Muscle Hub A/B Test

Codecademy - Intro to Data Analysis

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Motivation For Test

- Janet at Muscle Hub (MH), thinks that the fitness test intimidates customers and drives them away from signing up for a membership.

- Let’s put this idea to the test with an A/B test!

A/B Test Details

- **Hypothesis** - The fitness test impinges our visitors' likelihood of signing up for a membership. i.e. The fitness test dissuades visitors from becoming members.
- For our test, we split the visitors into two separate groups:

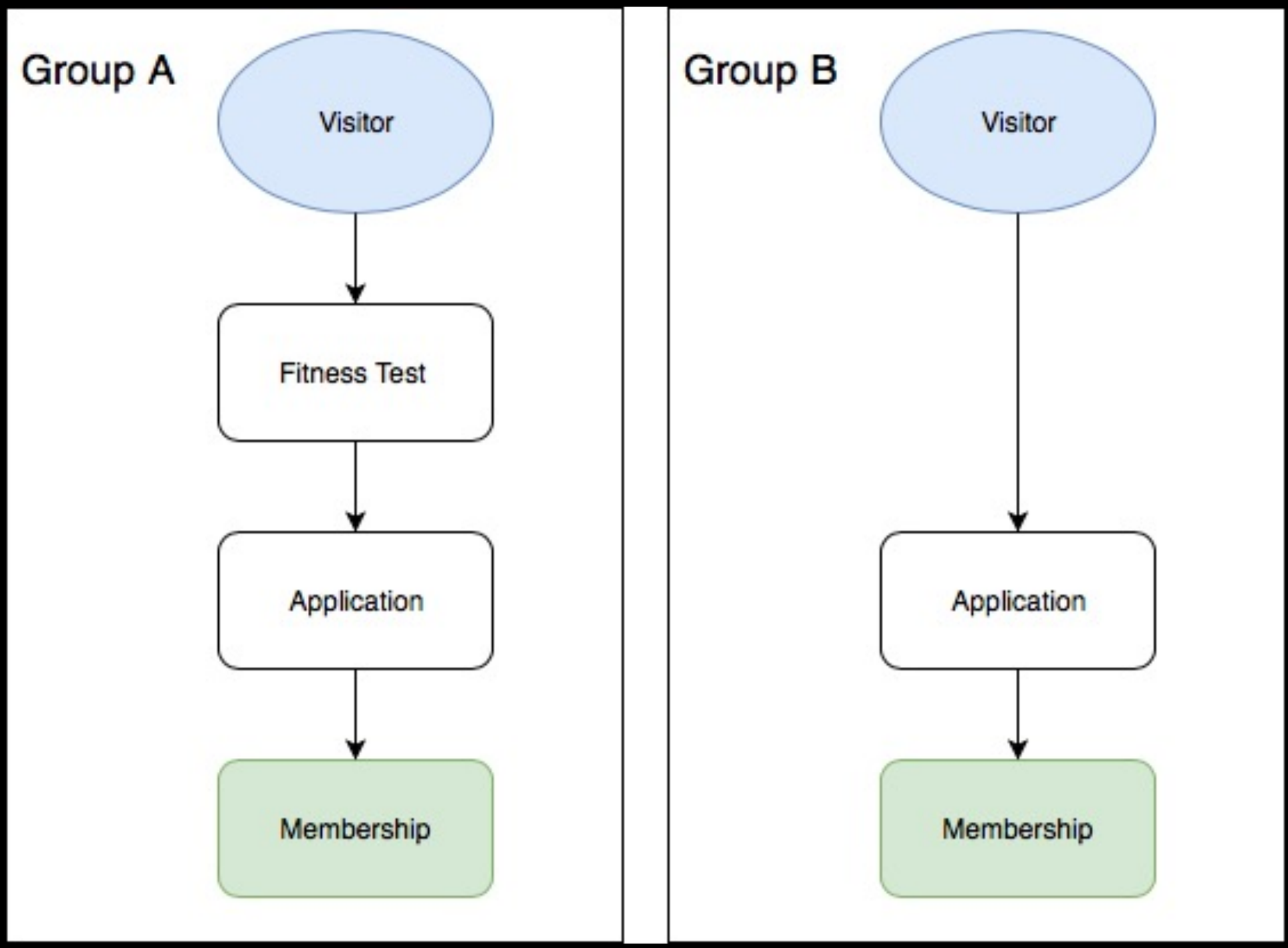
	Group A	Group B
Fitness Test	✓	x
Application sign-up	✓	✓
Membership sign-up	✓	✓
Sample size	2504	2000

A/B Test Details cont.

- Our data for each visitor is organized by their:
  - Visit date
  - Fitness test date (only for group A)
  - Application date
  - Membership sign-up date

- Duration:
  - From: July 1st, 2017
  - To: September 9th, 2017

How sign-up process looks



A/B Test Details cont.

- Since the sign-up process for a membership multistep procedure, we're going to run 3 hypothesis tests.

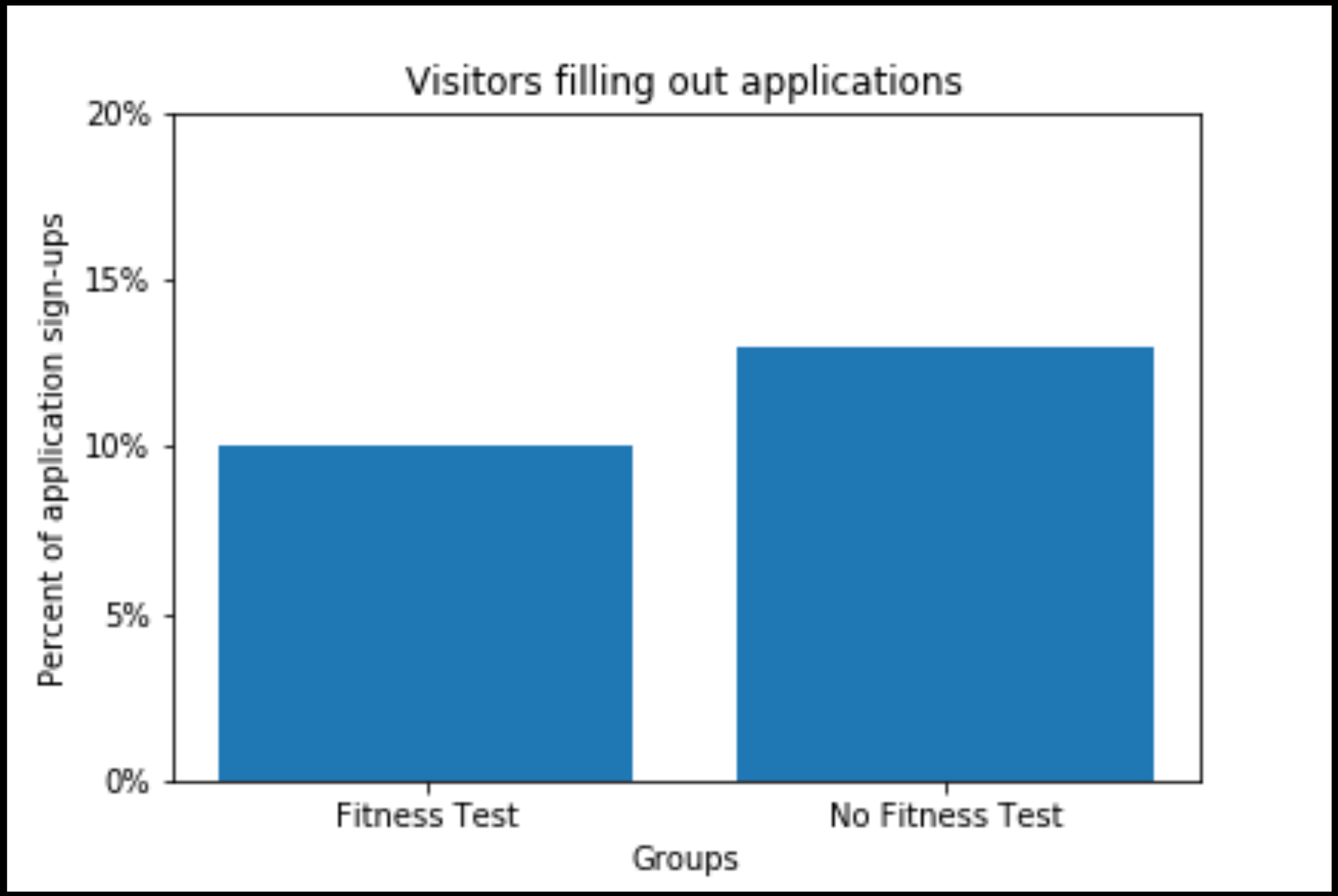
1. **Visitors** completing **application** form, disregarding membership sign-up.

2. **Applicants** signing up for a **membership**.

3. **Visitors** signing up for a **membership**. (Includes application).

Hypothesis 1

Hypothesis 1 Results



Hypothesis 1 Results

	Group A	Group B
Applications filled	250	325
Sample set	2504	2500
Application fill-out rate	9.984%	13%
Hypothesis test	Binomial Test	
P-Value	1.267E-06	

- For the binomial test, group B’s number of application sign-ups and sample size were used against group A’s percentage of application sign-ups

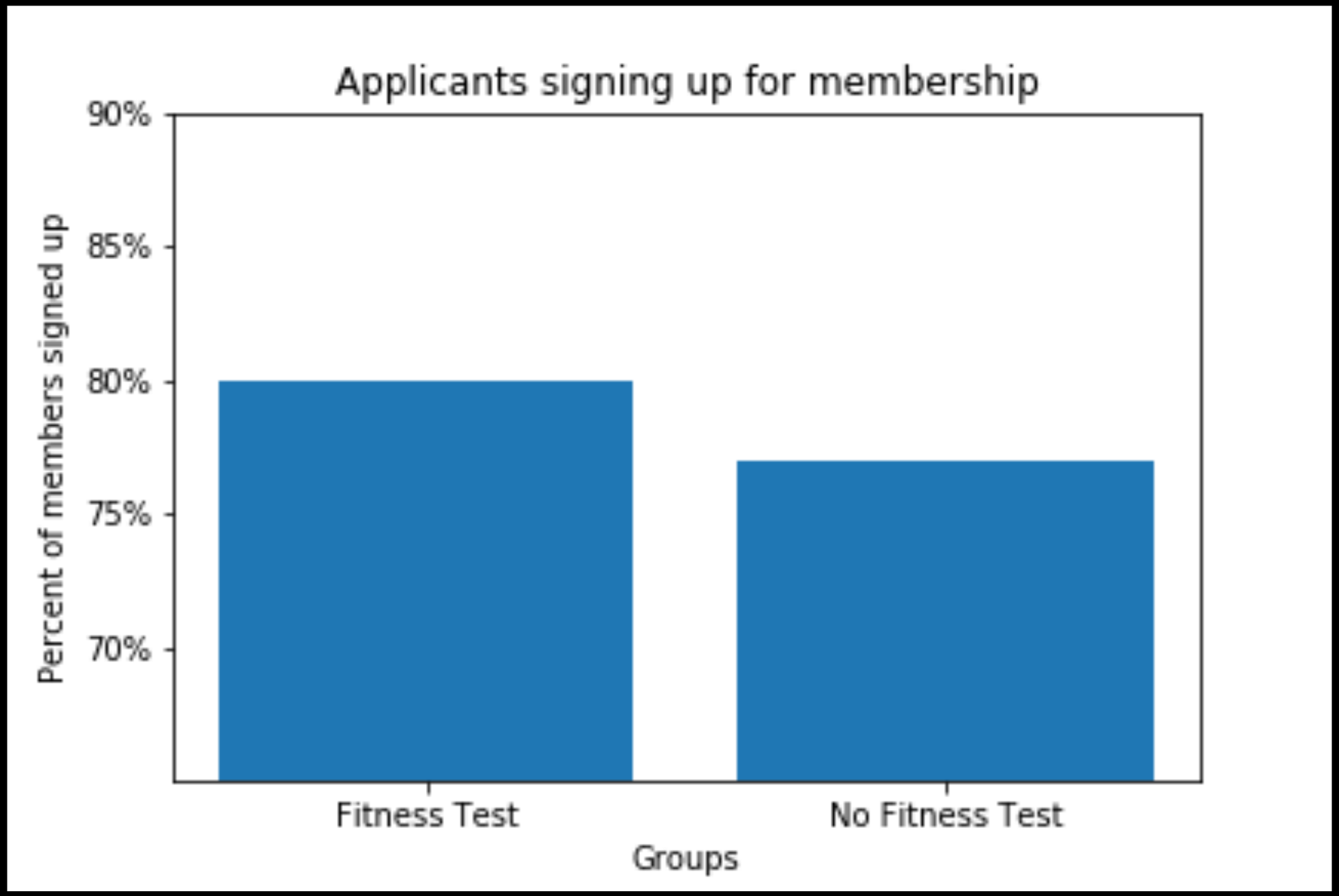
Hypothesis 1 Results

- Due to our minuscule P-value in our test for hypothesis 1, we can reject the null hypothesis; there is a difference between the two populations.

- Group B had more sign-ups compared to Group A, so we can say with confidence that skipping the fitness test increases the visitor’s likelihood of filling out an application.

Hypothesis 2

Hypothesis 2 Results



Hypothesis 2 Results

	Group A	Group B
Memberships	200	250
Sample set	250	325
Membership sign-up rate	80%	76.9%
Hypothesis test	Binomial Test	
P-Value	0.16571	

- For the binomial test, group B’s number of membership sign-ups and applicant sample size were used against group A’s percentage of membership sign-ups.

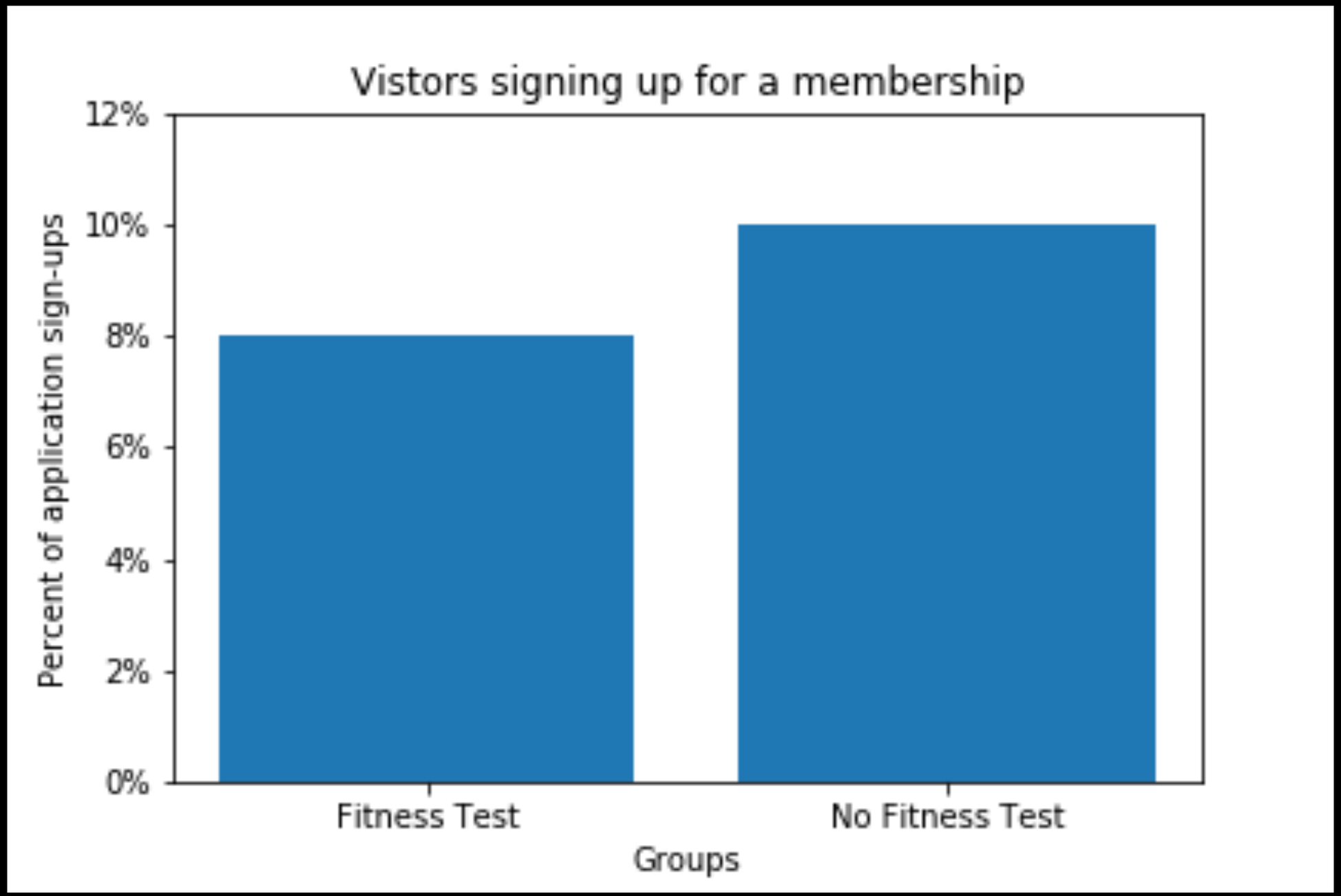
Hypothesis 2 Results

- Our P-value is greater than 0.05 which means we cannot confidently reject the null hypothesis and say that the populations of data are different.

- Skipping the fitness test does not have a statistical significance on applicants' likelihood of signing up for a membership.

Hypothesis 3

Hypothesis 3 Results



Hypothesis 3 Results

	Group A	Group B
Memberships	200	250
Sample set	2504	2500
Membership sign-up rate	7.98%	10%
Hypothesis test	Binomial Test / Chi-squared	
Binomial Test P-value	0.00034	
Chi-squared P-value	0.01472	

- For the binomial test, group B’s number of membership sign-ups and visitor sample size were used against group A’s percentage of membership sign-ups.

Hypothesis 3 Results

- Two separate tests were used since the crux of our original hypothesis hinges on this one's result.
- For both tests, our P-value was low enough to reject the null hypothesis. The two populations of data are different.
- We can see that more people signed up for memberships in group B vs. group A. (i.e. an increase by ~2%) Therefore, with reasonable confidence, we can say that **skipping the fitness test will increase our visitor's likelihood of signing up for a membership.**

Recommendation

- **Discontinue the fitness test.** It dissuades customers from signing up for a membership at Muscle Hub.

- There are testimonials from Muscle Hub's visitors and applicants that corroborate these findings too.