Email Subject Line A/B Test

SkillBuilder

This SkillBuilder walks through an A/B testing scenario you might encounter with a company with an online storefront. Here, the company wants to improve the efficacy of a regular email sent out to customers to inform them of promotions and highlight new products. The idea that they wish to test is that changing the subject line of the emails will result in more customers opening the email. An increase in the open rate should, ultimately, result in more customers checking out the online shop and making a repeat purchase.

Part 1 - Setting up the experiment

To start, we should define our hypotheses that we want to test.

1. In words, state the null hypothesis for the A/B test we want to run.
2. In words, state the alternative hypothesis for the A/B test we want to run.

Historically, the company has found that their promotional emails have had an open rate of 18%. The company wants to see the new subject line increase that rate to an open rate of 20%. Use this A/B Test Sample Size Calculator to help you answer the following questions:

3. What is the minimum detectable effect associated with that increase in open rate?
4. What total sample size is required to reliably detect that level of increase 80% of the time, at a significance level of 5%.
    - The 80% power and 5% statistical significance are default values for the linked calculator.
5. What total sample size would we need if we wanted to use a significance level of 1% (keeping the power at 80%)?
    - Changing the significance level requires you to go into the advanced settings.

Part 2 - Evaluating the experiment

Data for the A/B Test was collected, and the results can be found in the **ABTest** data table.

6. In a new sheet, create a PivotTable that summarizes the total number of emails sent out to customers in each group, and the number of times each version of the email was opened.

7. To check your work, what is the difference in the number of emails *sent* to each group?

    - You can click on cells of the PivotTable, and Excel will automatically fill in a function to extract that data.

8. What is the difference in the number of emails that were *opened* in each group?

Use this A/B Testing Significance Calculator to help you answer the following question:

9. Assuming a statistical significance level of 5%, what do you conclude from the A/B test? Make sure to phrase your conclusion in terms of your hypotheses, and justify your decision.

10. Since our data is based off of just a sample, it is possible for us to come to an incorrect conclusion. If the truth is in fact different from the conclusion drawn from the data, what type of error would we be making?