MuscleHub Gym

Membership Purchase A/B Test

CodeAcademy Intro to Data Analysis Capstone Project Option 1

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A/B Test Overview

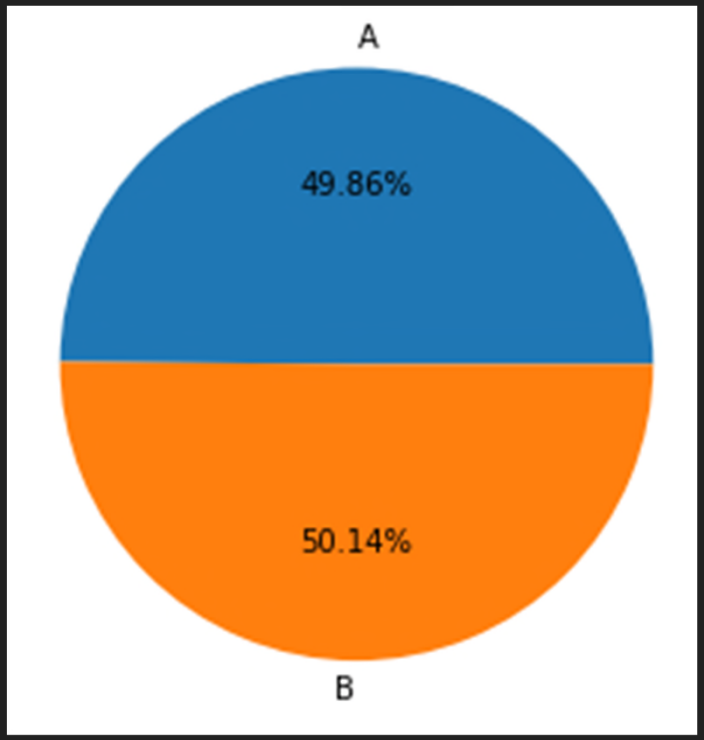
- MuscleHub Gym requires visitors who are considering buying a membership to take a fitness test prior to filling out the application form & settling the first month's payment.
- Management is under the suspicion that this fitness test may actually negatively impact a vistor's propensity to actually purchase a membership.
- This A/B test separates visitors into two groups in order to test this hypothesis. Group A will be subjected to the fitness test as per usual, whereas Group B will skip the fitness test and jump straight to the application.

Methodology

- The analysis is conducted on data gathered on or after 7-1-17.
- Data concerning individual visitors, applications filled out, fitness tests conducted and purchases made is consolidated into a single data frame.
- The data frame is then manipulated in order to identify the data related to Groups A & B respectively. Specifically, to ensure that each group is evenly represented.
- First, we identify if the number of applications submitted differs for each group & test if any difference is statistically significant
- Next, we identify if, out of the total number of applicants, there is any significant difference between those who took the fitness test (Group A) & those who didn't (Group B) & once again test for any statistical significance in any observed differences.
- Finally, out of all visitors, we identify how many individuals in each group (A and B) ended up purchasing a membership, also making sure to test for significance.

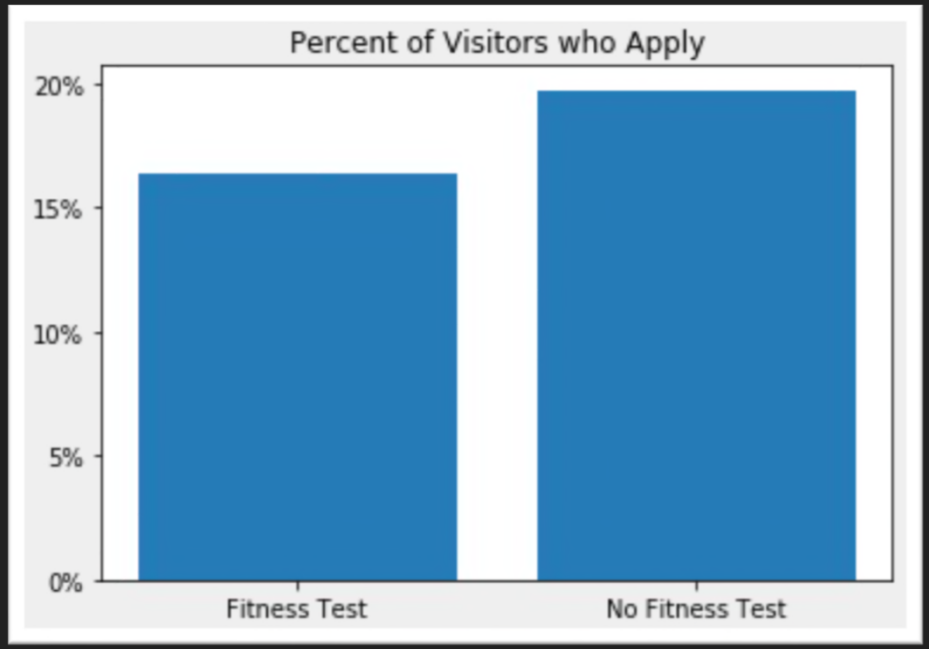
Visitor Data

- Total visitors: 5,403
- Group A (Fitness test): 2,694 (49.86%)
- Group B (No fitness test): 2,709 (59.14%)



Application Data

- Percentage of visitors who submitted an application:
  - Group A: 16.33%
  - Group B: 19.71%
- Given we are dealing with categorical data & there is no expected number to compare against, we used the Chi2 Contingency to test for statistical significance against a p-value of 0.05
- Our test yielded a p-value of 0.0013953087488558576 meaning we REJECT the null hypothesis that the difference is due to random chance
- In other words, the fitness test has a significant NEGATIVE impact on visitors propensity to submit an application

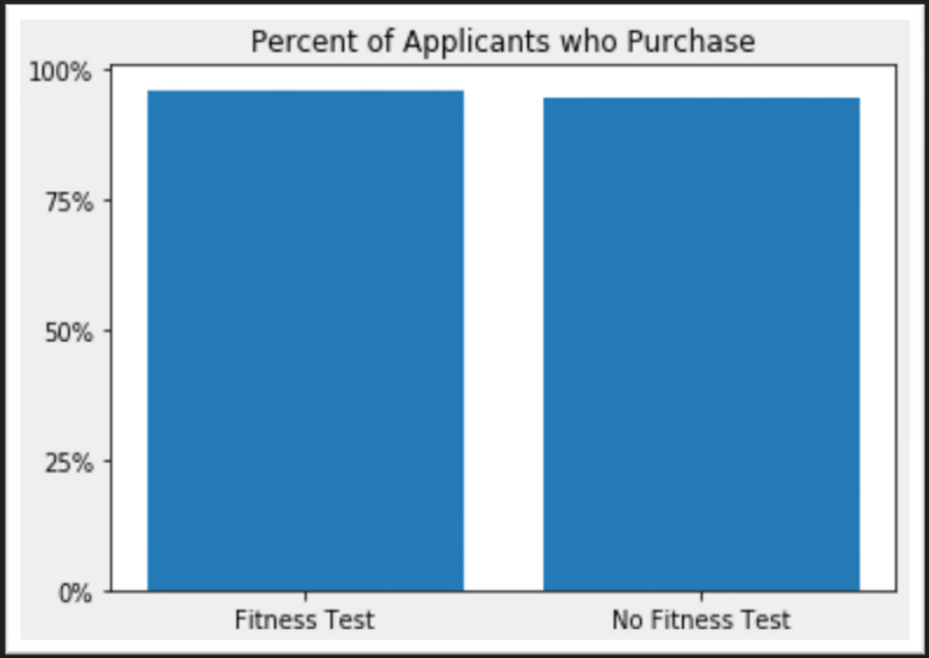


Applicant Purchase Data

- Percentage of applications who purchased a membership:
  - Group A: 95.9%
  - Group B: 94.38%

- For the same reason as with the Applicant Data we tested significance with a Chi2 Contingency test with a p-value of 0.05

- Our resultant p-value of 0.3436296822032022 indicates that the fitness test has NO significant impact on the propensity of applicants (visitors who submitted an application) to purchase a membership.

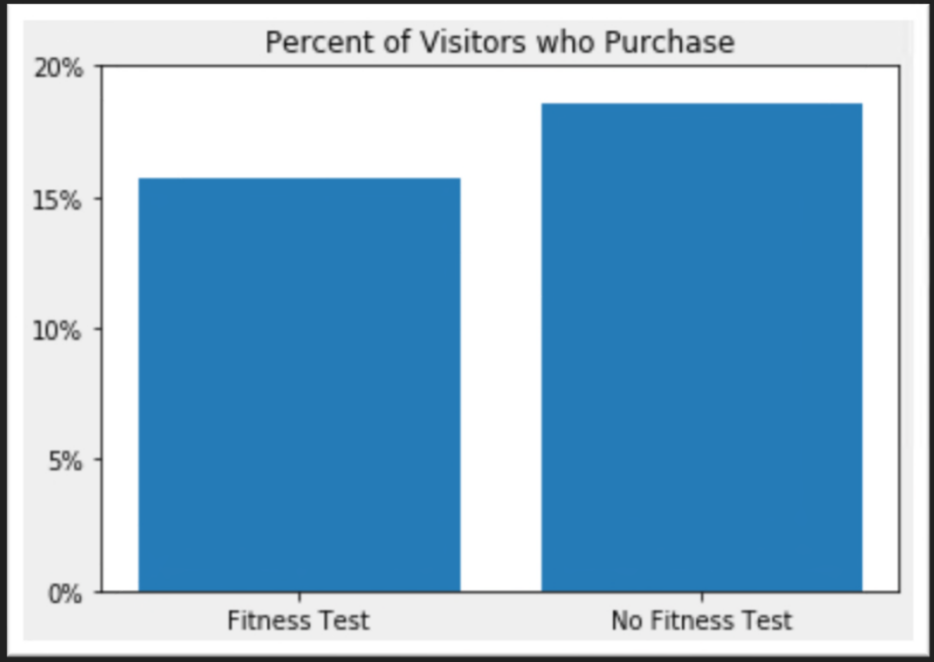


Visitor Purchase Data

- Percentage of visitors who purchased a membership:
  - Group A: 15.66%
  - Group B: 18.60%

- For the same reason as with the Applicant Purchase Data we tested significance with a Chi2 Contingency test with a p-value of 0.05

- Our resultant p-value of 0.0046347833609372 04 indicates that the fitness test has a significant NEGATIVE impact on visitors propensity to purchase a membership.



Qualitative Data

- Interviews of MuscleHub members show that 3 out of 4 visitors reported a negative emotion after having undergone an initial fitness test

- The interviews indicate that visitors feel intimated or overwhelmed after having gone through a fitness test (either at MuscleHub or elsewhere), potentially leading them to have second thoughts about their ability to make the most of a membership & thereby dissuading them from submitting an application

Recommendation

- Given that:
  1. There is a higher propensity for the Group B visitors, who did NOT undergo a fitness test, to apply for membership,
  2. There is a significant positive correlation between the Group B visitors and the propensity to purchase a membership, and
  3. The qualitiative data indicates a negative emotional response to the fitness test, potentially dissuading visitors from applying,

We strongly recommend MuscleHub discontinue its practice of subjecting visitors to a fitness test before allowing them to apply for membership.