MuscleHub A/B test data analysis

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The test

Janet, the manager of a gym called MuscleHub, decided to check whether visitors of the gym who were asked to take a fitness test with a personal trainer, before their application, were less likely to eventually purchase a membership.

She supposed that the fitness test intimidates some prospective members.

Visitors were randomly assigned to one of two groups:

- Group A was asked to take a fitness test with a personal trainer
- Group B skipped the fitness test and proceeded directly to the application

The results of the data analysis which I ran on the data which Janet had collected confirmed her hypothesis.

Summary of the dataset

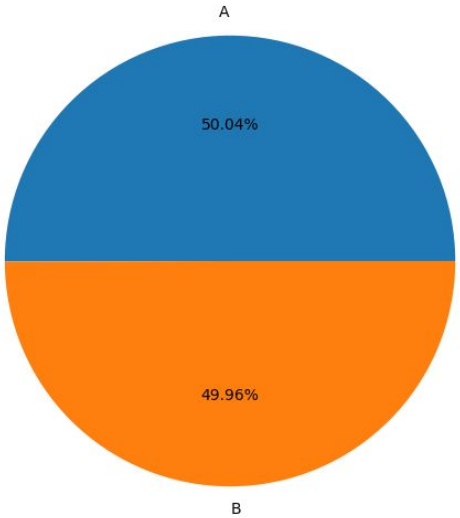
Like most businesses, Janet kept her data in a SQL database.

The database with collected information is organized in 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.
- **purchases** contains information about customers who purchased a membership to MuscleHub.

Using the information in those tables, I investigated the A and B groups and found that the difference in size between the two groups is negligibly small (only 4 people), i.e. they are pretty much equal.

That is illustrated in the pie chart on the right.



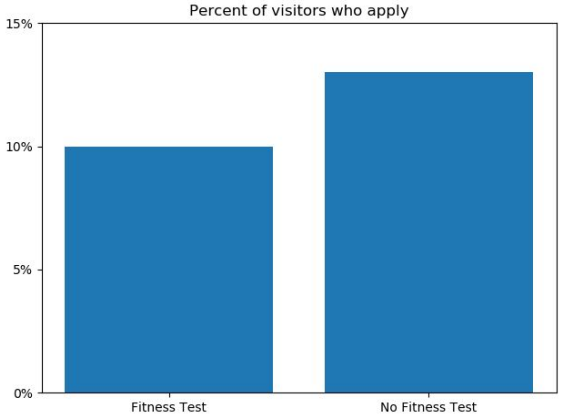
Hypothesis results

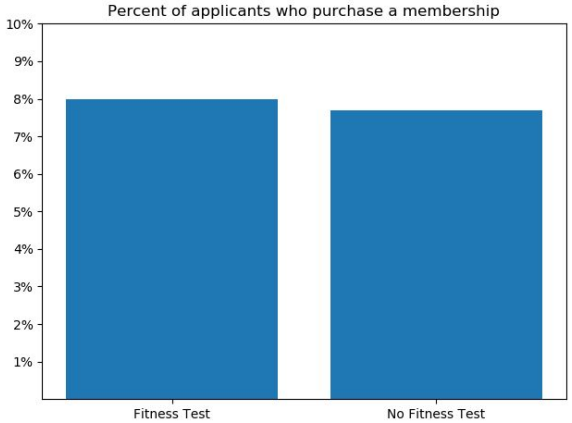
1. I compared how many people from both groups pick an application. It turned out that the people from group B who didn't take the fitness test were more likely to apply. That was most likely because they didn't go through the intimidating process of doing a fitness test with an instructor.
2. I compared whether what percent of people who picked up applications purchased membership and found that there was no significant difference between the two groups. In other words, it didn't matter whether the applicant took a fitness test or not, if he had applied then the probability of buying a membership was the same.
3. Finally, I checked what percentage of all visitors purchased membership. The result was that people who did not take the fitness test were more likely to purchase membership.

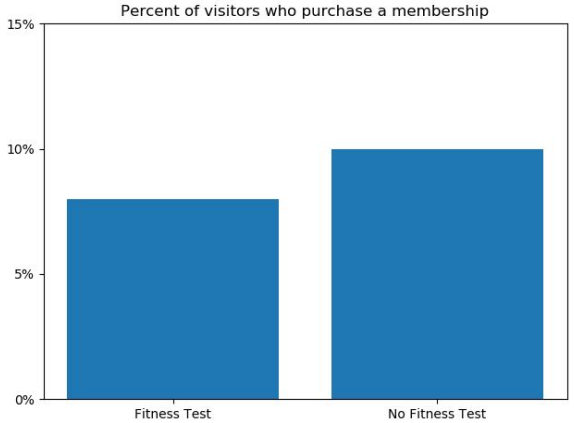
I used a Chi Square test, because it is useful in situations when we have two or more categorical datasets that we want to compare, just like the current analysis, and it is a perfect fit when it comes to A/B testing.

Tests Summary

The graphics below illustrate the results of the hypothesis tests.







What's next?

My recommendation to MuscleHub is that they should not put visitors through a fitness test before application.

The option can remain, but it should be optional and not part of the application process, because it reduces the number of people who purchase a membership.