

Applying Iterative Design Principles to a Live Product





Step 1
Select KPIs
&
Evaluate Previous
Multivariate
Experiment Results

Select KPIs for Flyber Analyses

1. For the data available, which KPI(s) best match Flyber's business model?

Flyber business model is a "ecommerce like model" where the sale of a service (item) in exchange for payment.

Common KPIs are:

1. Gross Bookings (Number of rides)
2. Number of repeat customers

2. How would you calculate these KPI(s) using the available event data logs?

No. of Rides = Count (Event type: begin_ride)

No. of repeat customers = Count (Event type: begin_ride) - Count Distinct (User uuid on Event type:begin ride)

3. List other KPIs that might be important to Flyber but are not calculable based on available data

Commissions or Profit Margin made on sales

Platform fees (% of transaction)

Describe the First Multivariate Experiment

- Describe the elements tested during the multivariate experiment. You can use the image below when referencing the tests

Control

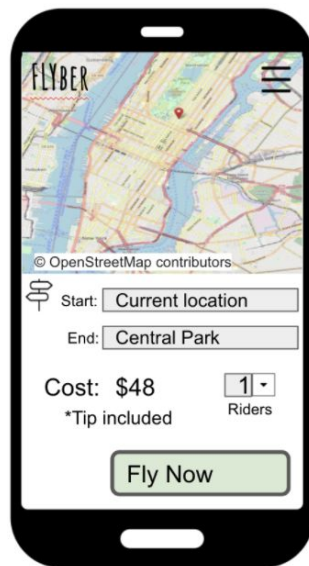


Control:

Booking
button text:
Book Flight

Specification:
*Tip Included

Experiment 1

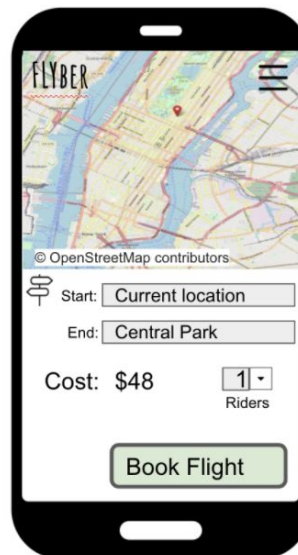


Experiment 1::

Booking
button text:
Fly Now

Specification:
*Tip Included

Experiment 2

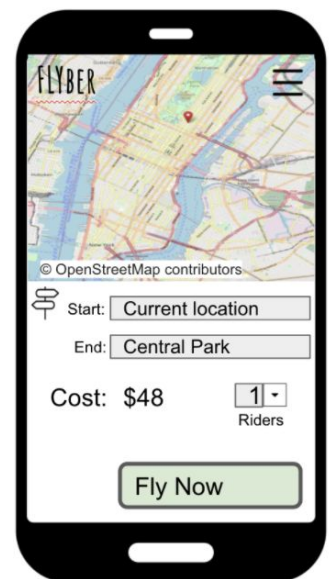


Experiment 2:

Booking
button text:
Book Flight

Specification:
NIL

Experiment 3



Control:

Booking
button text:
Fly Now

Specification:
NIL

Review Multivariate Test Results: Visualization

- Provide a visual representation of the impact of the experiment on the conversion rate of users booking a flight (out of all users opening the app)

Event Type	Experiment Group			
	control	experiment_1	experiment_2	experiment_3
open				
begin_ride	-99.73%	-99.69%	-99.68%	-99.70%

Review Multivariate Test Results: Significance Test

Determine if there was a significant difference between the experiments and control states.

- Explain how you would perform a t-test to determine if the experimental results had a greater impact on the booking conversion rate than the control state
 - **Step 1**, the null hypothesis: there is *no difference* in the conversion rate between users in the control and test groups. This is what we want to *reject*.
 - **Step 2**, the alternative hypothesis: there is *a difference* in the conversion rate between the test and control groups. This is what we want to *accept*.
 - **Step 3**, confidence threshold: 95%
 - **Step 4**, Multivariate experiment has been done
 - **Step 5**, perform the T-test. Insert the data from the Multivariate experiment and set it to be a two-tailed test since the test groups can convert *higher or lower* than the control group.
- List the test results (p value) for each experiment compared to the control

Experiment	Conversion Rate	P value
Control	0.27%	
Experiment A	0.31%	0.01591
Experiment B	0.32%	0.0843
Experiment C	0.30%	0.1848

Review Multivariate Test

Results: Significance Test

Determine if there was a significant difference between the experiments and control states.

- Using the statistical significance calculator of your choice, determine which experiments, if any, had a significant result at the 95% level. Include your calculations as part of your explanation

Experiment	P value	Significant?
Control		
Experiment A	0.01591	No
Experiment B	0.0843	No
Experiment C	0.1848	No

None of the experiments had $p \text{ value} \leq 0.05$ (95% confidence level).

Review Multivariate Test

Results: Significance Test

Determine if there was a significant difference between the experiments and control states.

- Based on your statistical significance calculations, recommend if any of the experiments should be expanded

The closest experiment (B) that had a p value score of 0.0843.

Experiment B can be expanded to include more features and design changes that may drive conversion.

After those additional proposed changes, Flyber could again retest this new iteration against control as an A/B test.



Step 2

Funnel & Cohort Analyses

User Funnel

Identifying the different stages the user funnel

- Based on the event types in the data provided, list the 3 or more steps a user can take from opening the app to final booking of a ride
 1. Open
 2. Search
 3. Begin Ride
- Provide a graph showing the funnel from step to step, including drop off rates.

Steps to Book a ride

Event Type	
open	
search	-79.88%
begin_ride	-98.51%

User Segments

- Identify 2 demographic attributes present in the data that allow for segment analysis
 - a. Age group
 - b. User neighborhood
- For each demographic attribute, provide the number of users in each segment group

Age Demographic		Neighborhood	
Age		User Ne..	
18-29	28,321	Manhattan	57,110
30-39	20,124	Brooklyn	16,435
40-49	41,774	Queens	4,050
50+	64,059	Bronx	2,396
		Staten Island	1,566

- For each demographic attribute, identify the segment group with the largest number of users
 - a. Age - 50+ @ 64,059 users
 - b. Neighborhood - Manhattan @ 57,110 users

Segment Analysis of Funnel

Identify Opportunities for Improvement

- Perform a funnel analysis by segment for all identified demographic attributes and describe the results

Segment Analysis of Funnel (Age)

Event Type	Age			
	18-29	30-39	40-49	50+
open				
search	-69.31%	-71.01%	-66.62%	-78.09%
begin_ride	-98.55%	-98.29%	-98.16%	-98.61%

The age group of 40-49 is the best performing demographic with 66.62% drop off from open to search, and 98.16% drop off from search to begin ride.

The age group of 50+ is the worst performing demographic, with 78.1% drop off from open to search, and 98.61% drop off from search to begin ride.

Segment Analysis of Funnel (2) (Neighborhood)

Event Type	User Neighborhood				
	Bronx	Brooklyn	Manhattan	Queens	Staten Island
open					
search	-56.05%	-56.19%	-56.14%	-56.12%	-56.19%
begin_ride	-97.82%	-98.14%	-98.11%	-98.26%	-97.96%

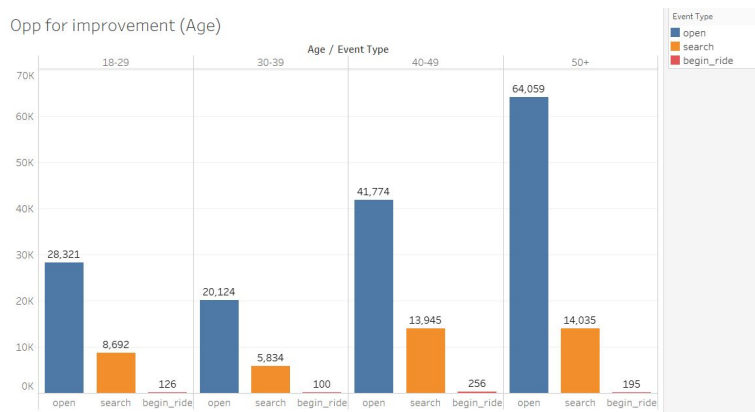
Neighborhoods such as the Bronx and Staten Island are the slightly better performing regions with the lowest drop offs compared to Brooklyn, Manhattan and the Queens.

Segment Analysis of Funnel

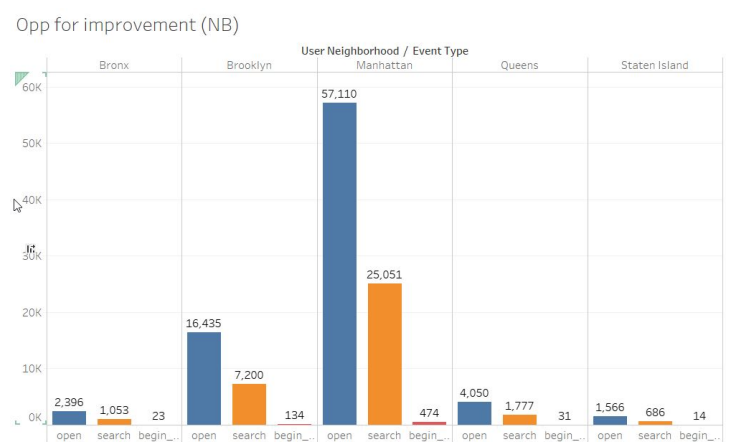
Identify Opportunities for Improvement

- If underperformance for a segment in an attribute is identified, add a visual showing the average funnel conversion by segment group for that demographic

Opp for improvement (Age)



Opp for improvement (NB)



50+ age group and Neighborhood of Manhattan and Brooklyn has the biggest opportunity for increased conversion in absolute terms.



Step 3

Hypothesis & Next
Steps

Review Qualitative Data

- Read user interviews to understand “why” any funnel under-performance seen in Step 2 might occur

The underperformance in the 50+ category may be due to the interface not being easy enough to be use by the customers. Although they like to use the service, they are not able to execute the request on the application.

One user saying, “Instructions too small, not easy to use for 70+” and another, had to request for his daughter to help book the ride. Another user also highlighted on the size of the buttons (being too tiny).

- List your hypothesis for what customer need is being under-served

Customer need on speed and to save time

- Provide 3 or more quotes as evidence for this hypothesis
 - a. “I can get anywhere in NY in a hurry.”
 - b. “I need to travel a lot and traffic can be killer.”
 - c. “I like the ability to get home quickly “
 - d. “Flyber helps me get to the hospital faster.”

Suggested Features & Experimentation Plan


- Share your hypothesis using the following format:
 - We believe by making **user friendliness** and focusing on **time savings** as a priority because users are looking for **convenience, speed, ease of use** and that by **improving the interface** and communicating the proposition more clearly for 50+ age group we will see increase conversion and rides/user
- Suggest 2 or more features that would match your hypothesis and determine a plan for multivariate testing, including describing the control and experimental conditions
 1. Increase font size and size of buttons
 2. Showing time saved vs. by car
 3. Integrating voice assistant support
 4. Save your favorite addresses/last known place

Suggested Features & Experimentation Plan

- Determine who should be exposed to the experimental changes

We are testing on users in the 50+ age group. In doing so, we must make sure that users in the control and the test/experiment group share the same characteristics. In addition to everyone being a target user, we need to make sure other user characteristics such as neighborhood demographics are balanced between the control and experiment groups.

- List any additional metrics that would be helpful to collect from your suggested features
 - ride booked using voice assistant
 - address filled from saved list
 - time taken from open to begin ride



Appendix

Raw Data

Additional Info

You could include supporting or additional information that can support your previous slides but isn't necessary for every person to see that looks at your slides.