



CAPSTONE 1: MUSCLE-HUB AB TEST PROJECT

Judy Ping McCormick

Python, Pandas, SQL, Matplotlib, Scipy,
chi2_contingency

22nd Jan 2021

EXECUTIVE SUMMARY – MUSCLE HUB

A. FINDINGS

1. From Visitors to Fill in the Application Form Process

- More people hand in the application forms without taking fitness tests, than those who undertaking the fitness tests (13% vs 10%)
- Taking the fitness test does have influence on filling the application form ($p\text{-value} < 0.05$, not-independent, associated,)

2. From Fill in Application Form to Become Member

- People who take the fitness test are more likely to purchase a membership (80% vs 77%)
- Taking the fitness test or not, do not have a different influence on signing up membership, if they have already filled in the application forms. ($P\text{-value}=0.432586 > 0.05$, independent)

3. From Visitor to Member

- People who do not take the fitness test, have a higher percentage on signing up the MuscleHub Membership, than those taking up the fitness test. (10% vs 8%)
- Taking Fitness Test is linked to ultimate membership signing. ($p\text{-value}=0.016034 < 0.05$)

EXECUTIVE SUMMARY: MUSCLE - HUB

B. RECOMMENDATIONS

1. Turn personal trainers into salesmen, provide incentive/ commission
2. Display application forms every where, gym reception desk, coffee tables, local cafes, news agencies, grocery stores
3. Spend more money on good marketing campaigns, both online & printing
4. On-line signing up without fitness test
5. The Secret to Membership drive is to get people fill in the Application Forms. Suggestion:
 - Free gym sessions if you fill in the form
 - Free tickets to tennis or concerts if your name is drawn from all the application forms;
 - Fill in the form by certain date get discount on membership



TABLE OF CONTENTS

EXECUTIVE SUMMARY

INTRODUCTION

MAIN BODY

- 1. PERCENTAGE FILL APPLICATION FORMS**
- 2. FITNESS TEST EFFECTS ON FILLING IN THE APPLICATION FORM**
- 3. PERCENTAGE BECOME MEMBER IF FILLING IN APPLICATION FORMS**
- 4. FITNESS TEST EFFECTS ON SIGNING UP MEMBERSHIP**
- 5. PERCENTAGE: VISITORES TO BECOME MEMBERS**
- 6. FITNESS TEST EFFECTS ON VISITORS TO SIGNING UP MEMBERSHIP**
- 7. MINI SUMMARY**

APPENDIX:

See Separately Attached PYNB File

INTRODUCTION

MuscleHub AB Test

- Test A: Conducting a Fitness Test with a personal Trainer
- Test B: No fitness test
- Analyse whether Test A and B have any effect on:
 - People fill in the application form;
 - People fill in the application to sign up for membership
 - People from visitors to ultimate sign up for the membership
 - Whether the results are significant enough

1. PERCENTAGE FILL APPLICATION FORMS

- 10% of people who have taken the fitness test fill in the application form
- 13% fill in the app form without taking the fitness test
- Reasons might be:
 - a. female or over-weight people might find it intimidating to have the test;
 - b. people choose easier option, set up appointment time for testing could be viewed as 'too much hustle'

AB_Test_Group		App_%
Yes Fitness Test		10.0
No Fitness Test		13.0

2. FITNESS TEST EFFECTS ON FILLING IN THE APPLICATION FORM

- $p\text{-value}=0.001094$, At 0.05 level of significance, The result is thought of as being "significant", they are associated, related, relationship exists between 2 variables.
- Taking the fitness test is linked to filling the application form. Reasons might be:
 - people taking the fitness tests are more healthy conscious, want to start their health & fitness journey by ultimately become a member;
 - might be persuasion from personal trainers who conduct the tests;
 - might be easier to pick up the app form from the reception desk before or after the fitness test.

	Yes_Application	No_Application
Yes_Fitness_Test	250	2247
No_Fitness_Test	325	2175

3. PERCENTAGE BECOME MEMBER IF FILLING IN APPLICATION FORMS

- 80% of people who have taken the fitness test become member, while only 77% for non-fitness- testers, if they fill in the app forms
- It looks like people who took the fitness test were more likely to purchase a membership if they picked up an application. Reasons might be:
 - a. people who take fitness test are more health conscious, and want to start the journey to get fitter, and more likely to sign up membership;
 - b. when people under take fitness test, they are already in the gym, it is easy to pick up an application form from the reception;
 - c. or the trainer in the gym who conducted fitness test, have incentive or 'commission' to sign up members.

AB_Test_Group	member_%
Yes_Fitness_Test	80.0
No_Fitness_Test	77.0

4. FITNESS TEST EFFECTS ON SIGNING UP MEMBERSHIP

- $P_value=0.432586$, At 0.05 level of significance, we accept the null hypotheses. They are independent.
- When only consider people who have already picked up an application, there is no significant difference in membership between Group A and Group B.
- Conducting Fitness test or not do not have a different influence on signing up membership. Reason might be: If people bother to fill in the membership form, they probably have already made up their minds.

Test	Become – Member	Not _Member
Yes_Fitness_Test	200	50
No_Fitness_Test	250	75

5. PERCENTAGE: VISITORES TO BECOME MEMBERS

People who do not take the fitness test, have a higher percentage on signing up the MuscleHub Membership, than those taking up the fitness test.

Reasons might be

- Good marketing campaign from MuscleHub
- On-line signing up without going to do the test, some people sign up without even going to the gym during the year, that is what most people do, that's why gym owners love 'direct debit'

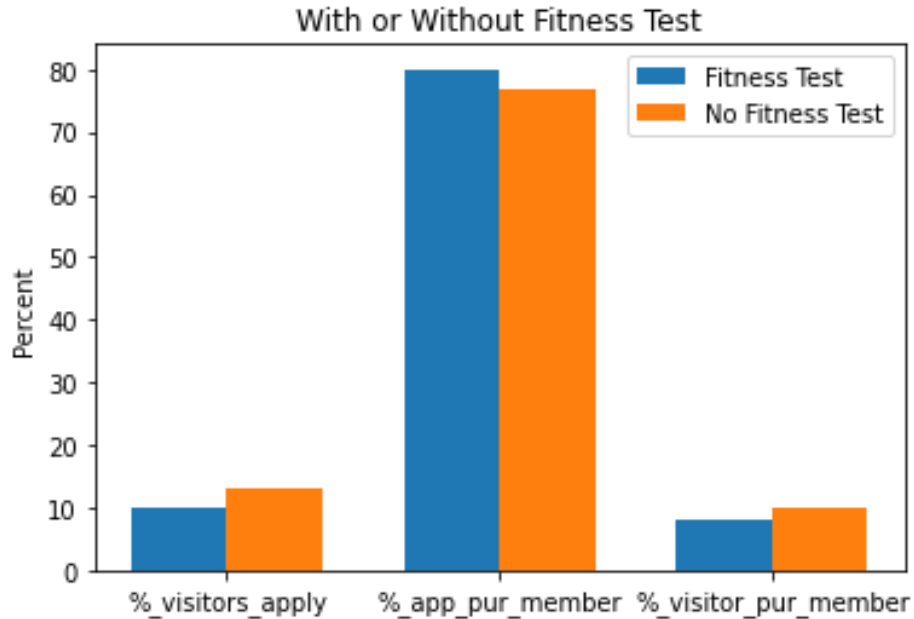
AB_Test_Group	purchase_%
Yes_Fitness_Test	8.0
No_Fitness_Test	10.0

6. FITNESS TEST EFFECTS ON VISITORS TO SIGNING UP MEMBERSHIP

- $p\text{-value}=0.016034$, $p\text{-value} \leq \text{significance level (0.05)}$, so this result is thought of as being "significant" meaning we think the variables are not independent,
- that Group A and B are linked to ultimate membership signing.

AB_Test_Group	is_Member	not_Member
Yes_Fitness_Test	200	2297
No_Fitness_Test	250	2250

7. MINI SUMMARY



The Secret to Membership drive is to get people fill in the Application Forms.

Suggestion:

- Free coffee while you fill in the form
- Free gym sessions if you fill in the form
- Free tickets to watch tennis/ basketball matches if your name drawn from all the application forms;
- Fill in the form by certain date get discount on membership