

MuscleHub A/B Test

Capstone Project

Codecademy Skill Path: Analyze Data with Python

Background

- Currently, MuscleHub visitors follow these steps when considering buying a membership:
 1. Take a fitness test with a personal trainer
 2. Fill out an application for the gym
 3. Send in their payment for their first month's membership
- MuscleHub's manager thinks that the fitness test intimidates some prospective members, so she has set up an A/B test.

Project Description

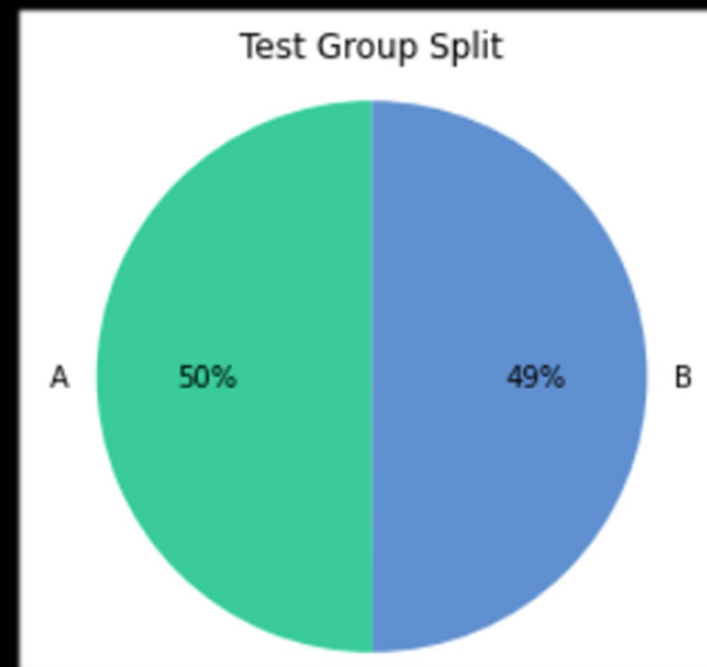
- Visitors will randomly be assigned to one of two groups:
 - **Group A:** take a fitness test with a personal trainer
 - **Group B:** skip the fitness test and proceed directly to the application
- Hypothesis:
 - Visitors in Group B will be more likely to eventually purchase a membership to MuscleHub
- An SQLite database contains several tables of customer information to be used:
 - visits
 - fitness_tests
 - applications
 - purchases

Dataset Summary

- All tables contain columns: *'first_name'*, *'last_name'*, *'email'*, and *'gender'*
- Visits table includes column with each customer's *'visit_date'*
- Fitness_tests table includes column with each customer's *'fitness_test_date'*
- Applications table includes column with each customer's *'application_date'*
- Purchases table includes column with each customer's membership *'purchase_date'*

Analysis Setup

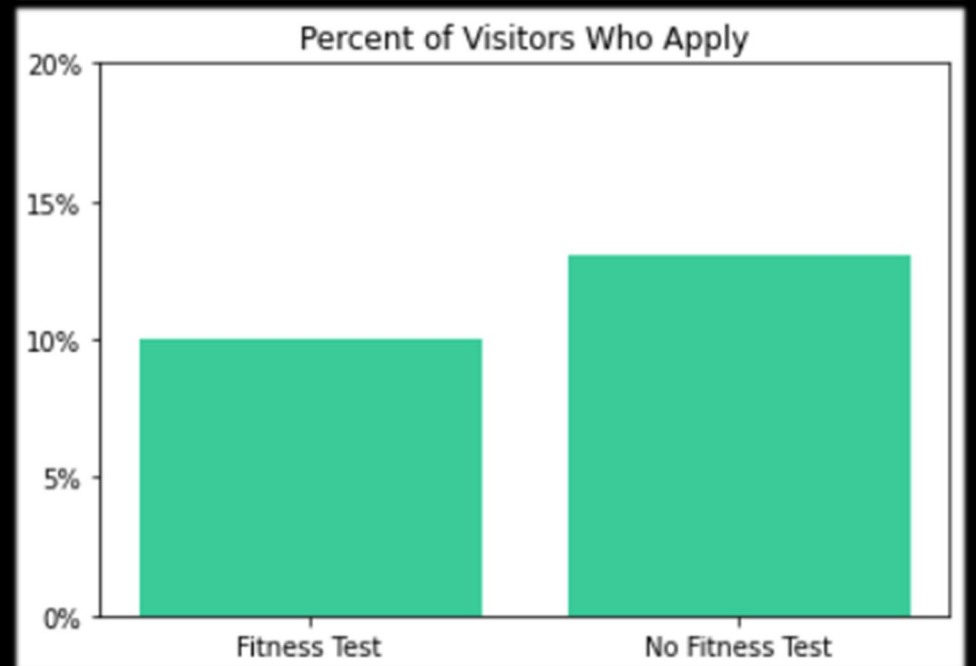
- The tables were combined into a single DataFrame including:
 - Only rows with a *'visit_date'* on or after the start of our A/B test
 - Date columns from each table
- The new DataFrame contains 5004 rows of data
- A/B test groups are split evenly



Analysis: Applications

- What percentage of visitors completed an application?
 - Visitors who did not take the fitness test are more likely to fill out an application
- Is the difference significant?
 - Significance Test: Chi Squared Test
 - Why:
 - Categorical data, need to understand association between pairs of categorical variables.
 - P-value = 0.00096 → visitors who did not take the fitness test are significantly more likely to fill out an application.

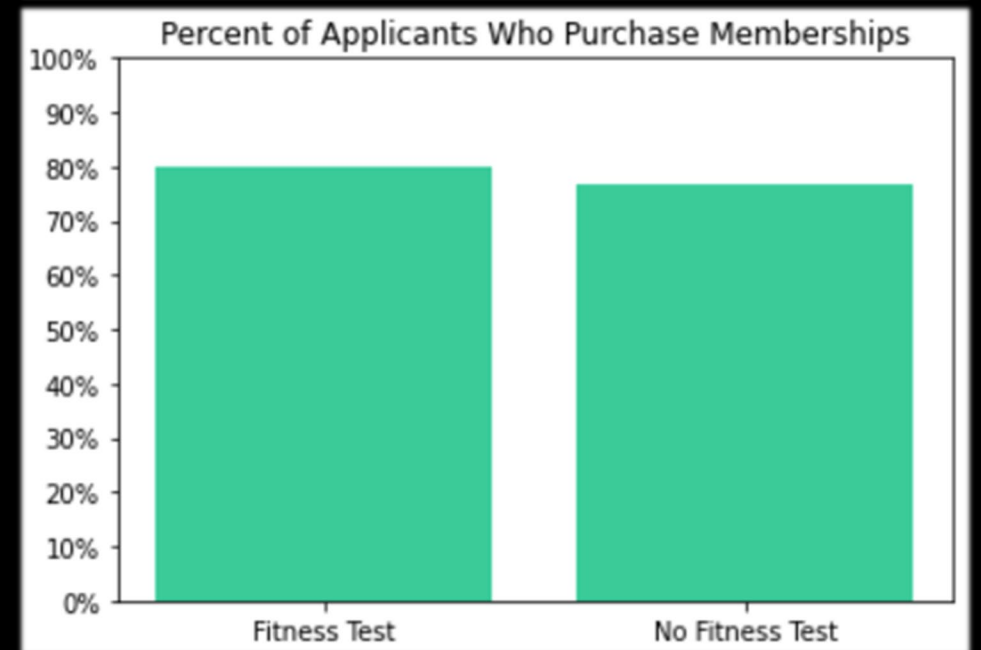
ab_test_group	Application	No Application	Total	Percent with Application
A	250	2254	2504	0.09984
B	325	2175	2500	0.13000



Analysis: Applicant Memberships

- What percentage of applicants purchased a membership?
 - Applicants who completed the fitness test are more likely to purchase a membership
- Is the difference significant?
 - Significance Test: Chi Squared Test
 - Why:
 - Categorical data, need to understand association between pairs of categorical variables.
 - P-value = 0.43259 → applicants who completed the fitness test are not significantly more likely to purchase a membership

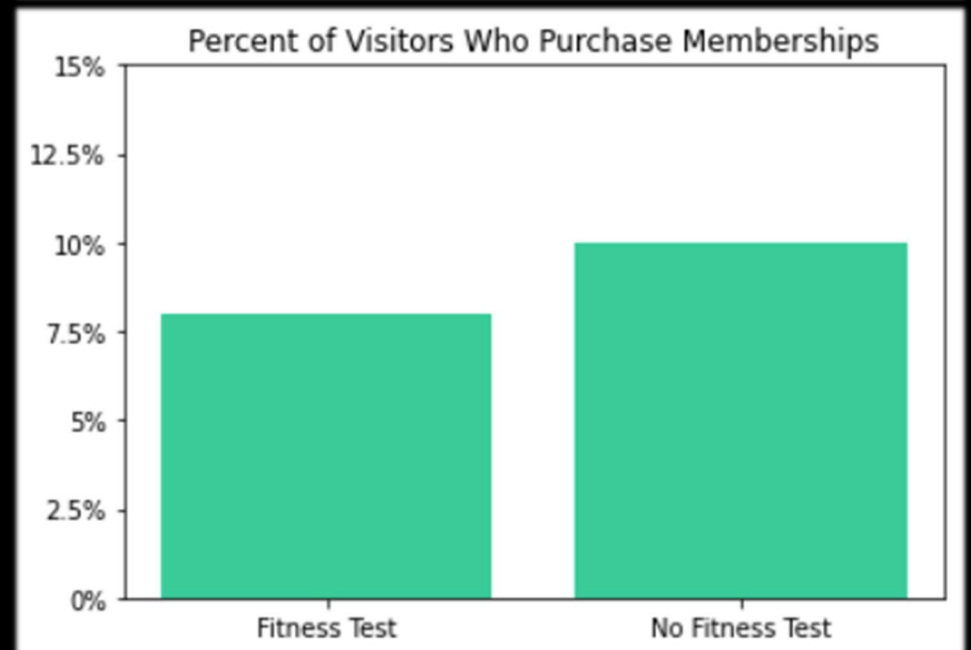
ab_test_group	Member	Not Member	Total	Percent Purchased
A	200	50	250	0.800000
B	250	75	325	0.769231



Analysis: Visitor Memberships

- What percentage of all visitors purchased memberships?
 - Visitors who did not complete the fitness test are more likely to purchase a membership
- Is the difference significant?
 - Significance Test: Chi Squared Test
 - Why:
 - Categorical data, need to understand association between pairs of categorical variables.
 - P-value = 0.01472 → visitors who did not complete the fitness test are significantly more likely to purchase a membership

ab_test_group	Member	Not Member	Total	Percent Purchased
A	200	2304	2504	0.079872
B	250	2250	2500	0.100000



Visitor Interviews Summary

- Some visitors found the fitness test helpful as a baseline and as motivation to come back and improve
- Some visitors want no personal trainer interaction on their first day
- Some visitors find fitness tests too intense of an activity
- Some visitors want a quick sign-up process
- Some visitors weigh the apparent cleanliness of exercise equipment in their decision to purchase a membership
- Some visitors are hearing about MuscleHub through social media and existing gym members

Recommendations

1. Consider making the fitness test optional
 - Some first-time visitors welcome the challenge, while others find it too intense
 - Others do not want to interact with personal trainers and are looking for a quick signup process
2. Consider the influence of gym cleanliness on membership purchase
3. Consider the influence of social media and existing member word-of-mouth on new visitor counts