing

| | ab_test_group | users |
|---|---------------|-------|
| 0 | A | 2504 |
| 1 | B | 2500 |



The number of users who took the test and those who didn't is pretty much the same. So a A/B test it possible.

Due to the categorical nature of the data, and the fact that we are making a comparison of two sets of data in all tests, a Chi2 test will be made to determine the acceptance of the null hypothesis

Hypothesis Test #1

Can we trust that there is a significant difference between the number of people who signed up an application in each of the test groups?

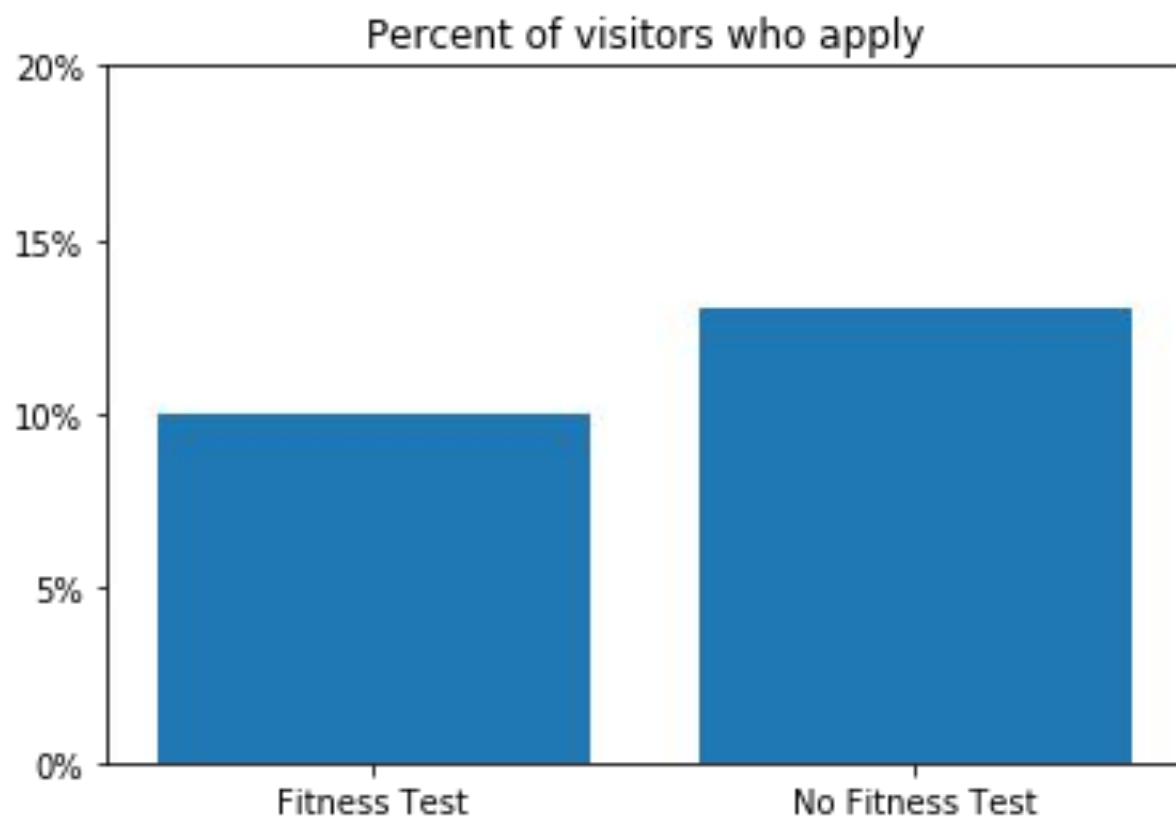
The low P-value obtained indicates that indeed there is a **very** significant difference between the two datasets.

People who **didn't** take the test were more likely to fill an application.

| is_application | ab_test_group | Application | No Application | Total | Percent with Application |
|----------------|---------------|-------------|----------------|-------|--------------------------|
| 0 | A | 250 | 2254 | 2504 | 9.984026 |
| 1 | B | 325 | 2175 | 2500 | 13.000000 |

```
from scipy.stats import chi2_contingency  
  
app_contingency = [[250, 2254], [325, 2175]]  
chi2, pval, dof, expected = chi2_contingency(app_contingency)  
print 'P-value: ' + str(pval)
```

P-value: 0.0009647827600722304



Hypothesis Test #2

Is there a significant difference in a customer's decision to actually purchase the membership had they already filled out an application?

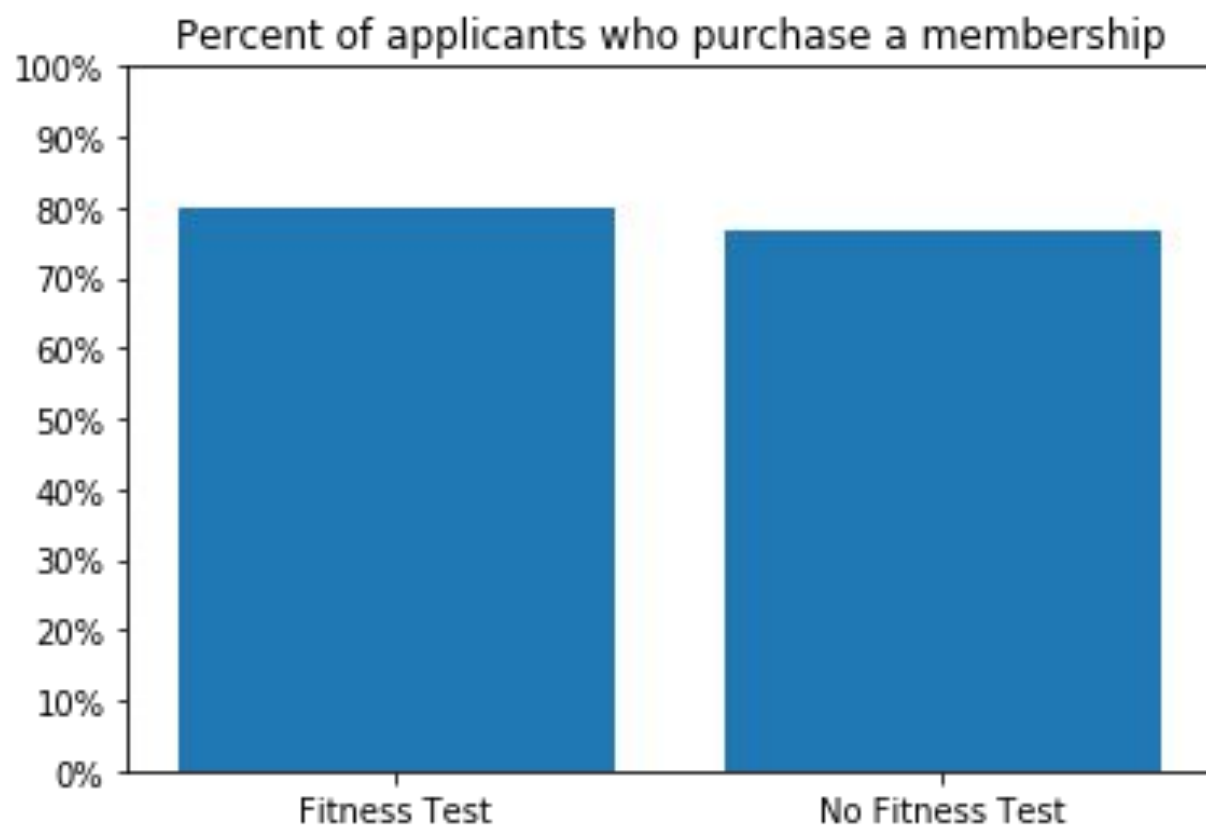
| is_member | ab_test_group | Member | Not Member | Total | Percent Purchase |
|-----------|---------------|--------|------------|-------|------------------|
| 0 | A | 200 | 50 | 250 | 80.000000 |
| 1 | B | 250 | 75 | 325 | 76.923077 |

```
member_contingency = ([200,50],[250,75])
chi2, pval, dof, expected = chi2_contingency(member_contingency)
print 'P-value: ' + str(pval)
```

P-value: 0.43258646051083327

When a customer has taken the fitness test, he/she is more likely to actually purchase a membership. But only if he/she had previously filled an application. Could be because the they already felt motivated enough to do it.

The obtained P-value indicates that there is no difference between the datasets and the information is not reliable.



Hypothesis Test #3

is there a significant difference on the results of customers who purchased a membership between each of the groups?

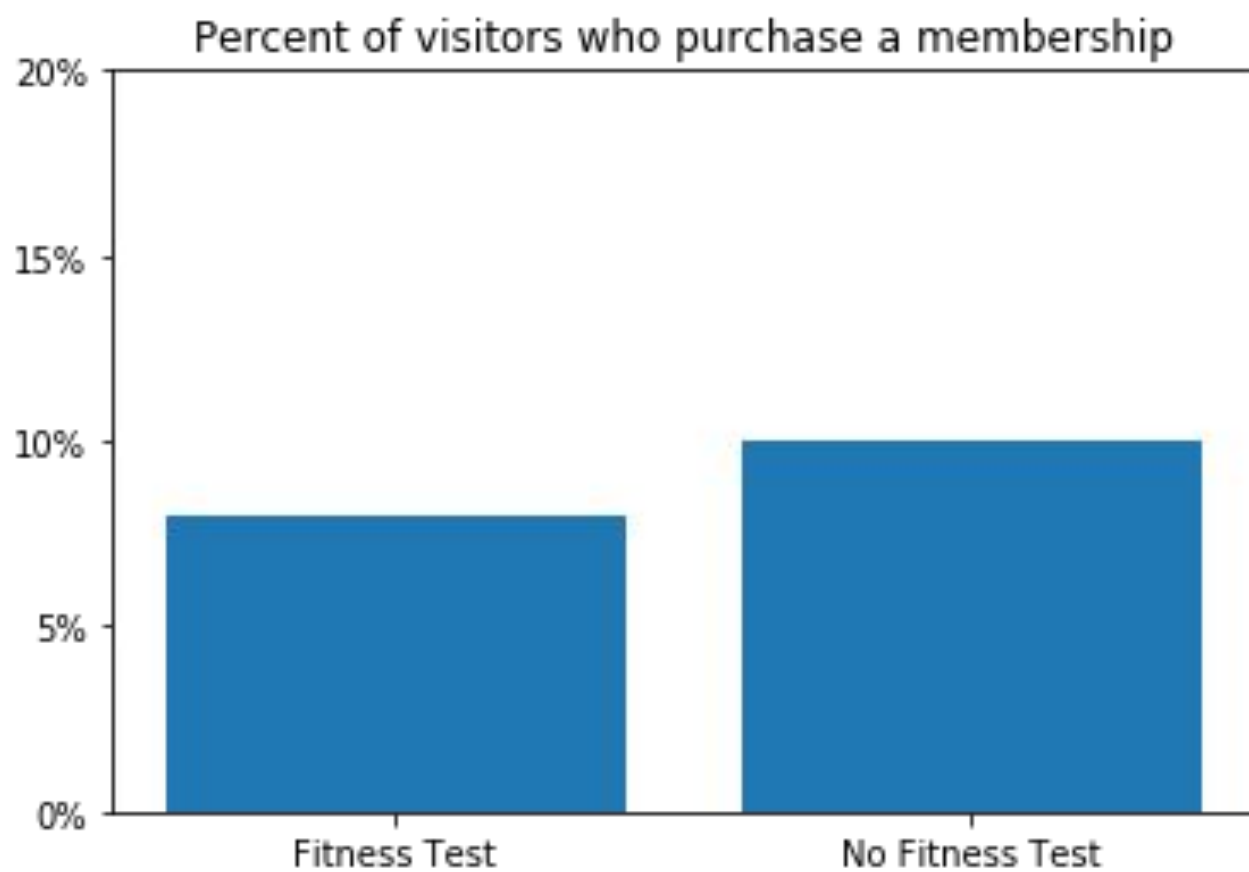
| is_member | ab_test_group | Member | Not Member | Total | Percent Purchase |
|-----------|---------------|--------|------------|-------|------------------|
| 0 | A | 200 | 2304 | 2504 | 7.98722 |
| 1 | B | 250 | 2250 | 2500 | 10.00000 |

```
final_member_contingency = ([200,2304],[250,2250])  
chi2, pval, dof, expected = chi2_contingency(final_member_contingency)  
print 'P-value: ' + str(pval)
```

P-value: 0.014724114645783203

There is! The p value is low enough to reject the possibility of having the same type of dataset.

We can infer with the information obtained that the group that does not take the fitness test ends up purchasing the membership more often than those who take the test.



Feedback for MuscleHub

Lighter test. Focus more on the aspect of how training works (testing a training session rather than a full hard-style workout).

Eventually measure the results on the influence on a customer's decision.



Feedback for MuscleHub

Push for friendliness and support: take advantage of the trainer's popularity and make a database on members' progress throughout their time in the gym and use the gym test to encourage clients to better themselves.

Could include a time series plot and -if the customer wants to- a before/after photo that can be published on BookFace and take advantage of the following it has.

