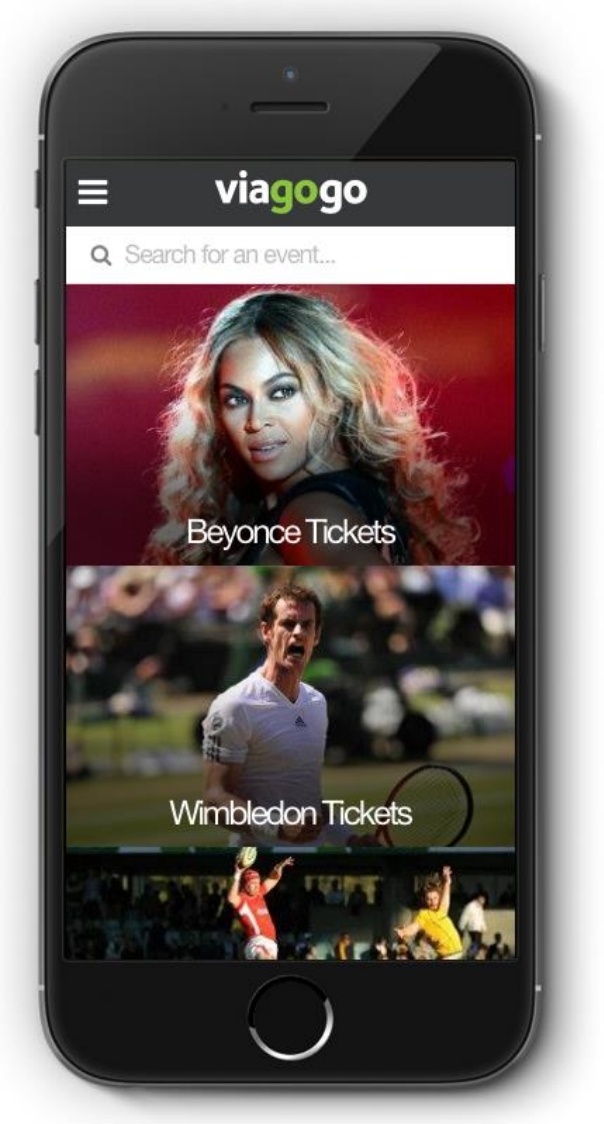
Product Case Study: Part 1

Below is a screenshot of our current mobile home page. The page currently displays the 10 most popular categories based on sales from our customers. A category is the name for a collection of similar events, for example 'Beyoncé'. Each image on the home page is a link to a list of the events for that category.



Suppose that we release a change to the current home page: change the categories displayed to the 10 categories nearest to the user's location with events this week. We believe this change will generate more revenue by making it easier for users to find events that are happening near them. We will validate our hypothesis by running a controlled experiment, or AB test. In an AB test, we show half our visitors the old version (control) and the other half the new version (variant) and compare the performance of these two groups. The primary metric to evaluate the performance of this change will be **Conversion Rate**, defined as:

$$\frac{\#\ visitors\ to\ the\ home\ page\ that\ subsequently\ make\ a\ purchase}{\#\ total\ visitors\ to\ the\ home\ page}$$

We can also consider **Bounce Rate,** which is the percentage of visitors to our website who navigate away from the site after viewing only one page. This can be defined as:

$$\frac{\#\ visitors\ that\ bounce\ from\ the\ home\ page}{\#\ total\ visitors\ that\ land\ on\ the\ home\ page}$$

Attached are sample results from this experiment. Below is an explanation of the data.

Date: date of user's visit
Channel: how the user arrived at our website
User Type: new or returning visitor to the website
Land: 0: user navigated to home page from another page on our site, 1: user landed directly on the home page
Bounce: 0: user navigated to another page on our website after landing, 1: user left our website after landing
Purchase: 0: user did not make a purchase, 1: user made a purchase
Visitors_Control: number of visitors in the control group that meet the criteria of the preceding columns
Visitors_Variant: number of visitors in the variant group that meet the criteria of the preceding columns

You are required to write up a report of this experiment to be circulated to the entire company. Use the questions below as a guide to structure your report, however the report should be able to be read on its own, without this question sheet.

1. What is the Conversion Rate of the control and of the variant? What is the aggregate relative difference of the variant vs. the control?
2. What is the Bounce Rate of the control and of the variant? What is the aggregate relative difference of the variant vs. the control?
3. For each metric, plot the trend of the control and variant by day over the period of the test. Discuss noticeable trends in the metrics, if any.
4. Using the data you have been given, calculate and discuss any supplementary analysis you think is relevant to this experiment.
5. Based on the data you have been given, what conclusions would you come to from this experiment? Would you deploy variant or revert to control? Why? How confident are you in this decision? Is there any extra data you would like to consider before deciding whether to deploy control or revert to control?

Please provide any Excel documents or code you used to calculate your analysis.

Product Case Study: Part II

Having just run the experiment described in Part 1, you are now tasked with coming up with the next experiment to run on the mobile homepage.

1. List five potential improvements you would make to the current page. Explain your reasoning.
2. What additional data would you like to know to help you assess which idea to prioritize?
3. How would you measure the success or failure of each of these changes?