MuscleHub A/B Test

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Introduction

Currently, when a visitor to MuscleHub is considering buying a membership, he or she follows the following steps:

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

Probably, the fitness test intimidates some prospective members, so the A/B test has been setted up.

Visitors will randomly be 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

Hypothesis

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

Study

Instead of questions, there should be information about conducted study. All these questions should be asked to Janet(manager) at the very beginning. It also should include the sample size calculation.

Do visitors that rejected the fitness test (but they were offered to do one) have the ‘fitness_tests.fitness_test_date’ column with filled date?

Quick example. A person enters the Musclehub. A manager records he or she into ‘visitors’ table and **offers to do a fitness test**. The person **rejects the fitness test** and lefts the Musclehub.

If we do not fill the ‘fitness_tests.fitness_test_date’ column, then our A-B-groups identification mechanism works wrong: the visitor is identified as the **B group** member, **despite** we **offered a test** and did not filled the column.

If we do fill the ‘fitness_tests.fitness_test_date’ column, then our A-B-groups identification mechanism works correct: the visitor is identified as the **A group** member, **because** we **offered the test** and filled the column. The further analysis is based on the assumption that study has been conducted this way.

Dataset summary

The presented data consists of four tables:

1. `visits` contains information about potential gym customers who have visited MuscleHub.

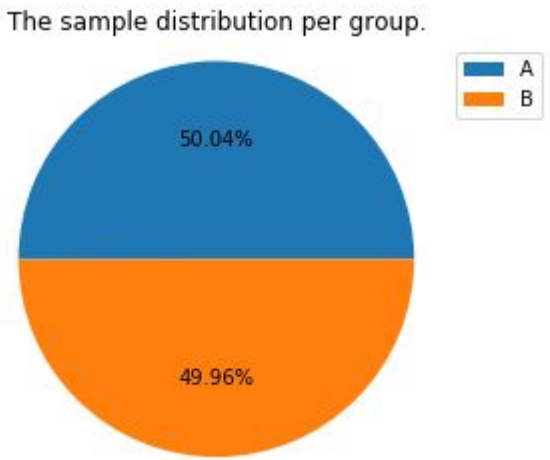
2. `fitness_tests` contains information about potential customers in "Group A", who were given a fitness test.

3. `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.

4. `purchases` contains information about customers who purchased a membership to MuscleHub.

The scope of A/B test consists of 5004 visitors. It includes only visitors that have been added on or after 7-1-17.

The sample distribution per group



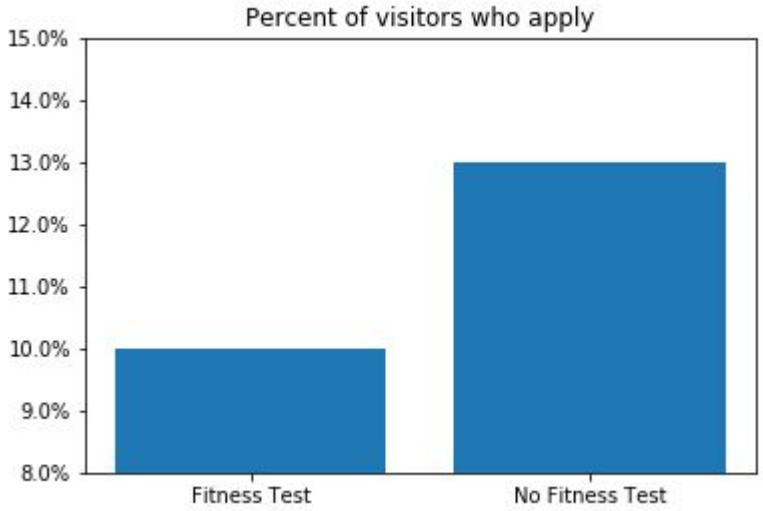
The sample of 5004 members has been splitted almost equally among A and B test groups.

Checking the hypothesis

Comprehensive view of MuscleHub sign-up process is a key to check whether the fitness test decreases the number of purchases. The aim is to get the data-driven answers on the following questions:

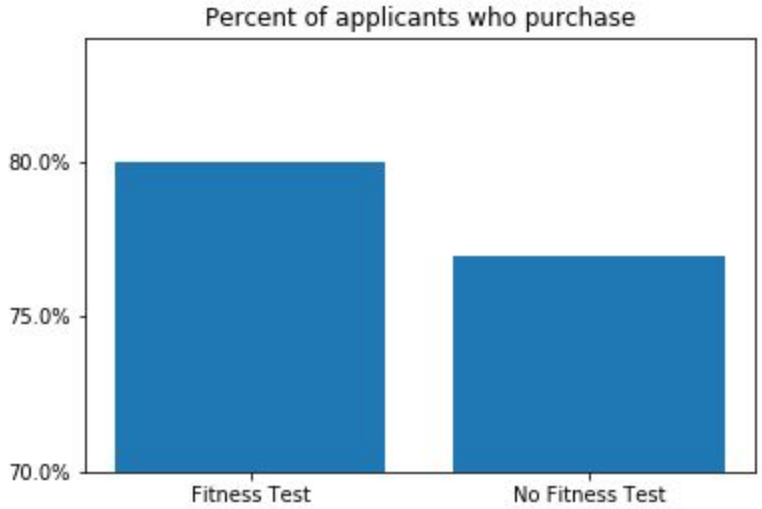
1. Who picks up an application?
2. What applicants purchase a membership?
3. What visitors purchase a membership?

Who picks up an applicaation?



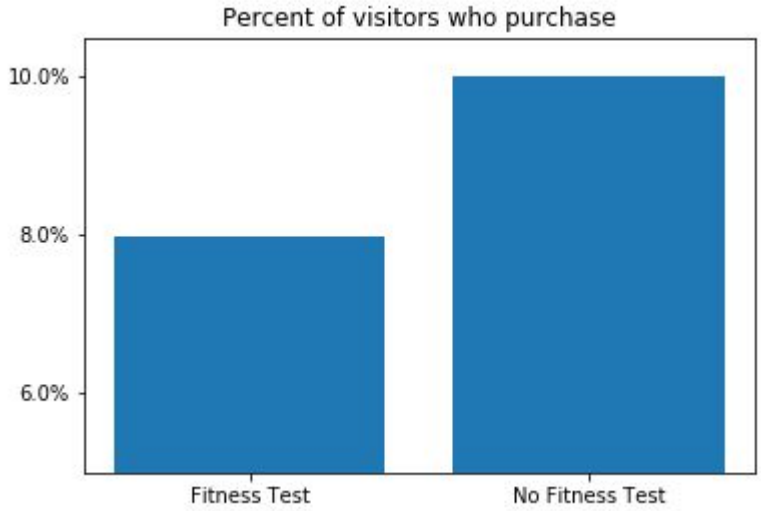
The visitors who do not take the fitness tests are 30% more likely to apply. Obviously, complete the application is much easier than complete the fitness test and application. The difference is significant (Chi-squared test p-value is 0.00096).

What applicants purchase a membership?



The number of applicants who purchase the membership is a bit higher for the A group. Why would I apply after the fitness test if I do not want to purchase? By the way, the difference is not significant (Chi-squared test p-value is 0.43258).

What visitors purchase a membership?



The bars chart indicates that the conversion rate of the group B is 2% higher. Taking into consideration the 8% baseline of the A group, such 2% difference indicates a 25% lift for the no-fitness-group. Chi-squared test p-value of 0.01472 indicates this difference as significant.

Qualitative data

Accordingly to the interviews with, the most visitors have been satisfied after the fitness test (the interviews were conducted with visitors who already taken the fitness test). Would be great to conduct some interviews with visitors before the fitness test. I bet that offering the fitness test discourages a numerous amount of people. The fitness test should be a serious barrier on the way of our potential applicants and, as a consequence, MuscleHub members.

Inferences

Despite a fact that the most of after-fitness-test interviews were positive, the data says that the no-fitness-test-group visitors are more likely to eventually purchase the membership to musclehub.

1.Who picks up an application?

The sign-up process with excluded fitness test results into the notably higher number of applications. People always look for the easiest way.

2. What applicants purchase a membership?

The second important point is a fact that almost the same quantity of applicants(with or without fitness test) purchase the membership. Thus, the number of visitors who purchases the membership straightly correlate with the applications number.

3. What visitors purchase a membership?

Summarizing, the more visitors apply - the more purchases we have. Excluding the fitness test is a data-driven decision that should lead to increased membership sales.

Thank you!