Musclehub A/B Test

Simon Hutchinson

Introduction

Summary of A/B Test

Musclehub wants to know if their sign up rate for membership is affected by the fact that potential members are asked to take a fitness test with a personal trainer.

Test methodology

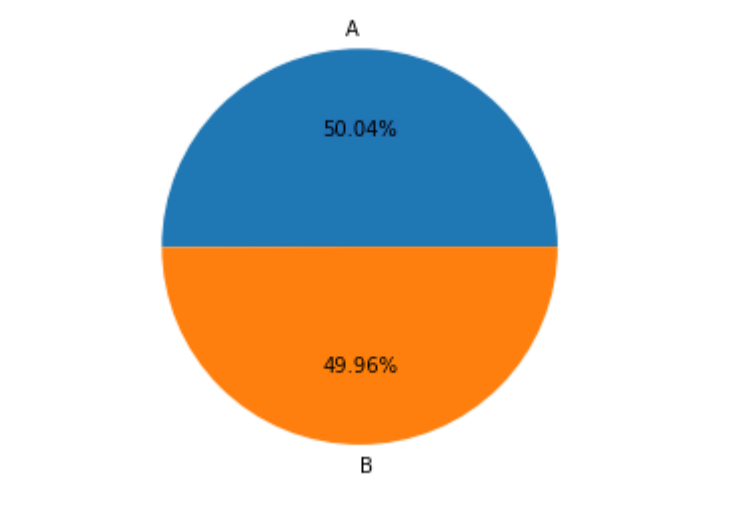
An A/B Test was performed to determine if the businesses hypothesis that being forced to have a fitness test with a personal trainer was likely to lead to a customer walking away instead of signing up for membership is true.

Potential members were split into two groups - One group would be forced to take a fitness test before signing up for memberships whilst the other group would not be asked to.

The hypothesis is that the signup conversion rate should be higher from the group which is not asked to take a fitness test.

The split

Before conducting a data analysis, the data was loaded into a data frame to determine if the members had been split into two groups correctly. The result was that 2504 were in group A and 2500 in group B. 50.04% vs 49.96% making this a valid A/B test.



Group A vs Group B - Applications

Group 1 - Group A that took a application after being forced to do a fitness test (250 people)

Group 2 - Group A that did not take a application after being forced to do a fitness test. (2254 people)

Group 3 - Group B that took a application after not being forced to do a fitness test (325 people)

Group 4 - Group B that did not take a application after not being forced to do a fitness test. (2175 people)

Chisquare Test

A chisquare test was then performed on the two groups to determine if there is enough data in each group to come to a conclusion based on data analysis.

P-VALUE = 0.0009

Less than 0.05 so the results can be used in a data analysis to form a recommendation. The test is fair.

Who purchased a membership by group?

The data was then broken up into those who purchased a membership after picking up a application from Musclehub.

Who purchased?

Group A - 200 purchased, 50 did not (80% percent purchase rate)

Group B - 250 purchased, 75 did not (76.9% purchase rate)

Chisquare Test

A second chisquare test was then performed on the membership data to determine if it was a fair test.

P-VALUE = 0.43258646051083327

The result is higher than 0.05 so the results cannot be used for a fair test.

Who purchased from all visitors?

The previous test produced a P-VALUE which indicated that the test was not fair. The data was then broken up into all visitors of converted to membership or not. It did not matter whether they had picked up a application or not.

Group A vs Group B - Memberships

Group 1 - Group A members after visit. (200 members, 2304 not members) - 7.9% conversion rate.

Group 2 - Group B members after visit (250 members, 2250 not members) - 10% conversion rate.

Chisquare Test

A chisquare test was then again run to determine if the test was fair.

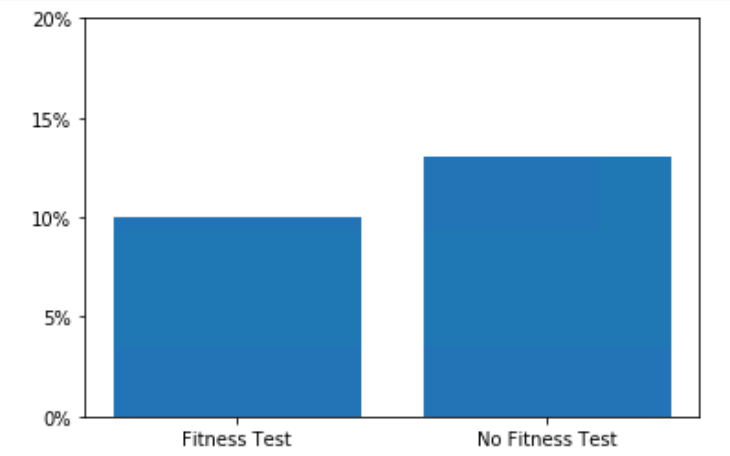
P-VALUE = 0.014724114645783203

Less than 0.05 so the results can be used in a data analysis to form a recommendation. The test is fair.

Results and Recommendation

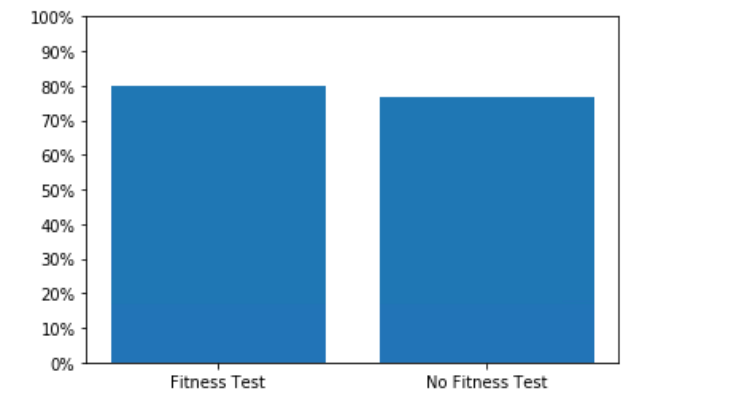
Percentage of visitors who apply

The results clearly show that a visitor is more likely to apply for membership and take a application form if they are not asked to take a fitness test with a personal trainer.



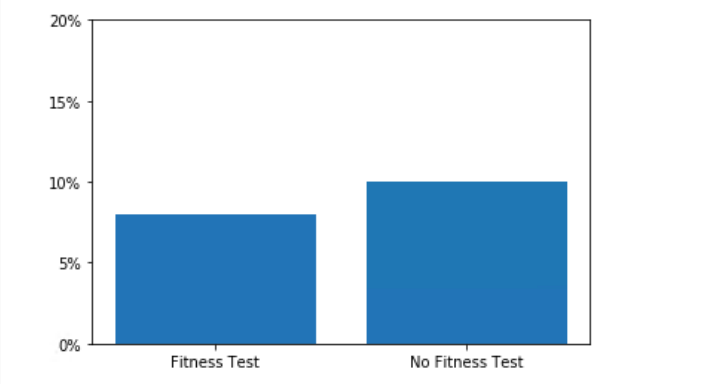
Percentage of applications who became members

Interestingly, the application conversion rate was higher to memberships from those who were forced to take a fitness test, in contrast to the previous slide results.



Percentage of visitors who became members

However when taking into account all visitors, not just those who took a application, the results were clear that the no fitness test returned a better conversion rate.



Conclusion: The hypothesis is correct. Musclehub should drop the fitness test as part of its sign up procedure