MuscleHub Gym

Membership Evaluation Project

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The MuscleHub Gym Membership

The current procedure:

- Take a fitness test with a personal trainer
- Fill out an application for the gym
- Become a member by paying the first month's membership

The question:

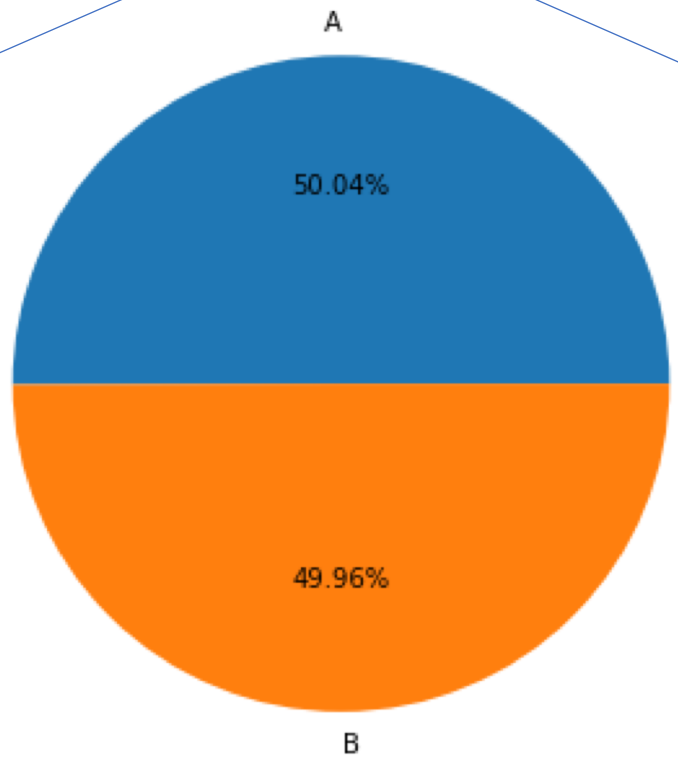
Does the fitness test intimidate some prospective members?

The input database

- **visits** – potential gym customers who have visited MuscleHub
- **fitness_tests** - potential customers in "Group A", who were given a fitness test
- **applications** - potential customers (both "Group A" and "Group B") who filled out an application
  - Note: not everyone in ***visits*** will have filled out an application
- **purchases** - customers who purchased a membership to MuscleHub

The project: A/B test

Random assignment of visitors



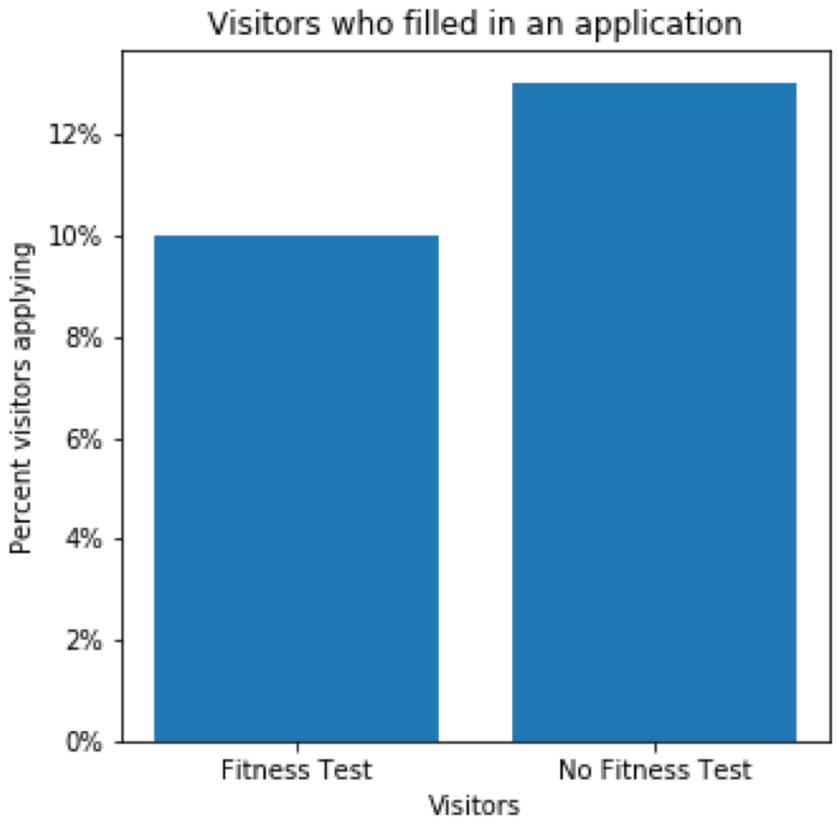
Group A

Take a fitness test with a personal trainer

Group B

Skip fitness test & proceed directly to application

Hypothesis #1: It is more likely to fill in the application with no fitness test



- Database analysis result:
  - Group A (Test) yields 10% applications
  - Group B (No Test) yields 13% applications

- Binomial Test: **Difference is significant**
  - A: 250 applications out of 2504 (10%)
  - B: 325 applications out of 2500 (13%)

pval=binom_test(250,2504,13%)=$4x10^{-6}$

pval (chi2_contingency) = 0.00096

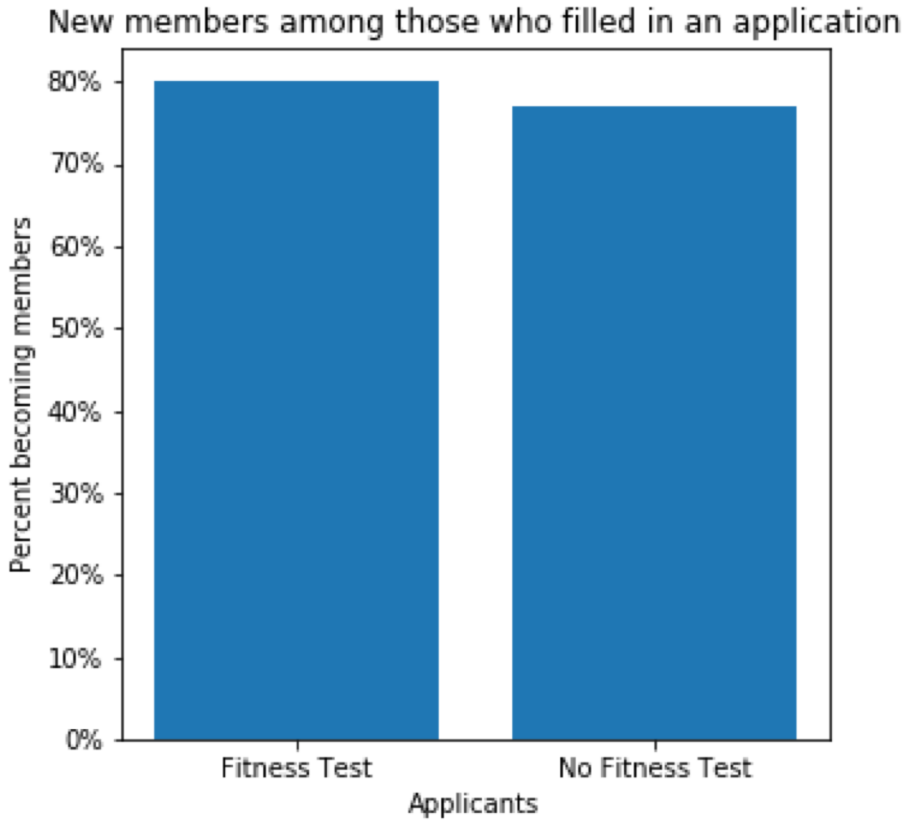
Hypothesis Test

- **Null hypothesis**: there is no significant difference; i.e. any difference between the two samples is due to chance
- P Value<0.05 → rejects null hypothesis

- **Binomial test**: given a number of observed successes (number of filled applications or number of purchased membership) and the number of total trials (group sample) what is the p_value for the percentage of success from group A if number of successes and sample are from group B?

- **CHI-SQUARE test**: null hypothesis that there is no difference between datasets is rejected if p<0.05

Hypothesis #2: It is more likely to become a member after applying with a fitness test



- Database analysis result:
  - Group A (Fitness test): 80% of applicants purchase membership
  - Group B (No Fitness test): 76.9% of applicants purchase membership

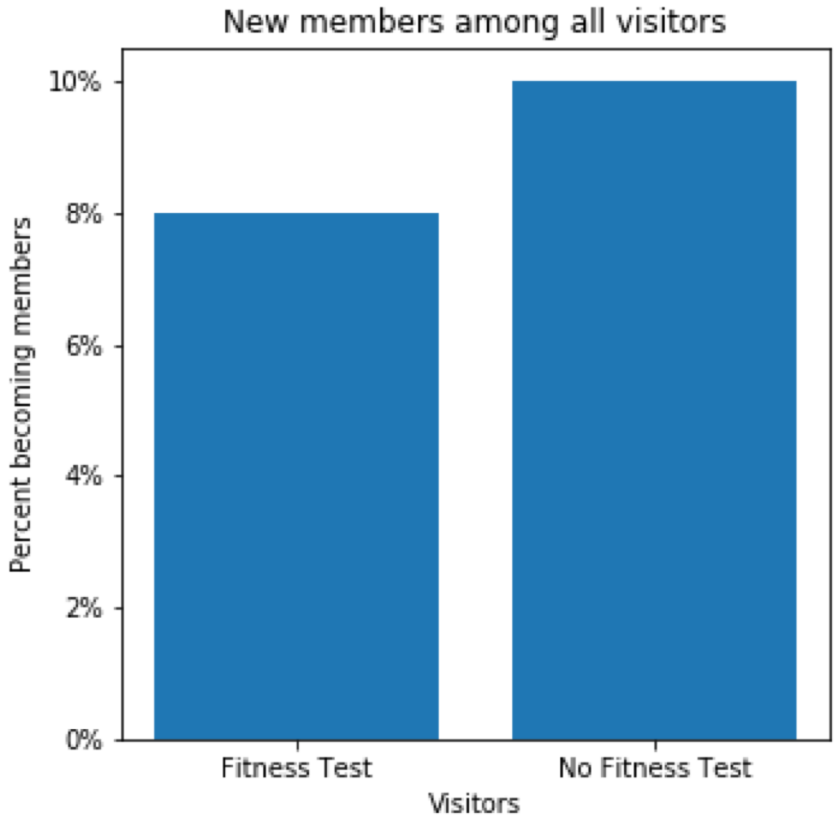
- Binomial Test: **Difference is NOT significant**
  - A: 200 of 250 applicants → members
  - B: 250 of 325 applicants → members

- Rationale:

pval=binom_test(250, 325, 80%)=0.16

pval (chi2_contingency) = 0.43

Hypothesis #3: It is more likely to become a member without a fitness test



- Database analysis result:
  - Group A (Test) yields 8% new members
  - Group B (No Test) yields 10% new members

- Binomial Test: **Difference is significant**
  - A: 200 members out of 2504 (8%)
  - B: 250 members out of 2500 (10%)

pval=binom_test(200,2504,10%)=$6x10^{-4}$

pval (chi2_contingency) = 0.01

Test Summary:

- Hypothesis #1: It is more likely that visitor will fill in the application if no fitness test is required – True & difference with the control sample is significant

- Hypothesis #2: Visitors who already filled an application and made the fitness test are more likely to purchase membership – result is inconclusive

- Hypothesis #3: Visitors who did not do a fitness test are more likely to purchase membership – True & difference with the control sample is significant

Interview data analysis

- 4 different types: only one liked the fitness test

Positive experience:

- Quick sign-up process
- Friendly & welcoming staff
- Clean equipment

Final Recommendation

- Fitness test should not be a prerequisite for filling in an application and becoming a member

- Provide further motivation through a friendly personal trainer after a membership was purchased