MUSCLEHUB A/B TEST

Capstone project for Introduction to Data Analysis

by Martina Homoliaková

CURRENT SITUATION

To buy a membership at MuscleHub, the visitor has to follow these steps:

1. Take a fitness test with a personal trainer
2. Fill out an application for the gym
3. Send in the payment for their first month's membership

The problem to solve:

Does the fitness test intimidate some prospective members?

A/B TEST AND HYPOTHESIS

The aim is to analyze the dataset of potential gym customers and confirm or reject the hypothesis.

Visitors are randomly assigned to one of two groups:

- Group A will still be asked to take a fitness test with a personal trainer
- Group B will skip the fitness test and proceed directly to the application
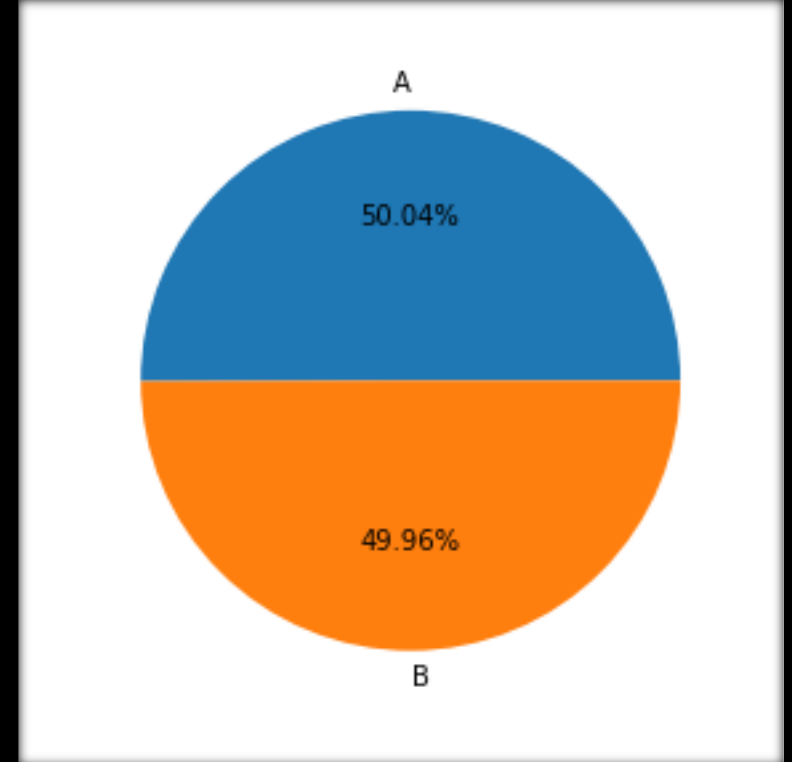
The hypothesis:

"Visitors assigned to Group B will be more likely to eventually purchase a membership to MuscleHub."

A/B TEST DATA

- The test group consists of 5004 visitors (visitors were divided into A/B groups from 1st July 2017)

- Both groups are approximately of the same size

  A: 2504 visitors

  B: 2500 visitors

WHO PICKS UP AN APPLICATION?
WHO BUYS THE MEMBERSHIP?

| Test group of 5004 potential customers	Proportion of groups	Visitors with Application	Visitors buying Membership
GROUP A	**2504** visitors **50.04%**	**250** visitors **9.98%**	**200** visitors **7.98%**
GROUP B	**2500** visitors **49.96%**	**325** visitors **13.00%**	**250** visitors **10.00%**

TO SUM UP DATASET:

- 250 visitors from **Group A pick up the Application** which is almost **10%**
  - 80% of visitors from Group A who apply bought also Membership (200)
- 325 visitors from **Group B pick up the Application** which is exactly **13%**
  - approx. 77% of visitors from Group B who apply bought also Membership (250)

- 200 visitors from **Group A bought the Membership** which is almost **8%**
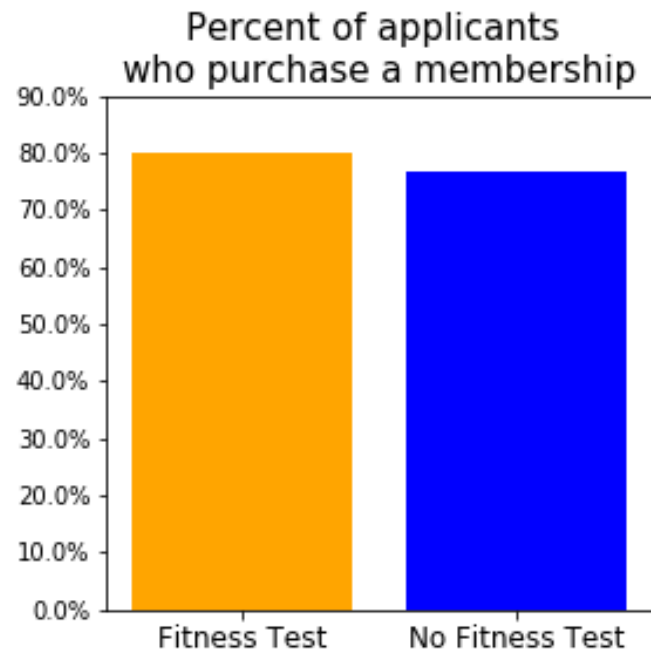- 250 visitors from **Group B bought the Membership** which is exactly **10%**

It looks like more people from Group B pick up the application and afterwards bought Membership.

To decide if these differences are statistically significant we use a significance test.

As we compare 2 categories (data are not numerical), we use **Chi squared test.**
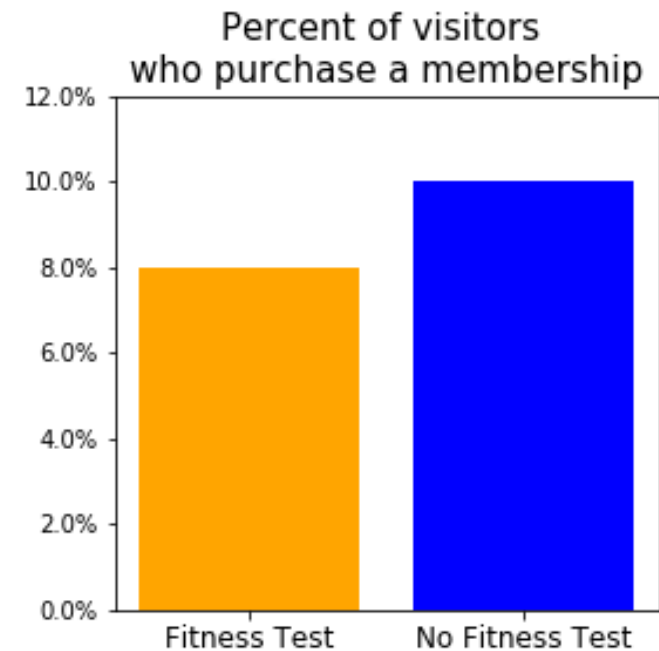
CHI-SQUARED TEST
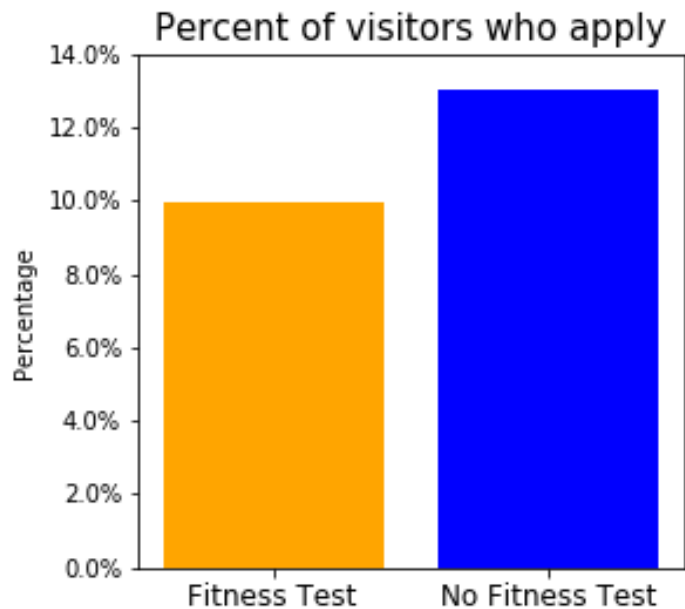
pvalue = 0.00096   pvalue = 0.43   pvalue = 0.0147

pvalue < 0.05   pvalue > 0.05   pvalue < 0.05

CHI-SQUARED TEST

Percent of visitors who apply:

- as the pvalue is **lower** than 0.05, we can reject null hypothesis that there is no difference and can tell that **there is a significant difference** between values from group A and group B

Percent of applicants who purchase a membership:

- as the pvalue is **above** than 0.05, we cannot reject null hypothesis that there is **no significant difference** between groups

Percent of visitors who purchase a membership:

- as the pvalue is **lower** than 0.05, so **there is a significant difference** between group A and group B

Based on the results of chi squared test, we have proven the hypothesis from the beginning, *"Visitors assigned to Group B will be more likely to eventually purchase a membership to MuscleHub."*

A SUMMARY OF THE QUALITATIVE DATA

Based on the interviews we can just assess the reasons why visitors who not attend fitness test are more likely to purchase membership.

- Generally it seems that fitness tests are usually too intense so visitors are afraid of them

- Some of fitness tests in MuscleHub are probably too intense too and visitors may be too exhausted after taking them or frightened, especially those who are in the fitness centrum for the first time

- According to one of interviews it seems that trainer Rachel is able to motivate visitors who are then motivated to improve themselves and buy membership

- Employees in MuscleHub are very friendly and sign-up process is really easy and fast

A RECOMMENDATION FOR MUSCLEHUB

- According to the results of A/B test and interviews I suggest to adjust the current process of buying a membership
  - I would leave the steps of the process as is but the **fitness test with a personal trainer should be optional** not mandatory, so that each visitor has an option to choose whether to first take a test or not

- Personal trainers should motivate visitors but sometimes the fitness tests may be too intense. Therefore I think they should more cooperate with visitors and **accommodate fitness test to physical condition of individual visitor** and so make the test more enjoyable.