



# MuscleHub A/B Grouping Test

A close-up photograph of a hand holding a blue pen, poised to write on a piece of paper. The hand is wearing a grey, textured sweater. The background is blurred, showing a desk and some papers.

# 1

## MuscleHub Visitor Grouping Analysis

**Purpose: Test the difference in rates of membership purchases between two groups of visitors. Group A will take a fitness test first while group B will skip the fitness test.**

# 2

## Methodology:

This test was executed with visitors of MuscleHub gym being assigned randomly to either group A or group B.

Group A consists of visitors who proceeded to take a fitness test with a personal trainer first.

Group B consists of visitors who skipped the fitness test and proceeded directly to the application process.

Visitors who consider a membership purchase will follow the following steps:

- Take a fitness test with a personal trainer
- Fill out an application for the gym
- Send in the payment for the first month's membership

Visitor data was collected, summarized and analyzed using statistical hypothesis testing.

# 3

***As manager of MuscleHub, Janet has hypothesized that Group B participants will be more likely to purchase a membership having foregone the initial fitness test.***

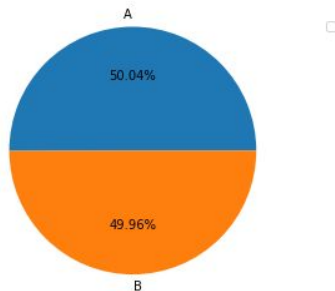
# 4

## Dataset Summary

Details of data:

A total of 5,004 visitor data points were collected during this test. These visitors were split relatively evenly between the two sample groups A and B. Group A consisted of 2,504 visitors whereas group B consisted of 2,500; this split was at 50.04% and 49.96% respectively.

From the data collected, the visitor data was then used to populate 4 separate tables (visits, fitness\_tests, applications and purchases) representing the stages of the membership purchase process (from initial visit to final membership purchase)



# 5

## Test Selection

### Chi2 Contingency Test

The Chi2 contingency test was selected to test the statistical data because it is intended to test how likely it is that an observed distribution is due to chance. The key measure it to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories.

In our MuscleHub test, the Chi2 contingency test is applicable because we have two data sets with group A and B in which we can categorize distinct data and use the Chi2 test to calculate the p-value between the 2 groups. The p-value is useful to determine if the result from the 2 groups led to differences which were significant.

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## Analysis Summary

### Three Hypothesis Tests Executed:

#### Test 1: Who picks up an application?

The first analysis involved looking at the visitors and how many picked up applications. The 2 groups (A & B) of visitors were further summarized into visitors who picked up an application and those who did not. It was found that 250 of 2,504 visitors from group A picked up an application equating to 9.98% of this group while 325 of 2,500 visitors from group B picked up an application equating to 13.00%.

The chi2 contingency test was used to test if the difference in the data results was statistically significant. The p-value calculated was 0.00096 which was well below 0.05 implying that the difference in the results of group A and B was significant.

# 7

## Analysis Summary

### Three Hypothesis Tests Executed:

#### Test 2: Who purchases a membership?

The second analysis involved looking at the visitors who picked up applications and how many of them purchased memberships. The 2 groups (A & B) of visitors who picked up an application were further summarized into visitors who purchased memberships and those who did not. It was found that 200 of 250 visitors from group A picked up an application also purchased a membership equating to 80.00% of this group while 250 of 325 visitors from group B picked up an application also purchased a membership equating to 76.92%.

The chi2 contingency test was used to test if the difference in the data results was statistically significant. The p-value calculated was 0.43259 which was well above 0.05 implying that the difference in the results of group A and B was not significant.



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## Analysis Summary

### Three Hypothesis Tests Executed:

#### Test 3: Of all the visitors, who purchases a membership?

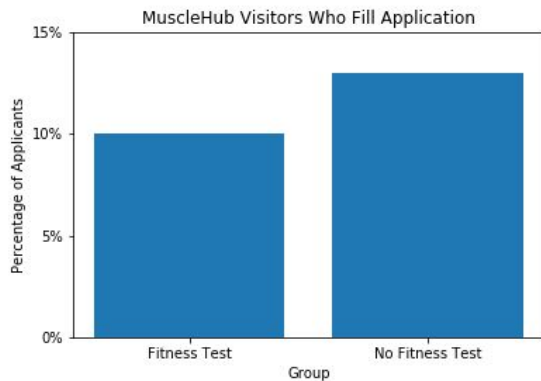
The third analysis involved looking at all visitors and how many of them purchased memberships. The 2 groups (A & B) of visitors were summarized into visitors who purchased memberships and those who did not. It was found that 200 of 2,504 visitors from group A purchased a membership equating to 7.99% of this group while 250 of 2,500 visitors from group B purchased a membership equating to 10.00%.

The chi2 contingency test was used to test if the difference in the data results was statistically significant. The p-value calculated was 0.0147 which was well below 0.05 implying that the difference in the results of group A and B was significant.

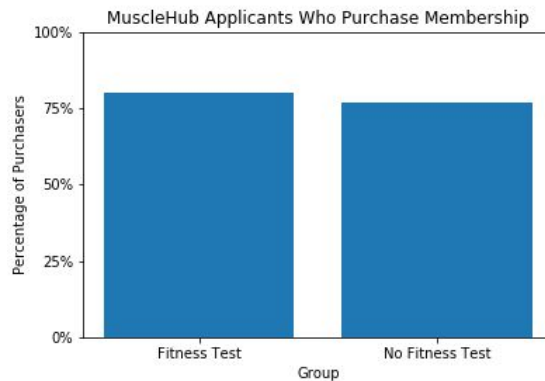
# 9

## Graphical Representation of Tests

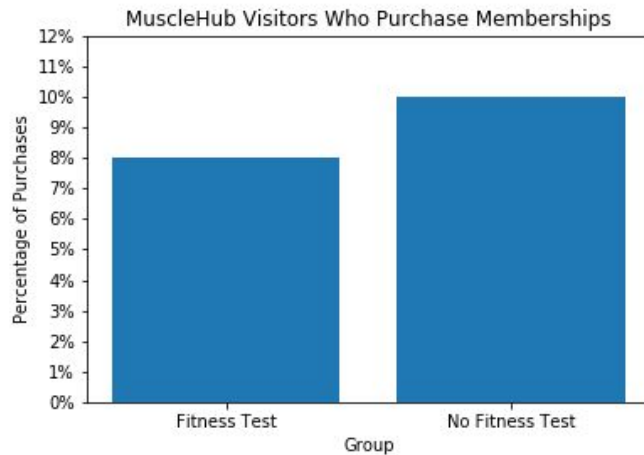
**Test 1**



**Test 2**



**Test 3**



# 10

## Conclusion of Results

### Conclusion:

As per the analysis of this visitor grouping test and analysis, visitors of MuscleHub gym were randomly placed into two groups in which group A visitors would take a fitness test first whereas group B visitors would completely skip the initial fitness test. Observations were made on these visitors to determine if the visitors ultimately purchased a gym membership.

From the results of the 3 tests, it can be safely concluded that the manager of MuscleHub, Janet, was correct in her hypothesis. It was observed that group B visitors were more likely to purchase a gym membership. These were the visitors who were not given an initial fitness test.

From the testimonies, a possible reason for the lower membership purchases from group A may be the intensity of the fitness test for first-time gym visitors. As the fitness test is standardized whereas the physical abilities of visitors is not, the struggles of completing this test may be intimidating and embarrassing.

Typical gym visitors may simply be looking for a more independent experience. A common reason for joining a gym in the first place is to get back into shape and live a healthier lifestyle. This is expected to be a gradual improvement according to each visitor's pace.

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## Recommendation

### Recommendation:

To offer potential gym visitors a better initial experience aimed at increasing gym membership purchases, MuscleHub gym may consider to make the initial fitness test an optional test instead. This option may still give a challenge to visitors who desire to engage the physicality of a gym while not placing a mandatory burden on other visitors who simply want a more relaxed workout environment and pace.

Alternatively, if MuscleHub gym is adamant at making the initial fitness test a requirement, gym management may choose to use it as a feature in marketing and promotions. The gym may consider advertisements promoting a free fitness test with every gym membership purchased. Although this is not an honest promotion tactic as the fitness test was already free in the first place, the general population will typically believe that any promotion being advertised is a deal in itself.

However, if the decision was simply between giving an initial fitness test or not to gym visitors, the best approach would be to remove the fitness test altogether. From the test results, it was observed that visitors who did not complete the fitness test had higher rates of gym membership purchases.

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