MuscleHub A/B test

By Sharmeen Islam

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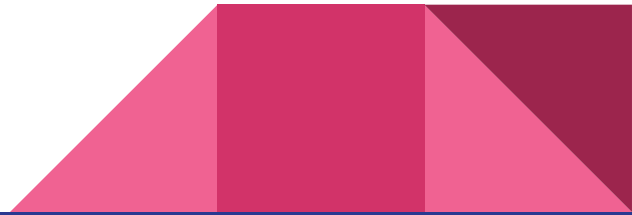
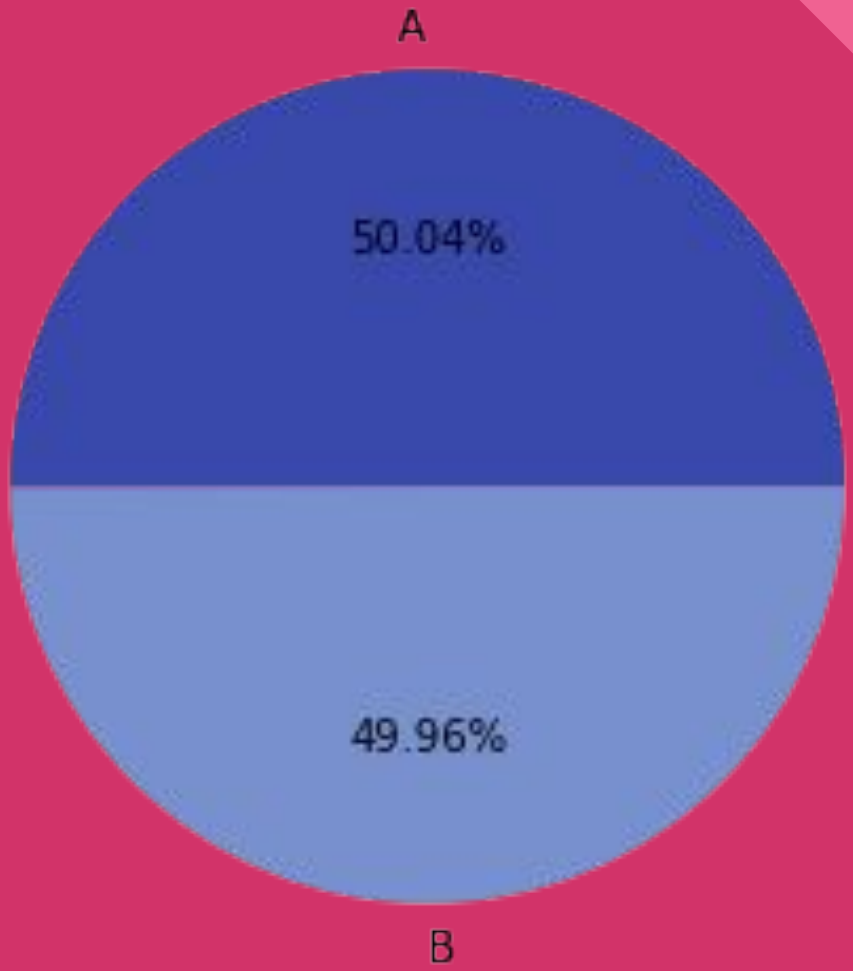
Janet, the manager at MuscleHub gym, is concerned that the routine fitness test given to new visitors to the gym is detering them from applying for membership. She asks that we synthesize the data she's collected in SQL to determine if the fitness test really is a factor for the lack of applications. Using data tables in SQL and Data Visualization in Matplotlib, as well as reviewing visitor interviews, we sought out to discover if her hypothesis is actually true.



Summary of Data

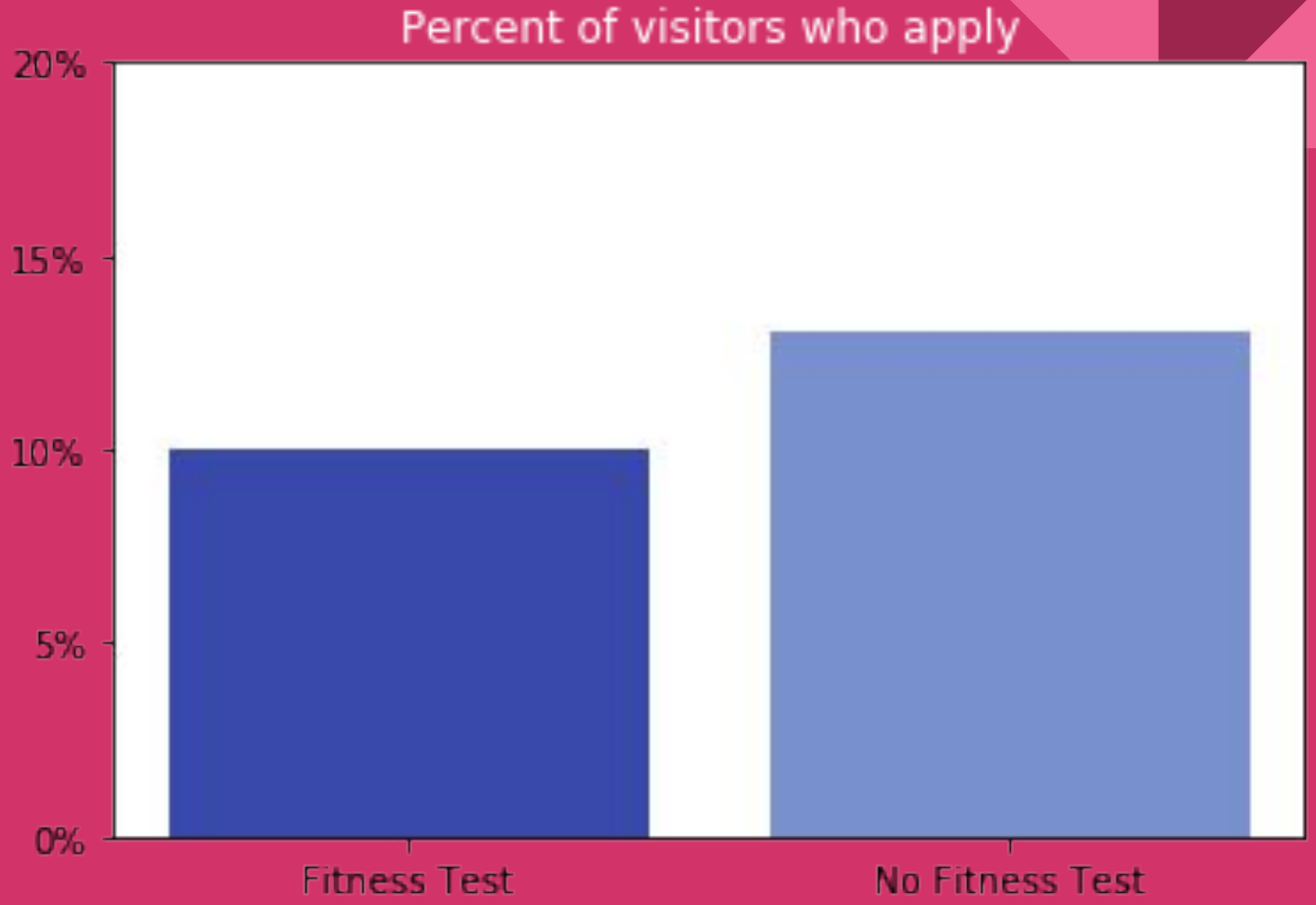
The data was split between four SQL tables: visits, fitness tests, applications, and purchases. Each of these tables told us who these visitors to the gym were, whether they took the fitness test, and if they subsequently purchased a membership to the gym. Using the JOIN function we were able to combine the tables to see a more robust set of data points. Interviews were also reviewed to see if there were any blatant issues that visitors had with the fitness test. Some visitors did complain that the fitness test was hard. Additional analysis was also done to see if there was a significant difference between the gender make up of the test groups, which there was none.

There is nearly even split between the two groups.



Hypothesis Testing

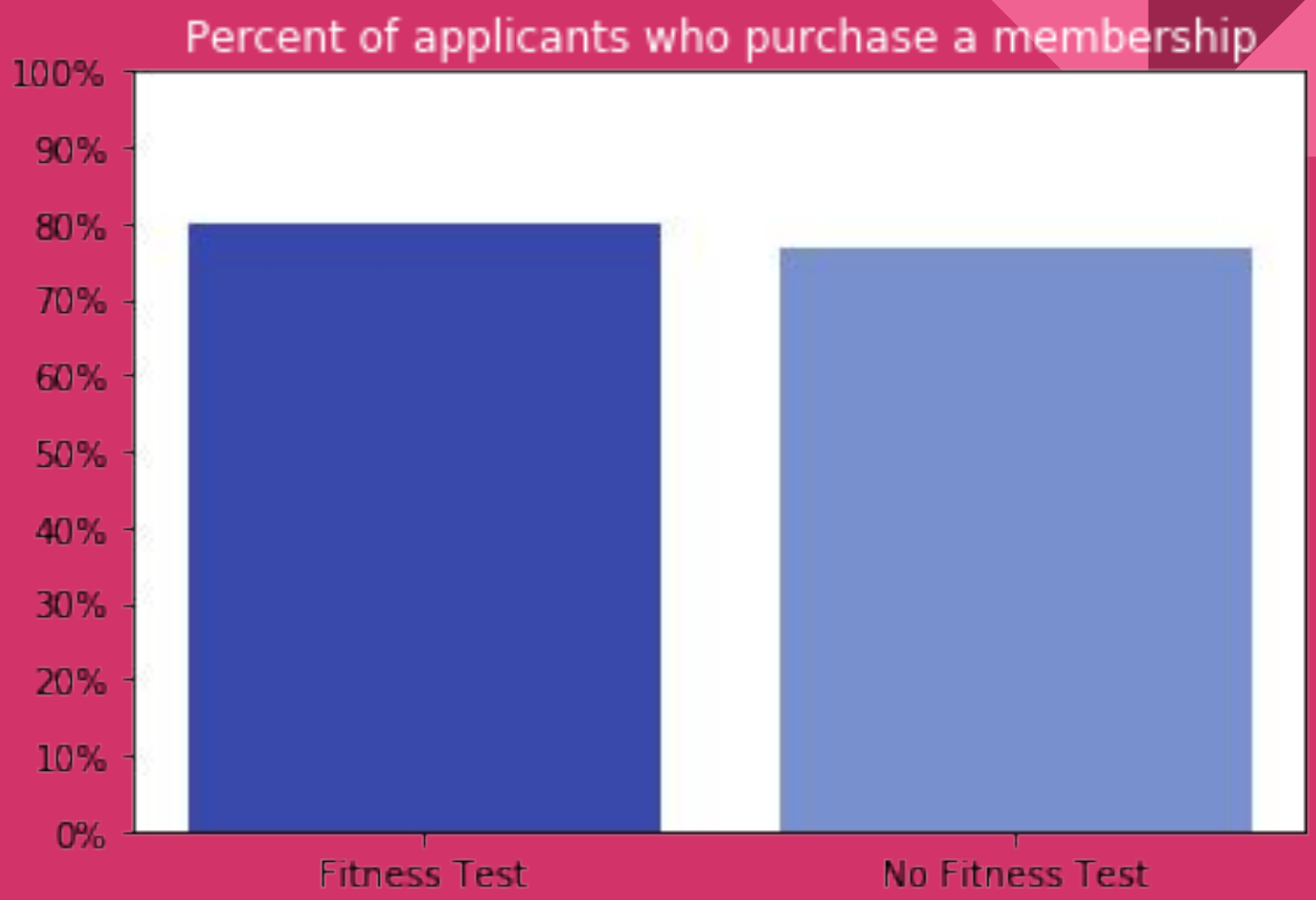
- A 2x2 Chi Square test was used. Since there were two conditions with only two outcomes in each analysis, this was deemed the most appropriate type of test to do.
- First, we looked at which group picks up an application more often. We found that Group B significantly applies more often than Group A.
- Second, we looked at which group eventually purchases a membership more often. We found that there is no significant difference between the groups.
- Lastly, we looked at the percentage of total visitors who become members. There were significant differences between groups where Group B became members more often.


Percent of visitors who apply
20%
15%
10%
5%
0%
Fitness Test
No Fitness Test

pval=0.0009

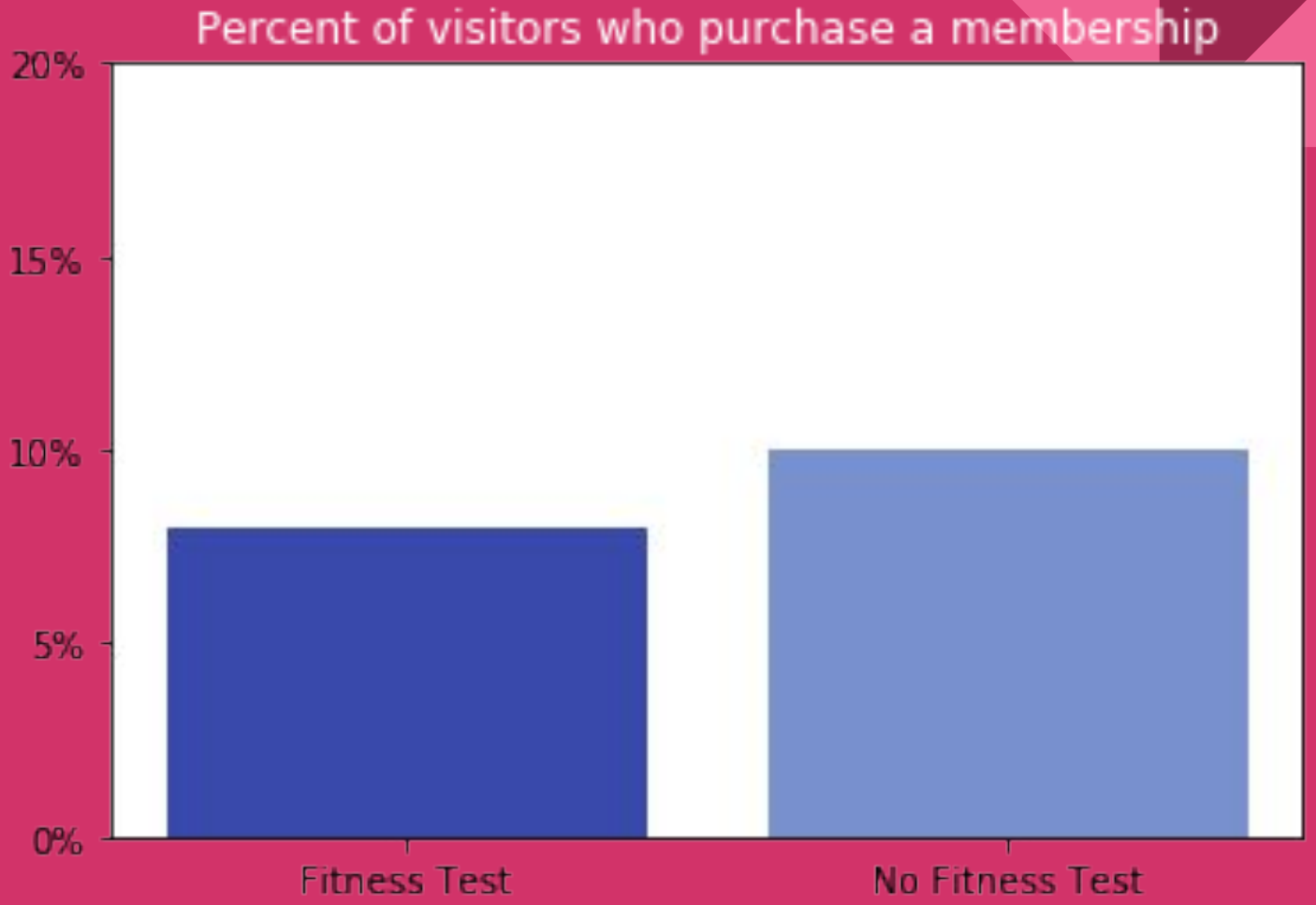
There is a significant difference between Group A and Group B who pick up applications.

Group B picks up applications more often.


Percent of applicants who purchase a membership
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Fitness Test
No Fitness Test

pval=0.4326

There is no significant difference between Group A and Group B when it comes to applying for membership. This means that doing the fitness test does not affect applying for membership.


Percent of visitors who purchase a membership
20%
15%
10%
5%
0%
Fitness Test
No Fitness Test

pval=0.0147

There is a significant difference between Group A and Group B when looking at total visitors who eventually purchase membership

Recommendation

According to the analysis, it appears that Janet was correct in thinking that the fitness test was contributing to a lack of new memberships compared to visitors applying without any fitness test. This would lead us to believe that implementing the fitness before application would deter visitors from becoming members.

A recommendation would be to administer the fitness test after membership has been purchased, and offer it as a complementary test rather than a required assessment. Furthermore, trainers should be more mindful of the ability level of new members when administering the fitness test. Making the test too hard would deter new members from renewing membership.

Reflection

This is the second capstone project I have done for this intensive course. Not having the option to do the project on Codecademy forced me to strengthen my skills in Jupyter Notebook. I also got to play around with the graphs to improve my visualization skills.

Since I am not strong at statistical hypothesis testing, this project also allowed me to get a grasp on Chi Square tests and finding p-values to determine significance.