MuscleHub A/B Test

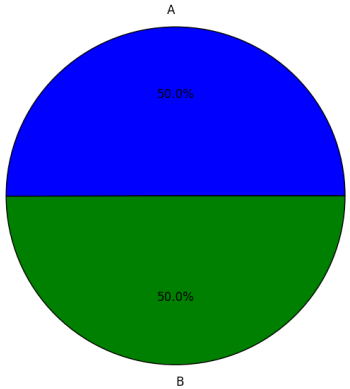
Python Capstone Option 1– Lara Eiligmann 23/07/2018

MuscleHub A/B Test – Description and Dataset

The gym **MuscleHub** would like to understand if its mandatory fitness test has an effect on the probability of visitors becoming members of the gym. The concern is that it might intimidate potential members.

Description of the A/B Test:

1. In advance of the test, visitors were randomly assigned to one of two groups:
    1. Group A was asked to take the fitness test with the personal trainer
    2. Group B skipped the fitness test
2. The A/B Test checks the statistical significance of differences between those two Groups regarding the likelihood of … to …:
    1. Visitors - turn in an application
    2. Applicants - purchase a membership
    3. Visitors - purchase a membership



Dataset:

1. Combined dataset consists of 5004 rows, one row per visitor.
    1. Of the visitors, 2504 took a fitness test
    2. Of these, 575 visitors filled out an application
    3. 450 finally purchased the membership

Variables:
- First name
- Last name
- Email
- Gender
- Visit date
- Fitness test date
- Application date
- Purchase date

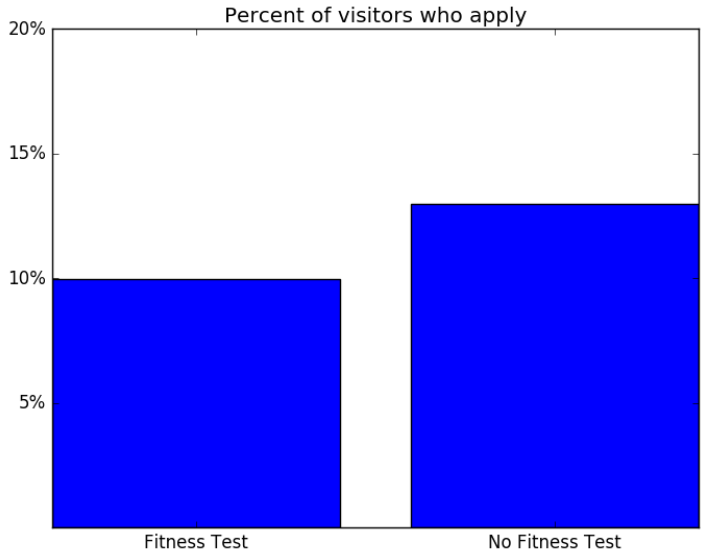
MuscleHub A/B Test – Hypotheses results

Hypothesis 1:

H_{01}: Visitors assigned to Group B (no fitness test) are **equally likely** to turn in an application to MuscleHub than visitors of Group A (fitness test)

H_{A1}: Visitors assigned to Group B (no fitness test) are **more likely** to turn in an application to MuscleHub than visitors of Group A (fitness test)

- → *Significance tested by use of the Chi-Square Test. This same test was used for Hypotheses 2 and 3.*
- → *This test was chosen as*
  - → *We deal with discrete categories of data*
  - → *We compare two unpaired groups.*
- → *Result: H_{01} rejected. There is a significant difference between both groups. Visitors assigned to Group B are more likely to turn in an application to MuscleHub than visitors to Group A.*
- → *This result supports the impression gained when looking at the % of visitors who apply per group.*



MuscleHub A/B Test – Hypotheses results

Hypothesis 2:

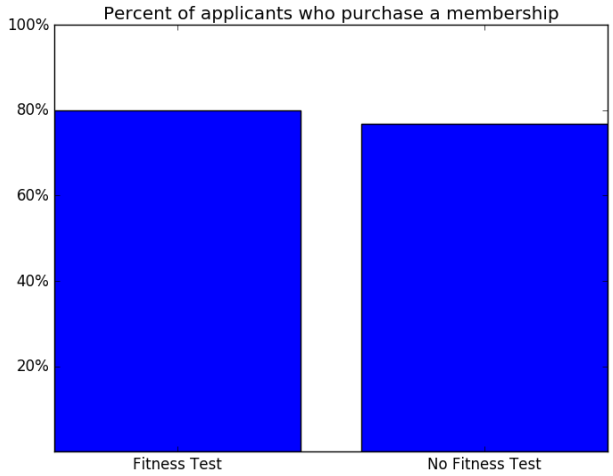
H_{02}: Applicants from Group B (no fitness test) are **equally likely** to purchase a membership to MuscleHub than applicants from Group A (fitness test)

H_{A2}: Applicants from Group B (no fitness test) are **more likely** to purchase a membership to MuscleHub than applicants from Group A (fitness test)

→ ***Result:*** *H_{02} not rejected. There is no significant difference between both groups. Applicants from Group B are equally likely to purchase a membership to MuscleHub than applicants from Group A.*

→ *Intuitively, this result makes sense – after visitors have taken the fitness test and thereafter have decided to turn in an application, their final decision to become a member is not dependent on the fitness test.*

→ *Hypothesis 1 and 2 show that he fitness test impacts a visitors decision to apply, but is not a significant differentiator between the steps of application and final membership. Hypothesis 3 helps us understand the effect on the whole conversion impact from visitor to membership.*



MuscleHub A/B Test – Hypotheses results

Hypothesis 3:

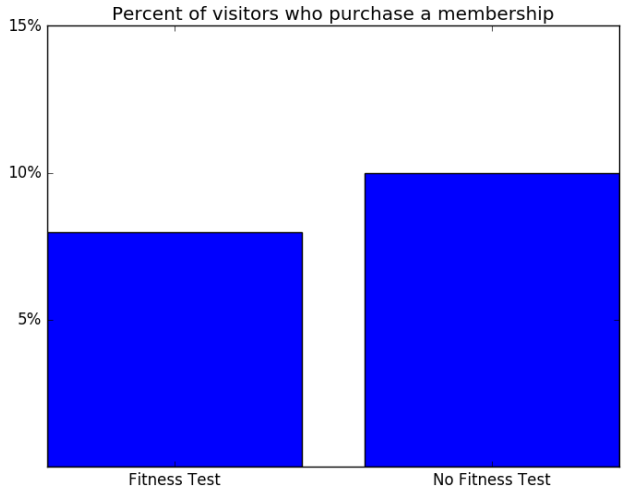
H_{03}: Visitors assigned to Group B (no fitness test) are **equally likely** to purchase a membership to MuscleHub than visitors of Group A (fitness test)

H_{A3}: Visitors assigned to Group B (no fitness test) are **more likely** to purchase a membership to MuscleHub than visitors of Group A (fitness test)

→ ***Result:*** *H_{03} rejected. There is a significant difference between both groups.*

→ *Whereas the prior two hypotheses tests only investigated parts of the membership process, Hypothesis 3 investigates the complete conversion from visitor to member and thus yields the main result.*

→ *It shows that visitors assigned to Group B (no fitness test) are more likely to purchase a membership to MuscleHub than visitors of Group A. From a visitor – member conversion standpoint, it makes sense for MuscleHub to get rid of the fitness test.*



MuscleHub A/B Test – Summary of qualitative data and Recommendation

The **hypothesis test** points towards a visitor conversion benefit of skipping the initial fitness test.

Supporting qualitative data show that:

- The Fitness Test can help new visitors orient themselves / is perceived as a good support function for people new to gym workouts
- However, the Fitness Test can also be perceived as unnecessary (“personal trainers trying to sell me some mumbo jumbo”). Also, customers value a quick sign-up process.
- Apart from the Fitness Test, customers also mentioned gym hygiene, such as stains on weight machines, which could be improved upon.

Based on the quantitative and qualitative research, we recommend MuscleHub to remove the mandatory Fitness Test and instead offer it as an optional test for those new to gym workouts. To provide a value add to customers, we recommend MuscleHub to invest in further equipment and cleaning aids.