# MUSCLEHUB A/B TEST

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# SCENARIO

- This is the current order flow that MuscleHub uses for new members:
    - Take a fitness test with a personal trainer
    - Fill out an application for the gym
    - Send in their payment for their first month's membership
- ▶ MuscleHub management are of the belief that the fitness test intimidates prospective members
- ▶ We have setup an A/B test to see whether this is true

# A/B Test

5,004 Visitors have been randomly assigned to one of two groups:

- Group A will still be asked to take a fitness test with a personal trainer

- Group B will skip the fitness test and proceed directly to the application

Hypothesis:

Visitors assigned to Group B will be more likely to eventually purchase a membership to MuscleHub



Percentage of A/B Test Groups
A — 50.04
B — 49.96
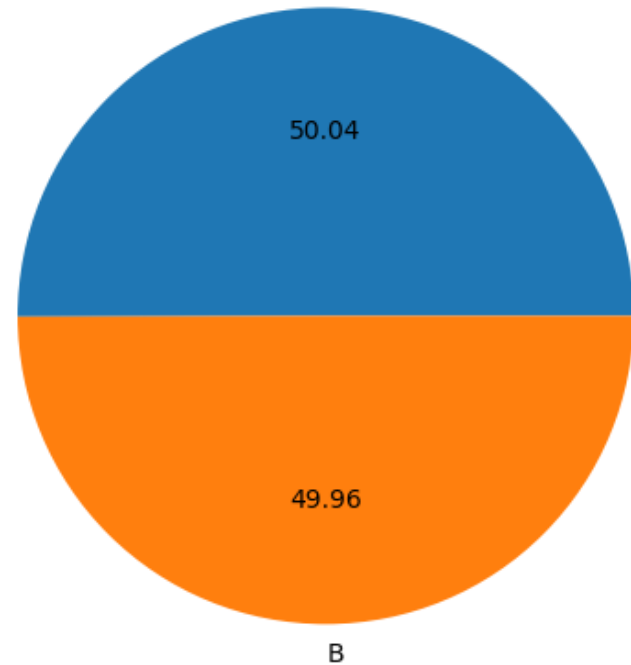
# Dataset

4 datasets were provided in .csv format:

- Visitors: a list of visitors to the gym including name, email, gender and visit date

- Fitness test: a list of visitors that then took a fitness test including name, email, gender and fitness test date

- Applications: a list of visitors that picked up an application including name, email, gender and application date. This covers both visitors that did and did not complete a fitness test

- Purchases: a list of visitors that picked up an application that also went on to purchase a membership. Includes name, email, gender and purchase date

Funnel from Visit to Purchase for A Group and B group



Visit

Fitness test

Pickup application

Purchase Membership
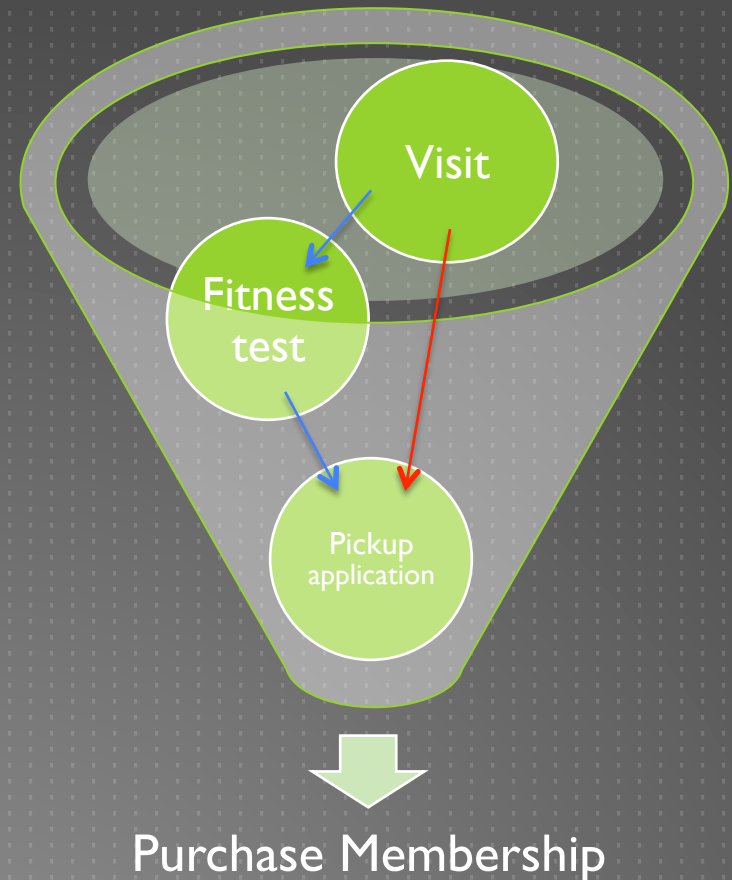
# DATA SAMPLE

As the 4 datasets provided contain the same information aside from the dates, the datasets were concatenated into one usable dataframe, a sample of which is shown below.

This dataframe shows all the information per visitor, including their test group, and how far along the sign-up funnel they reached.

The Test Group letter was allocated based on the existence of a Fitness test date.

| First | Last | Gender | E-mail | Visit date | Fitness test date | Application date | Purchase date | Test Group |
|-------|------|--------|--------|-----------|-------------------|-----------------|---------------|------------|
| Kim | Walter | female | KimWalter58@gmail.com | 07/01/17 | 03/07/17 | | | A |
| Tom | Webster | male | TW3857@gmail.com | 07/01/17 | 02/07/17 | | | A |
| Edward | Bowen | male | Edward.Bowen@gmail.com | 07/01/17 | | 04/07/17 | 04/07/17 | B |
| Marcus | Bauer | male | Marcus.Bauer@gmail.com | 07/01/17 | 01/07/17 | 03/07/17 | 05/07/17 | A |
| Roberta | Best | female | RB6305@hotmail.com | 07/01/17 | 02/07/17 | | | A |
| Joseph | Foley | male | JosephFoley81@gmail.com | 07/01/17 | | | | B |
| Carrie | Francis | female | CF1896@hotmail.com | 07/01/17 | 05/07/17 | | | A |
| Sharon | William | female | Sharon.William@outlook.com | 07/01/17 | | | | B |
| Teresa | Yates | female | TYates1988@gmail.com | 07/01/17 | 02/07/17 | | | A |
| Salvador | Cardenas | male | SCardenas1980@gmail.com | 07/01/17 | 07/07/17 | 06/07/17 | | A |

# HYPOTHESIS TESTING

Hypothesis testing is important to determine whether an observed difference between datasets is significant or not. Though there may appear to be a difference in the datasets, it could be due to natural frequency fluctuations or by chance.

We have opted for the Chi Square test due to the below reasons.

The variables in the test must be mutually exclusive i.e. a visitor cannot belong to both group A and B.

The Chi Square test should be used in cases where the data is categorical. For example we have 2 groups of visitors that did / did not do a fitness test, that did / did not pick up an application and did / did not purchase a membership.

We use this hypothesis test to determine the significance of a null hypothesis. A null hypothesis means that there is no significant difference between the datasets.

P-value: if we get a **p-value less than 0.05** this means we can **reject the null hypothesis**, meaning **there is a significant difference** between the data.

# Quantitative Data

This chart shows the percentage difference in each group that go on to pickup an application.

Group A: Having taken a fitness test, approximately 10% of visitors do not go on to pickup an application

Group B: Having visited the gym, approximately 13% of visitors go on to pickup an application without having to take a fitness test

Hypothesis testing: P value = 0.001

Significant

There is a 0.1% chance that this difference is not significant. Therefore the fitness tests are certainly causing fewer visitors to pickup applications.
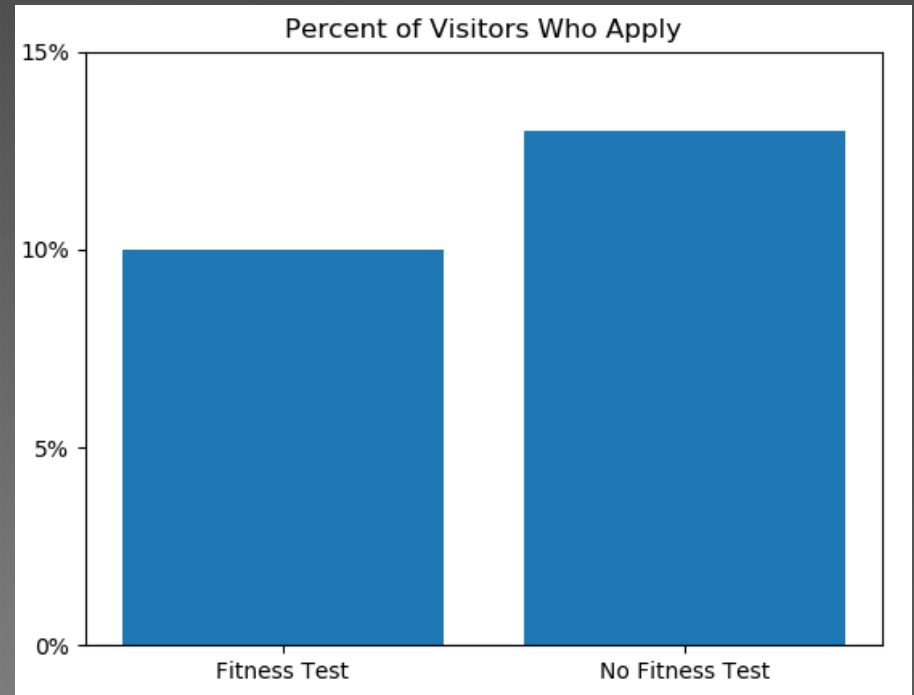


Percent of Visitors Who Apply

# Quantitative Data

This chart shows the percentage difference in each group that go on to purchase a membership having picked up an application.

Group A: Approximately 80%

Group B: Approximately 77%

Hypothesis testing: P value = 0.43

Not Significant

There is a 43% chance that this difference is not significant. This is not unexpected as there is very little difference between the percentage of applicants that then purchase a membership.

It also makes sense that the fitness test would not have a large impact at this point as they have already committed to picking up an application.

If anything, one could argue that those who have gone through the fitness test are then more committed to purchasing a membership.
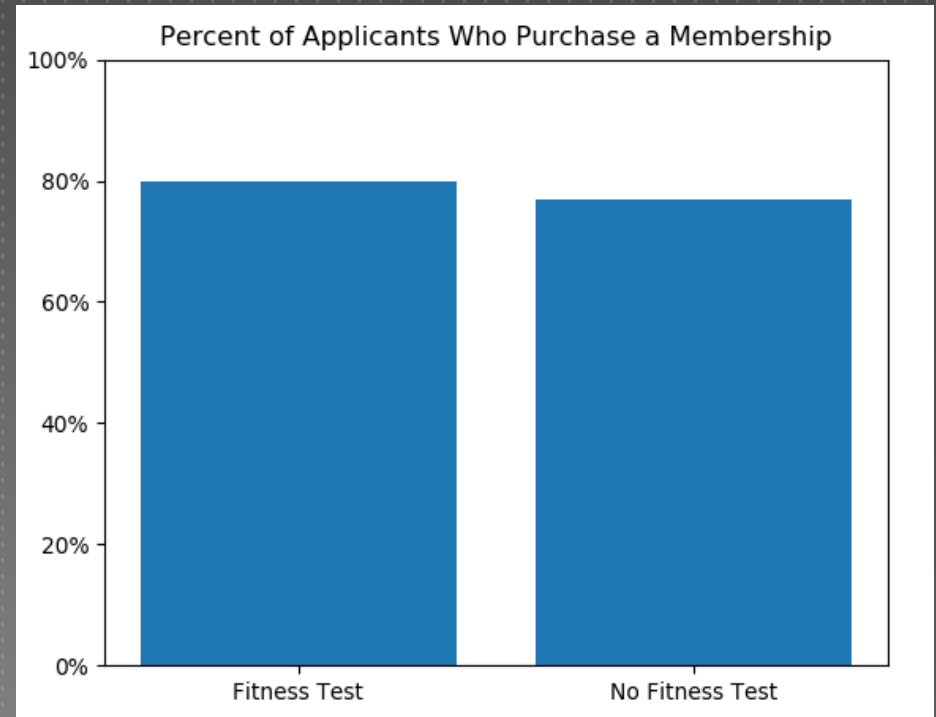


Percent of Applicants Who Purchase a Membership

# Quantitative Data

This chart shows the percentage difference in each group that go on to purchase a membership i.e. from beginning to end of the funnel.

Group A: approx. 8% of visitors purchase a membership that also complete a fitness test

Group B: approx. 10% of visitors that do not complete a fitness test purchase a membership

Hypothesis testing: P value = 0.01

Significant

There is a 1% chance that this difference is not significant. It is clear to see that those who do not take a fitness test are more likely to purchase a membership.

The original hypothesis was correct



Percent of Visitors Who Purchase a Membership
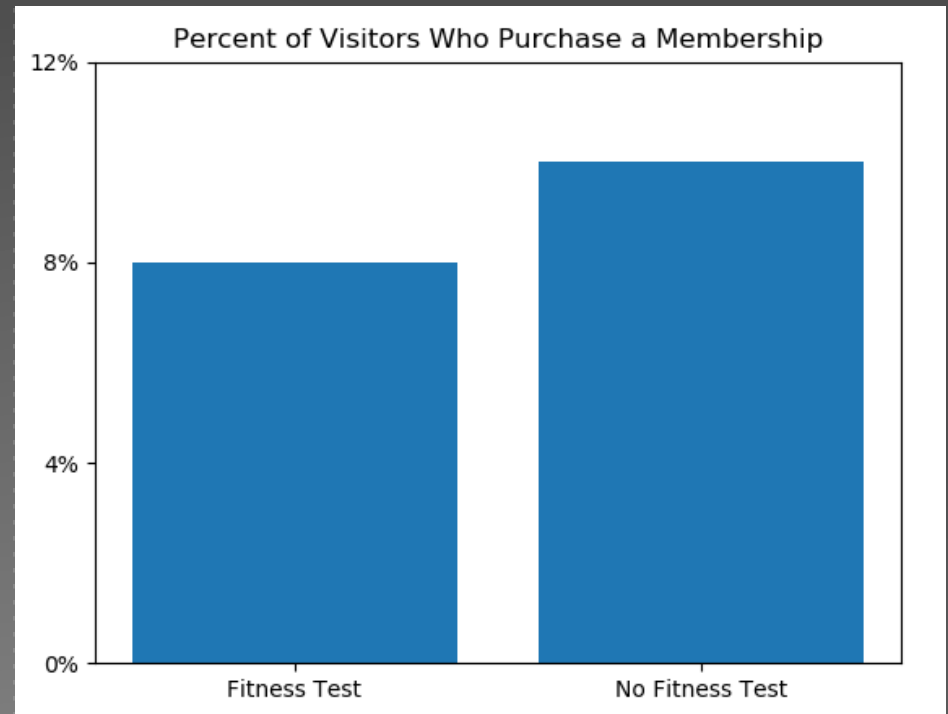
# Qualitative Data

The general consensus is that the majority of users may find the fitness test intimidating.

This is a very small sample of testimonies but is in agreement with the data we have seen.

However there are visitors that appreciate the additional help and motivation they get from the trainers.

**Testimonies:**

*"I always wanted to work out like all of the shredded people on the fitness accounts I see on Instagram, but I never really knew how to start. MuscleHub's introductory fitness test was super helpful for me! After taking the fitness test, I had to sign up and keep coming back so that I could impress my trainer Rachel with how much I was improving!"*

- Cora, 23, Hoboken

*"When I walked into MuscleHub I wasn't accosted by any personal trainers trying to sell me some mumbo jumbo, which I really appreciated. Down at LiftCity they had me doing burpees 30 seconds after I walked in the door and I was like "woah guys slow your roll, this is TOOOO much for Jesse!" I still ended up not signing up for a membership because the weight machines had all those sweat stains on them and you know, no thanks."*

- Jesse, 35, Gowanes

*"I took the MuscleHub fitness test because my coworker Laura recommended it. Regretted it."*

- Sonny "Dad Bod", 26, Brooklyn

*"I saw an ad for MuscleHub on BookFace and thought I'd check it out! The people there were suuuuuper friendly and the whole sign-up process took a matter of minutes. I tried to sign up for LiftCity last year, but the fitness test was way too intense. This is my first gym membership EVER, and MuscleHub made me feel welcome."*

- Shirley, 22, Williamsburg

# RECOMMENDATION

▶ The original hypothesis was correct; more visitors are likely to sign up without having to take a fitness test, with a difference of 2%

▶ I believe the sample size was large enough to satisfy this hypothesis

▶ There is still a market for the fitness test, some members find it useful according to testimonies

▶ I would recommend making the fitness test optional for prospective members, they could choose to take the test at a later date if they require additional help or training