Capstone Project

MuscleHub AB Test

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A/B Test: Purpose and set up

- An A/B test was performed which split visitors to MuscleHub into groups, which determined how they would be treated on their first visit to the gym
  - Group A: These visitors were asked to take a fitness test with a personal trainer prior to filling out an application form to sign up to the gym
  - Group B: These visitors skipped the fitness test and instead proceeded straight to the application form phase
- Data was collated over an undisclosed period such that there was a rough 50% split between the two A/B groups, as desired

The data

- Janet of MuscleHub collated the data in an SQLite database, which was organised into the following tables:
  - visits: Which contains information about all visitors to MuscleHub
  - fitness_tests: Which contains the information about clients from Group A who performed a fitness test at the gym
  - applications: Which contains information about all potential clients who filled out an application form
  - purchases: Which contains information about all customers who ended up purchasing a membership to MuscleHub
- Note: The data collated in the visits table started before the period in which the A/B test was running, and as such the data collated in this earlier period will need to be excluded from the analysis.

Hypothesis tests run

Test 1

- Null hypothesis: The percentage of customers that fill out an application form is the same for group A and group B
- From the data, the percentage of customers from group A that filled out an application form was roughly 10%, compared to 13% for group B.
- To test whether this difference between group A and B was significant, a chi-squared test was used. A chi-squared test was appropriate as the data is categorical and we are comparing 2 samples.
- From the chi-squared test, the resulting p value was far below 0.05, meaning that we could reject the null hypothesis, confirming that the difference between the percentage for group A and group B is indeed statistically significant

Hypothesis tests run

Test 2

- Null hypothesis: The percentage of customers that go on to purchase a membership that had previously filled out an application form is the same for group A and group B
- From the data, the percentage of customers from group A that purchased a membership after filling out an application form was 80%, compared to roughly 77% for group B.
- To test whether this difference between group A and B was significant, a chi-squared test was used. A chi-squared test was appropriate as the data is categorical and we are comparing 2 samples.
- From the chi-squared test, we got a p value of roughly 0.43, meaning that in this case we did not have sufficient evidence to reject the null hypothesis, meaning that from the data, there was not a significant difference between the percentage of customers that purchased a gym membership who had already filled out an application form between the two groups A and B

Hypothesis tests run

Test 3

- Null hypothesis: The percentage of customers that purchase a gym membership is the same for group A and group B
- From the data, the percentage of customers from group A that purchased a gym membership was roughly 8%, compared to 10% for group B.
- To test whether this difference between group A and B was significant, a chi-squared test was used. A chi-squared test was appropriate as the data is categorical and we are comparing 2 samples.
- From the chi-squared test, we got a p value of roughly 0.015. As this value is sufficiently smaller than our benchmark of 0.05 for a 95% significance level, we could reject the null hypothesis, confirming that the difference between the percentage for group A and group B is indeed statistically significant

Qualitative data

- Albeit on an extremely small sample (4 customers), there are some takeaways that we can see from the feedback from the interviews conducted
- Customer 1 (group A): Performed the fitness test and loved it and used it as a point of reference to improve on and use as motivation. Customer purchased membership.
- Customer 2 (group B): Didn’t perform the fitness test and appreciated the fact that they weren’t put through such a rigorous test immediately upon entering the gym. Customer did not purchase a membership.
- Customer 3 (group A): Was made to do the fitness test and did not enjoy it. Customer did not purchase membership.
- Customer 4 (group B): Didn’t perform the fitness test and appreciated the quickness and ease of the sign-up process as a result. Customer purchased membership.

Recommendation for MuscleHub

- From the data of the A/B test, we concluded that between the two options trialled, option B – that is to not perform a fitness test on visiting potential customers – performed better
- However, the revelations from the qualitative data suggest that a third approach could be incorporated to even further improve sign-up rates for the gym
- My recommendation is that MuscleHub do not enforce a personal fitness test on visiting potential customers, but they do offer it as an option. That way, they get all the upside of the customers that are after a hassle free sign up, but they also cover themselves for extremely active or motivated people like Cora from Hoboken