A/B testing at MuscleHub gym

Data analysis and interpretation

By Amy Birdee

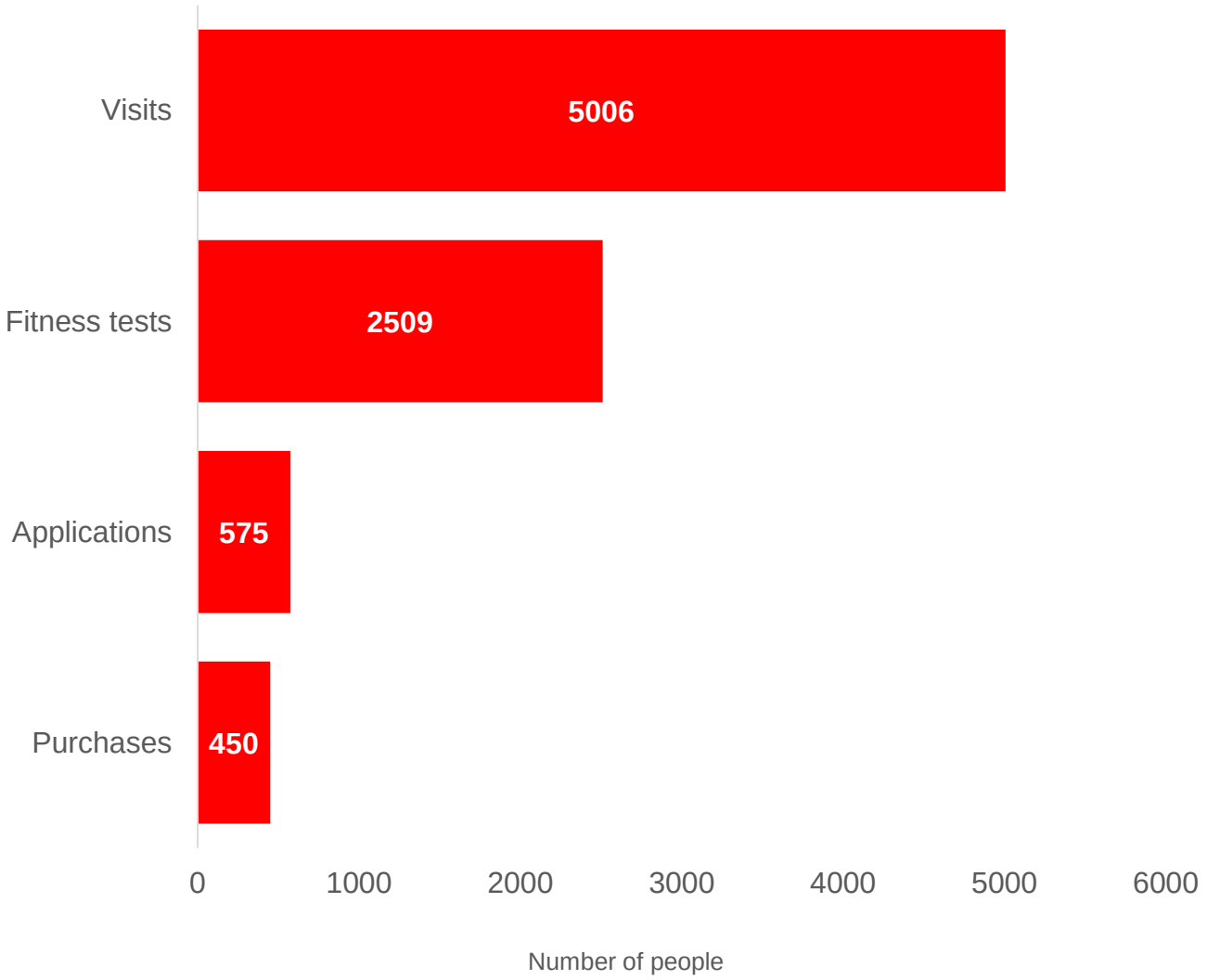
Introduction

- MuscleHub is a hypothetical gym running an A/B test to test whether or not introducing a fitness test for gym visitors results in an increase in applications and membership purchases
- Group A received the fitness test and Group B did not
- The data consist of four tables:
  - visits – contains details of potential gym customers who visited MuscleHub
  - fitness_tests – contains details of potential customers in Group A who were given a fitness test
  - applications – contains details of potential customers in Groups A and B who filled out an application
  - purchases – contains details of customers in Groups A and B who purchased a membership at MuscleHub
- The data analysis has been carried out in SQL and the Chi-squared test to test for significance has been carried out in Python

Define a null hypothesis

- Null hypothesis 1: the introduction of fitness tests will not lead to an increase in conversion rates for applications
- Null hypothesis 2: the introduction of fitness tests will not lead to an increase in conversion rates for the purchase of gym memberships
- We are testing for a 95% significance level

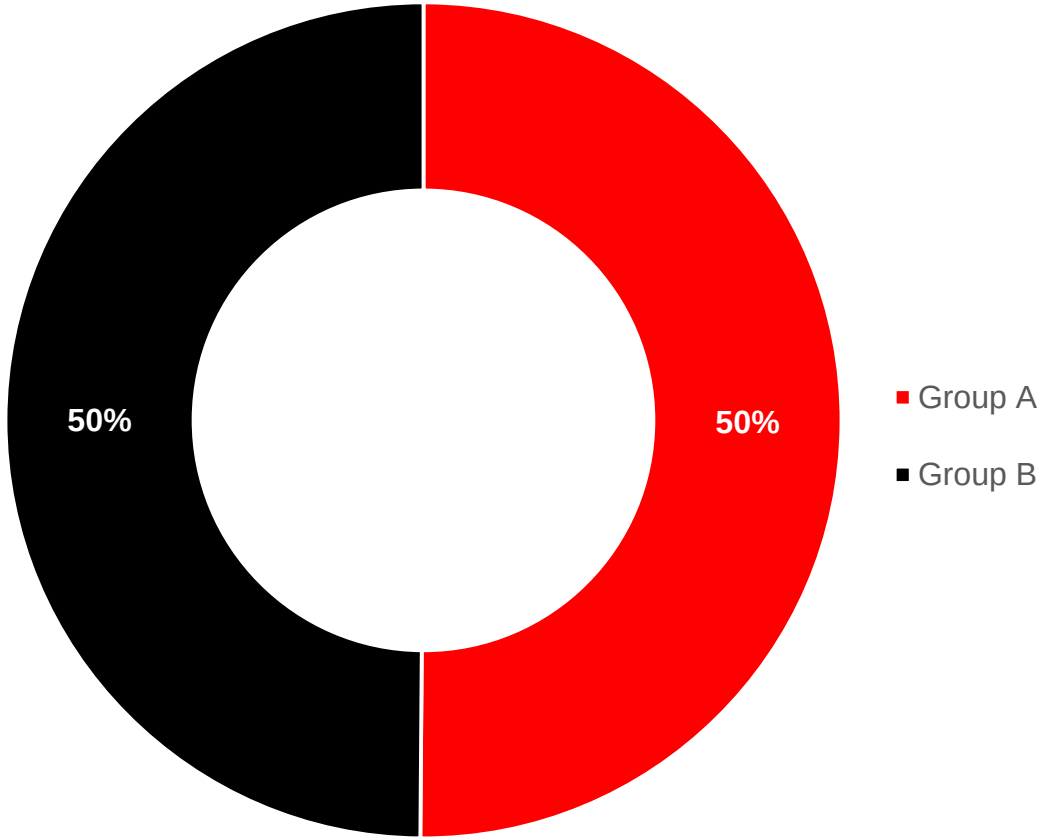
The MuscleHub funnel



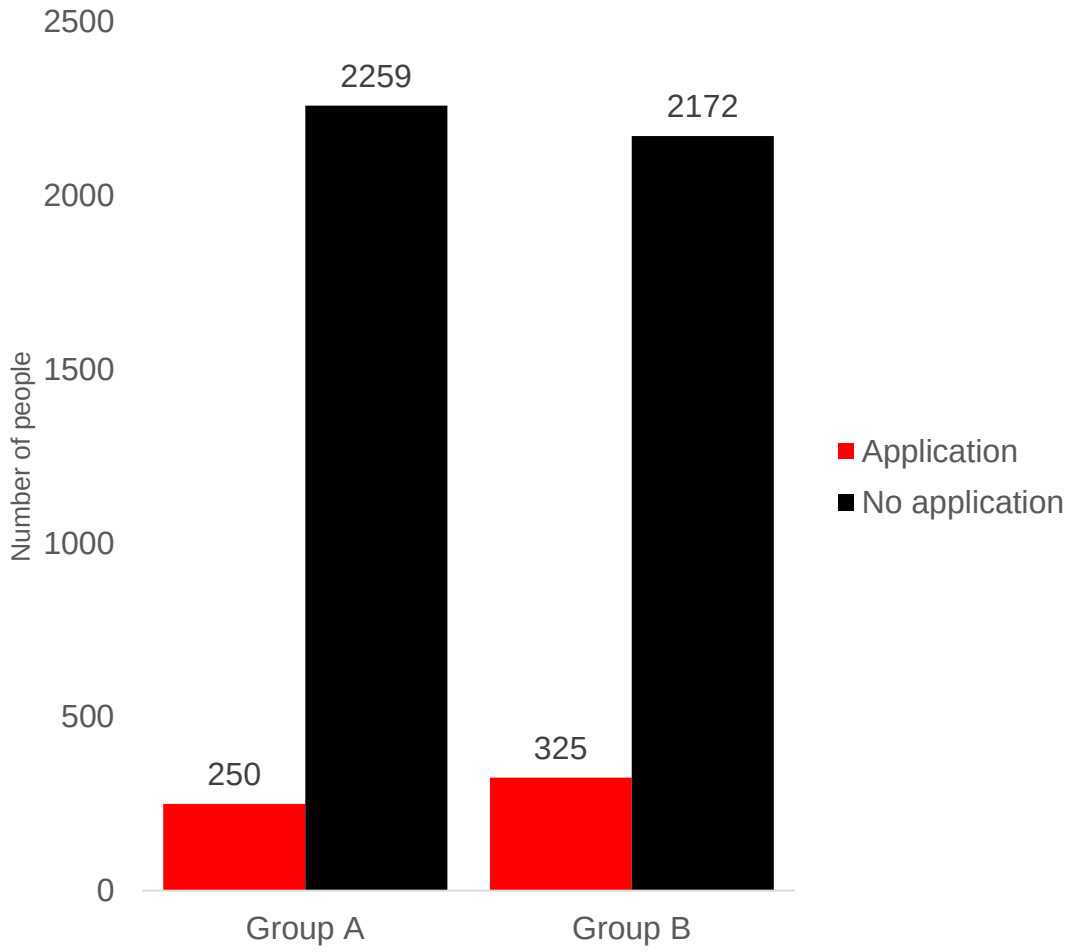
- Much of the churn occurs at the top of the funnel – just 11% of total visitors filled out an application form
- This explains why MuscleHub have introduced a fitness test to try and increase this conversion rate
- Conversion is much higher at the bottom of the funnel – 78% of those who fill out an application end up buying a membership

The A/B test

- Gym visitors are split fairly evenly into Groups A and B
- Group A consists of 2,509 potential customers
- Group B consists of 2,497 potential customers
- The test runs for three months



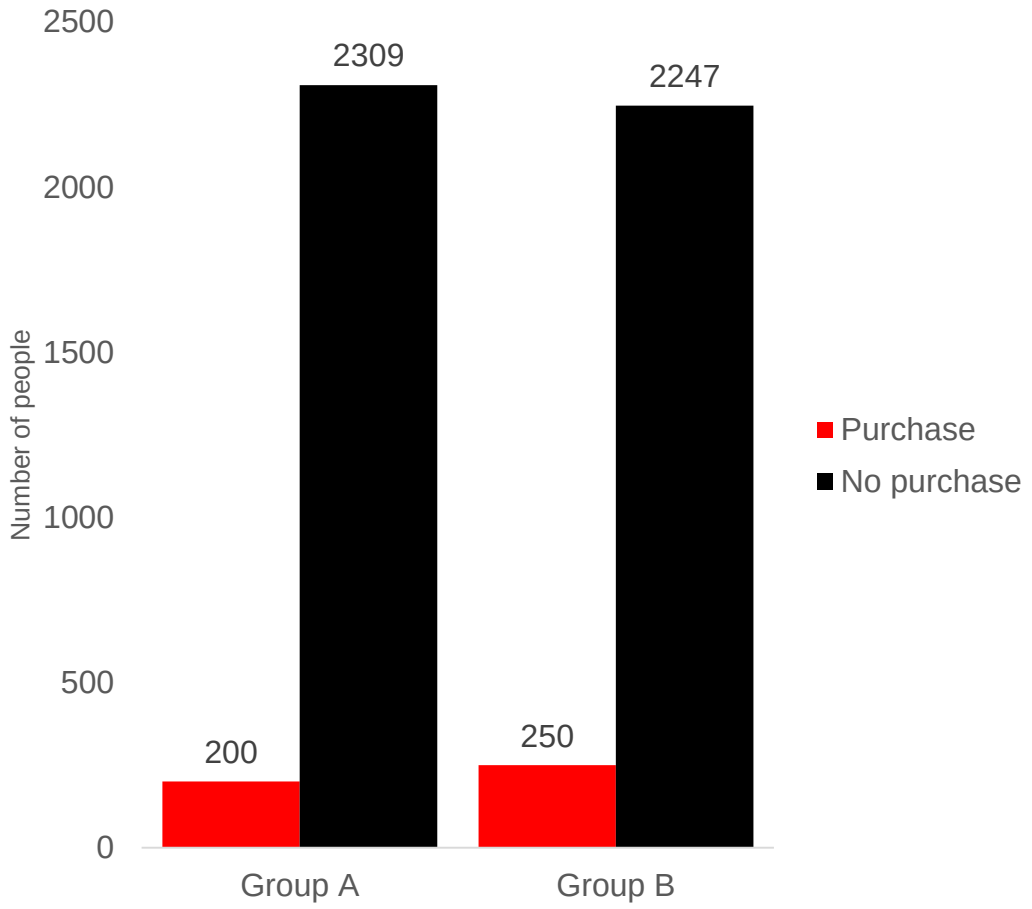
The A/B test results - applications



- The results show that more people in Group B filled out an application form compared to Group A despite not having the fitness test
- The conversion rate for Group A is 10%
- The conversion rate for Group B is 13%

The A/B test results - purchases

- The results for purchases show that more people in Group B bought a gym membership compared to Group A despite not having the fitness test
- The conversion rate for Group A is 8%
- The conversion rate for Group B is 10%



Are the results significant according to a Chi-squared test?

Applications

- P value = 0.0008340 and so the results are significant and unlikely to have occurred by chance (p value < 0.05)
- Given that Group B (who did not have the fitness test) filled out more applications, we fail to reject the null hypothesis
- It is therefore unlikely that introducing a fitness test will result in an increase in applications

Purchases

- P value = 0.0133393 and so the results are significant and unlikely to have occurred by chance (p value < 0.05)
- Given that Group B (who did not have the fitness test) bought more memberships, we fail to reject the null hypothesis
- It is therefore unlikely that introducing a fitness test will result in an increase in gym memberships

Conclusion

- It is clear from the funnel analysis that MuscleHub needs to take some action to convert gym visits into applications and purchases
- However the fitness tests did not yield significant results in the way the gym would have hoped – those who did not take a fitness test filled out more applications and purchased more memberships compared to those who did take a fitness test
- The fitness test may have put some potential customers off (e.g. if they scored low on the test, this could have resulted in them feeling deflated rather than motivated to try and improve their fitness levels)
- MuscleHub should try an alternative approach to encourage new members, e.g. investing more in advertising, offering a free gift when signing up or reducing its pricing for a limited promotional period – these efforts may help to increase conversion rates

Thank you

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