

Determine the Best Mailer Using A/B Test

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Agenda

- Project Overview
- Business Problem
- Data Analysis
 - Analytical Method
 - Analytical Process
- Result and Interpretation
- Next Steps

Project Overview

- In this project we apply Chi-Square Test For Independence (a Hypothesis Test) to assess the performance of two types of mailers that were sent out to promote a new service!
- Our recommendation is to stay with the Low-Cost mailer type as the alternative option of High-Cost mailer type doesn't make resulting in any significant increase in the customer's sign-up rate.

Business Problem

- Earlier in this year, ABC Grocery ran a campaign to promote their new “Delivery Club” – an initiative that costs a customer \$100 per year for membership in turn customer will get free delivery where the normal delivery charge is \$10 per shipping.
- To test the effectiveness of the mail-out campaign, customers were put into three groups
 - Mailer 1 : customers receiving Low-quality-low-cost mailer
 - Mailer 2: customer receiving High-quality-high-cost mailers
 - Control Group: no mailers were received
- The business would like to know whether the high-cost mailers would result in higher chances of sign-up from customers.

Analytical Method

- We adopt the Chi-Square Test For Independence.

Rationale:

Compared with *Z-Test For Proportions*, *Chi-Square Test For Independence*

- *Is easier to explain due to the way it represent the data - the 2×2 metrics*
- *More consistent approach of measuring the result — data can be extended to more than 2 groups.*

Analytical Process



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graph TD; A([Set Up Hypotheses]) --> B([Aggregate Data for analysis]); B --> C([Run Chi-square Test]); C --> D([Interprets the test result]);
```

Set Up
Hypotheses

Aggregate
Data for
analysis

Run Chi-
square Test

Interprets
the test
result

Results

Retain the null hypothesis and conclude that mailer type and sign-up rate are independent. i.e. higher quality mailers do not result in higher sign-up rate.

Chi – Square
Statistic

1.94

Critical value

3.84

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P – value

0.16

Acceptance
Criteria

0.05

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Business Impact and Next Steps

- We recommend that ABC Grocery management team do not go with the higher-cost mailers as from what we've seen, you would have to spend more on the marketing cost, but would not result in extra membership sign-up hence revenue.
- Our results doesn't say definitely there is no difference between the two mailers. Instead, it simply indicates that high-quality mailers do not trigger higher chances of sign-up.
- We could run more A/B tests like this to gather more data and then re-run the test to gain more insights!

Thank you!

Any questions?