MuscleHub A/B Test

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Does the fitness test intimidate our members?

MuscleHub Gym

Membership

Steps considering buying a membership.

- Fitness test
- Application form
- Monthly Payment

A/B Test: 2 groups

A. Fitness test with a personal trainer
B. Skip fitness test and proceed with the application

Which group will be more likely to eventually purchase a membership to MuscleHub?

Our Data

MuscleHub Database

SQLite database with 4 tables:

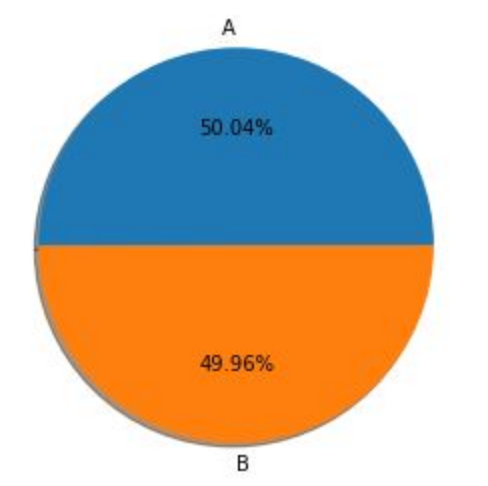
- *visits* contains information about potential gym customers who have visited MuscleHub
- *fitness_tests* contains information about potential customers in "Group A", who were given a fitness test
- *applications* contains information about any potential customers (both "Group A" and "Group B") who filled out an application. Not everyone in visits will have filled out an application.
- *purchases* contains information about customers who purchased a membership to MuscleHub

Our final dataset contains 5004 rows.

A and B Groups

We are dividing the data in 2 groups:

- Group A: visitors that have taken the fitness test
- Group B: visitors that have not taken the fitness test



A/B Test - Chi Square

Chi Square Test

For our study we are going to use a Chi Square Test, as we are comparing categorical variables.

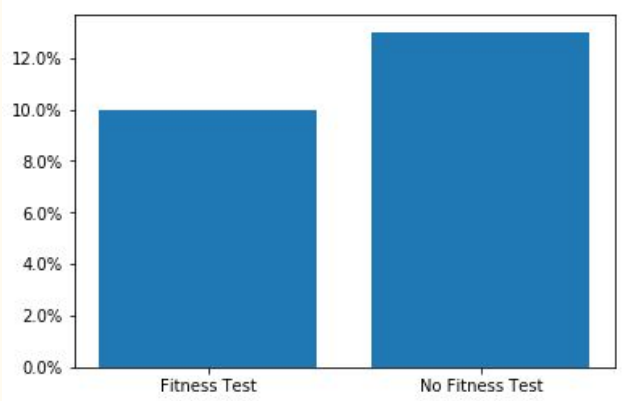
The second reason it is because half of the visitors are taking the fitness test and the other half are not. Therefore, makes sense to do an A/B test.

1. Filling out an application

We are going to if there is significant difference between people that fill or not fill out an application.

The data show us that almost 10% of people that filled the application belong took the fitness test and 13% did not take it.

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



1. Filling out an application (continued)

After performing our Chi Square test we can say that there is a significant difference between groups as the p-value is smaller than 0.05. Our p-value in this case is 0.003.

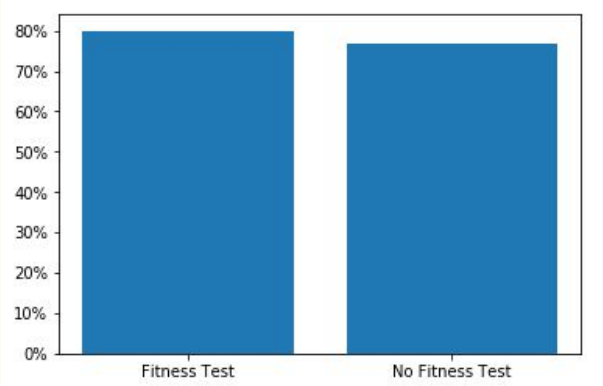
```
In [21]: from scipy.stats import chi2_contingency
         table = ([250, 2504],
                  [325, 2500])
         chi2, pval, dof, expected = chi2_contingency(table)
         print (pval)

         0.0033192529739047606
```

2. Application and purchased a membership?

For those people that filled out the application. Is there any significant difference between those who purchased a membership?

The data show us that almost 80% of people that purchased the membership after filling out the application took the fitness test and 77% did not take it.

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



2. Application and purchased a membership? (continued)

In this case, we can say that there is not a significant difference between those who purchased the membership and belong to group A or group B. Our p-value is 0.80.

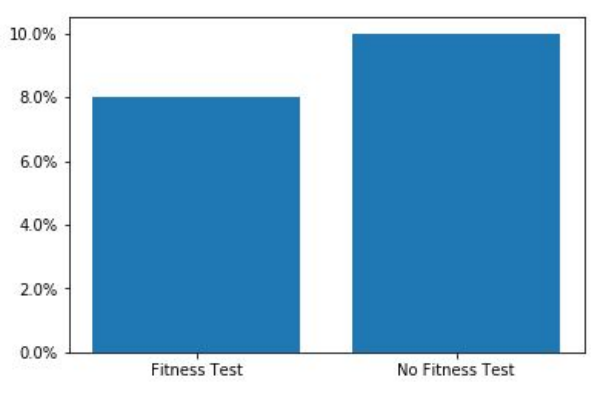
```
In [25]: table = ([200, 250],
                  [250, 325])
         chi2, pval, dof, expected = chi2_contingency(table)
         print (pval)

         0.8057464138837647
```

3. All visitors who purchased a membership?

For all visitors, is there any significant difference between those who purchased a membership?

The data show us that almost 8% of all visitors that purchased the membership took the fitness test and 10% did not take it.

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



3. All visitors who purchased a membership? (continued)

In this case, we can say that there is a significant difference between those who purchased the membership and belong to group A or group B. Our p-value is 0. 026.

```
In [27]: table = ([200, 2504],
                  [250, 2500])
         chi2, pval, dof, expected = chi2_contingency(table)
         print (pval)

         0.02609468179039563
```

Conclusion

Recommendation

Global data seem to be showing that there are more membership application from people that are not taking the fitness test.

However, even when we receive more application from visitors that does not want to do the fitness test, this does not mean that they will apply to the membership.

I would recommend MuscleHub to perform a survey in order to segment the visitors as could be a different pattern on those intimidated in taking the fitness test.