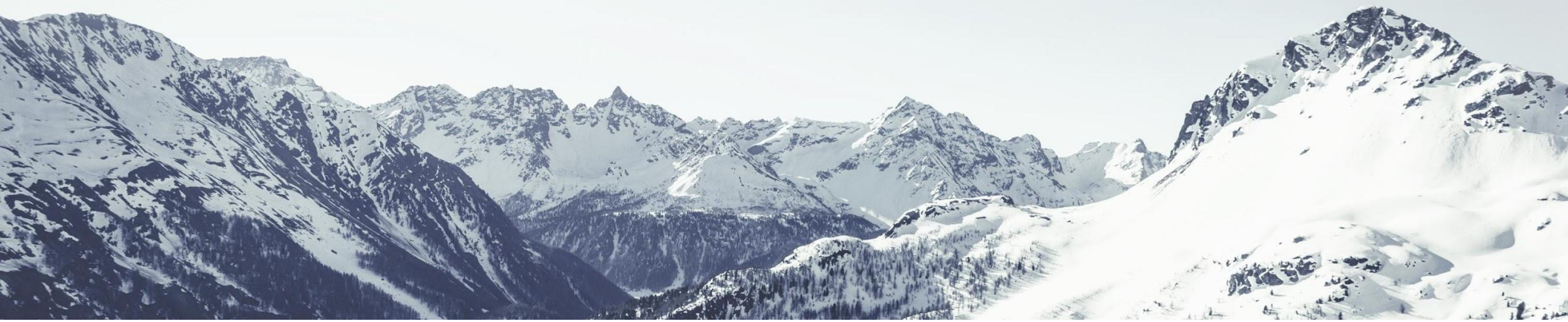
Does fitness test intimidate prospective members?

MuscleHub AB Test by *Leyu Shi 2018*



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Overview

MuscleHub, a fancy gym, offers membership to its visitors, There are three steps for a visitor to get the membership. Firstly, take a fitness test with a personal trainer; then, fill out an application for the gym; finally, send in their payment for their first month's membership. However, the manager, Janet, thinks that the fitness test intimidates some prospective members, so she has set up an A/B test which randomly assigns visitors to either a group that will be asked to take a fitness test or a group that skips the test. The test will be analyzed at three different levels to see whether the fitness test affects application and membership purchase, i.e., whether fitness test intimidates potential applicants and potential members.

Levels to analyze

1. Whether taking a fitness test with a personal trainer affects visitors to fill out an application?

2. Whether taking a fitness test with a personal trainer affects applicants to purchase memberships?

3. Whether taking a fitness test with a personal trainer affects visitors to purchase memberships?

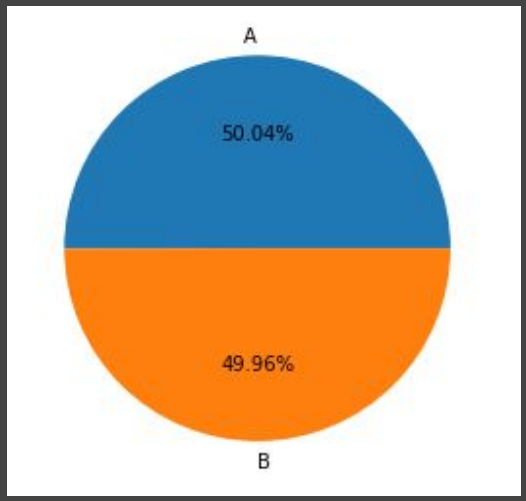
Background Data 01

MuscleHub AB test data were kept in a SQL database. There are mainly four pieces of data for this test, visits, fitness_tests, applications and purchases . We accessed the data using a special Codecademy library (sql_query) that let us type SQL queries directly into the Jupyter notebook. Using sql_query, we created a DataFrame that left joins all the four data tables. From there, we used pandas and matplotlib.pyplot investigate AB groups and create pivot tables according to the three hypotheses to analyze the data.

Background Data 02

In the AB test, Janet, the manager, split her visitors such that about half are in A and half are in B.

	ab_test_group	first_name
0	A	2504
1	B	2500



Background Data 03

For the hypothesis test, we applied Chi Square test. Chi Square test is appropriate if we have two or more categorical datasets that we want to compare. It is useful in situations like:

- An A/B test where half of users were shown a green submit button and the other half were shown a purple submit button. Was one group more likely to click the submit button?

Hypothesis 1

Taking a fitness test with a personal trainer decreases the percentage of visitors to fill out an application.

Result and Implication:
Data show that there is a significant difference (p=0.001) between the visitors who took a fitness test with a personal trainer and the visitors who skipped the fitness test to fill out an application. Taking a fitness test with a personal trainer decreased the percentage of visitors to fill out an application, which implicates taking a fitness test with a personal trainer intimidates potential applicants.

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

Hypothesis 2

Taking a fitness test with a personal trainer decreases the percentage of applicants to purchase memberships.

Result and Implication:

Data show that there is not a significant difference (p=0.433) between the applicants who took a fitness test with a personal trainer and the applicants who skipped the fitness test to purchase memberships. Taking a fitness test with a personal trainer does not decrease the percentage of applicants to purchase memberships, which implicates taking a fitness test with a personal trainer does not intimidate potential members.

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

Hypothesis 3

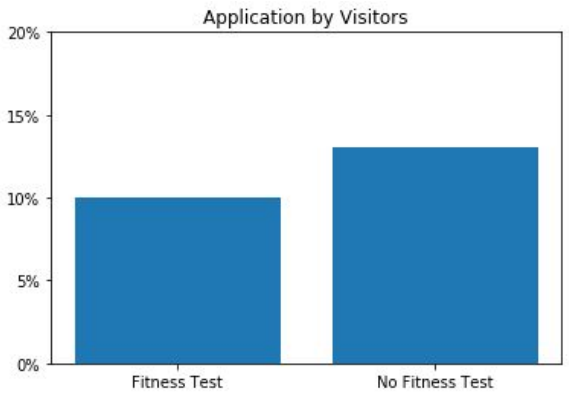
Taking a fitness test with a personal trainer decreases the percentage of visitors to purchase memberships.

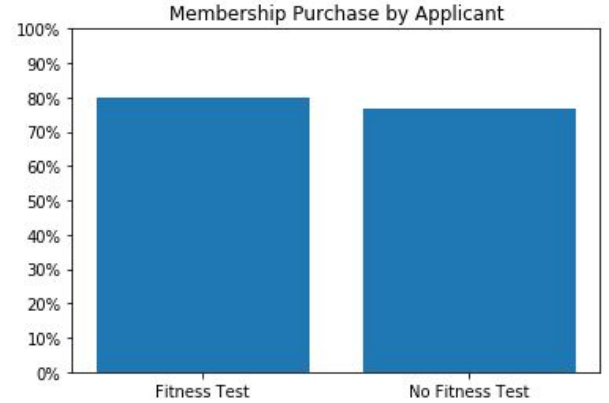
Result and Implication:
Data show that there is a significant difference (p=0.015) between the visitors who took a fitness test with a personal trainer and the visitors who skipped the fitness test to purchase memberships. Taking a fitness test with a personal trainer decreased the percentage of visitors to purchase memberships, which implicates taking a fitness test with a personal trainer intimidates potential members.

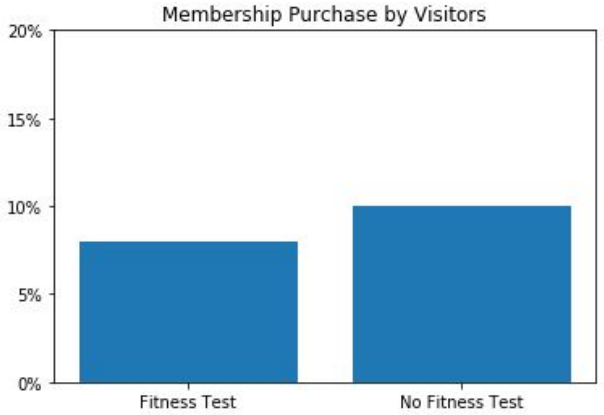
is_member	ab_test_group	Member	Not Member	Total	Percent Purchase
0	A	200	2304	2504	0.079872
1	B	250	2250	2500	0.100000

Summary

Taking a fitness test with a personal trainer decreased the percentage of visitors both to fill out applications and to purchase memberships, however, it does not affect the percentage of visitors who have filled out applications to purchase memberships.







Recommendation

A change of the order of membership process is recommended. Taking a fitness test with a personal trainer being the second step after visitors filled out their applications is recommended.

Thank you.