MuscleHub A/B Test

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In our task we are going to run 3 A/B tests in order to answer three questions:

1.Is there any correlation between people who were given a fitness test and people who filed out an application?

2. Is there any correlation between people who picked up an application and customers who purchased a membership?

3. Is there any correlation between people who were given a fitness test and customers who purchased a membership?

Because we have two categorical datasets that we want to compare, we should use a Chi Square test. In this case, the null hypothesis is that there's no significant difference between the datasets. We reject that hypothesis, and state that there is a significant difference between two of the datasets if we get a p-value less than 0.05.

1. Is there any correlation between people who were given a fitness test and people who filed out an application?

ab_test_group	Application	No Application	Total	Percent with Application
A	250	2254	2504	9.984026
B	325	2175	2500	13.000000

p-value = 0.0009647827600722304 => reject the null hypothesis, and state that there is a significant difference between two of the datasets because we get a p-value less than 0.05. That means that people who were not given a fitness test test preferred to filed out an application more often than people form group ‘A’.

I think this information can’t help MuscleHub in no way. Let’s go further...

2. Is there any correlation between people who picked up an application and customers who purchased a membership?

ab_test_group	Member	Not Member	Total	Percent Members
A	200	50	250	80.000000
B	250	75	325	76.923077

p-value = 0.43258646051083327=> can't reject the null hypothesis, and state that there is no significant difference between two of the datasets because we get a p-value greater than 0.05. So we can't use this information.

3. Is there any correlation between people who were given a fitness test and customers who purchased a membership?

ab_test_group	Member	Not Member	Total	Percent Members
A	200	2304	2504	7.98722
B	250	2250	2500	10.00000

p-value = 0.014724114645783203 => reject the null hypothesis, and state that there is a significant difference between two of the datasets because we get a p-value less than 0.05.

So people without a fitness test purchased a member more often than people from group ‘A’.

I recommend to MuscleHub to give up fitness test or to hire new better trainers!