

# Applying Iterative Design Principles to a Live Product





**Step 1**  
**Select KPIs**  
**&**  
**Evaluate Previous**  
**Multivariate**  
**Experiment Results**

# Select KPIs for Flyber Analyses

- For the data available, which KPI(s) best match Flyber's business model?
  - Most affected age group
  - Increment in customer by region
  - Frequency of visit of a customer
- How would you calculate these KPI(s) using the available event data logs?
  - **Most affected age group**- In order to find the increase/decrease in different age group for different experiments, I will find out percentage of each age group of people who are going for experiment\_1, experiment\_2 or experiment\_3.
  - **Increment in customer by region**- Here I will try to find out involvement of users of different user in different experiment as compared to control . We will try to find which experiment led increase in customer involvement in which region.
  - **Frequency of visit of a customer**-The main motive of this KPI will be find user involvement with different experiments(experiment\_1, experiment\_2 or experiment\_3) as compared to control. We will watch closely, which experiment led increase in user involvement percentage and which had an adverse effect.
- List other KPIs that might be important to Flyber but are not calculable based on available data
  - Some other KPIs which could be useful are:-
    - The device used (Laptop, Mobile, Tablet etc.)
    - The number of users who sign up.
    - Do users tell others(referral)

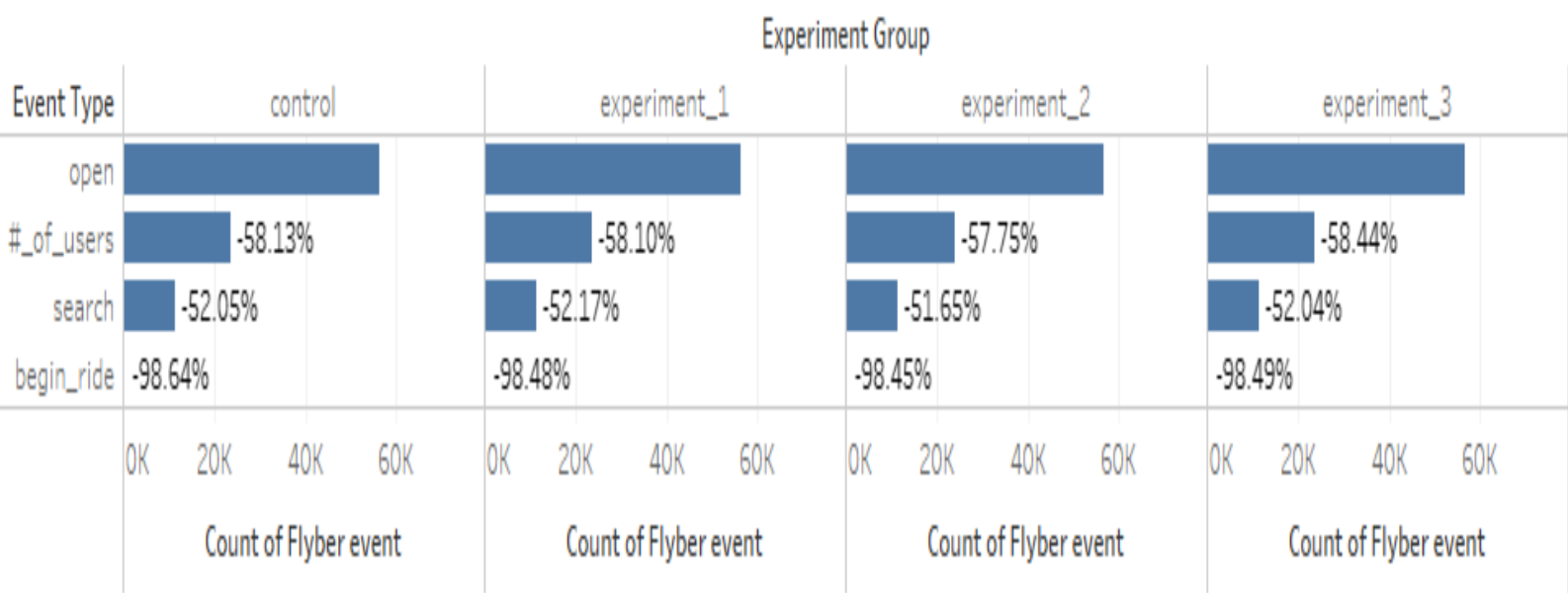
# Describe the First Multivariate Experiment

- Describe the elements tested during the multivariate experiment. You can use the image below when referencing the tests
  - We use multivariate experiment when we wish to test more than one change at once.
  - In the experiment below the element tested are:-
    - In experiment\_1 we are testing whether the button should contain word “Book flight” or “fly Now”.
    - In experiment\_2 we are checking whether to add “Tip included” on the UI or not.
    - In experiment\_3 we are testing whether to add “Tip included” on the UI or not. And also whether the button should have text “Book Flight” or “Fly Now”



# 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)



# 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
  - In order to perform the t-test, we will first make hypothesis
    - **Null hypothesis:-** Customer do not convert better with the test state as compared to control state.
    - **Alternative hypothesis:-** Customers will convert differently with the test state.
    - **Confidence interval:-** 95% confidence
    - **P- value**  $< 0.025$ , difference is statistically significant, the null is rejected.

# Review Multivariate test results(Continued)



## (Continues)

- List the test results (p value) for each experiment compared to the control
  - The p value for different tests are:-
    - Experiment\_1:- 0.1590
    - Experiment\_2:- 0.0843
    - Experiment\_3:- 0.1848
- 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



Test data

Visitors A

56390

Conversions A

154

Visitors B

56390

Conversions B

172

Apply changes

Settings

Hypothesis <sup>(?)</sup>

☐ One-sided

☒ Two-sided

Confidence <sup>(?)</sup>

☐ 90%

☒ 95%

## Experiment\_1

### Conversion Rate Control

Conversions A / Visitors A

0.27%

### Conversion Rate B

Conversions B / Visitors B

0.31%

### Observed Power

31.55%

### p value

0.1590

Test data

Visitors A

56390

Conversions A

154

Visitors B

56688

Conversions B

180

Apply changes

Settings

Hypothesis <sup>(?)</sup>

☐ One-sided

☒ Two-sided

Confidence <sup>(?)</sup>

☐ 90%

☒ 95%

## Experiment\_2

### Conversion Rate Control

Conversions A / Visitors A

0.27%

### Conversion Rate B

Conversions B / Visitors B

0.32%

### Observed Power

52.29%

### p value

0.0843

Test data

Visitors A

56390

Conversions A

154

Visitors B

56687

Conversions B

171

Apply changes

Settings

Hypothesis <sup>(?)</sup>

☐ One-sided

☒ Two-sided

Confidence <sup>(?)</sup>

☐ 90%

☒ 95%

## Experiment\_3

### Conversion Rate Control

Conversions A / Visitors A

0.27%

### Conversion Rate B

Conversions B / Visitors B

0.30%

### Observed Power

26.43%

### p value

0.1848

## (Continued)

- Based on your statistical significance calculations, recommend if any of the experiments should be expanded
  - Based on the value obtained in different experiments we can conclude that:-
    - $p\_value\ experiment\_1 = 0.1590 > 0.025$  (null is accepted)
    - $p\_value\ experiment\_2 = 0.0843 > 0.025$  (null is accepted)
    - $p\_value\ experiment\_1 = 0.1848 > 0.025$  (null is accepted)



# **Step 2**

## Funnel & Cohort Analyses

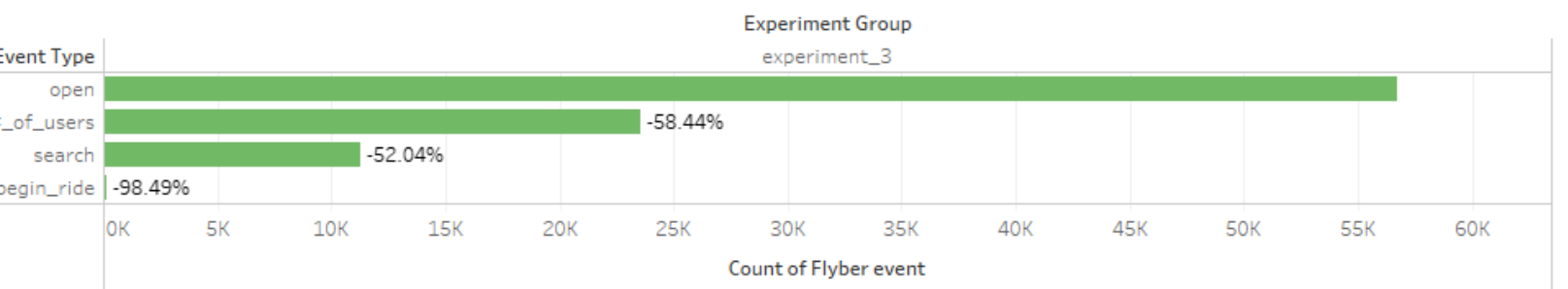
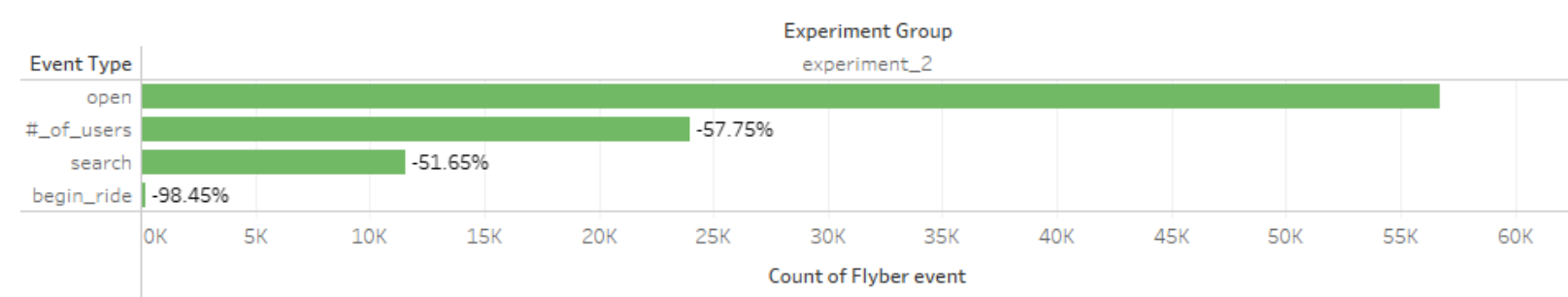
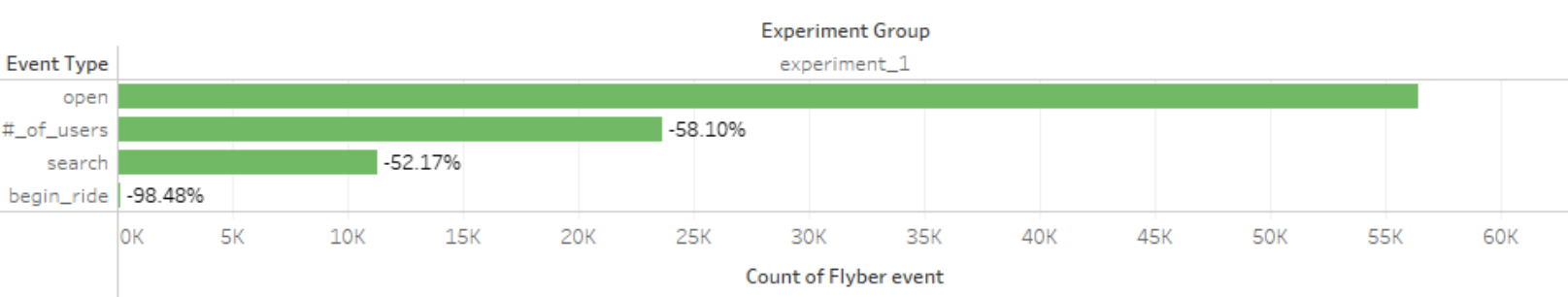
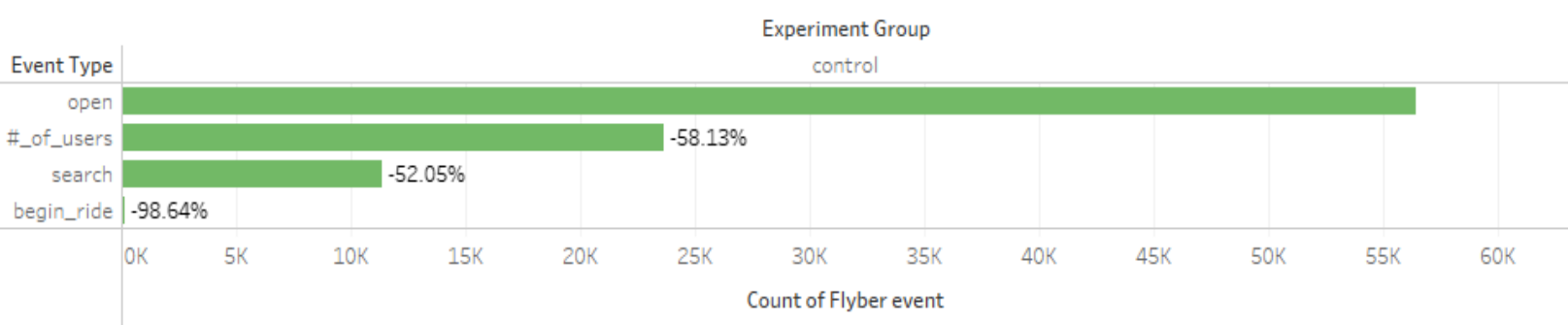
# User Funnel

## 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
  - The steps which may be taken by the user are:-
    - Open
    - #\_of\_Users
    - Search
    - Begin ride

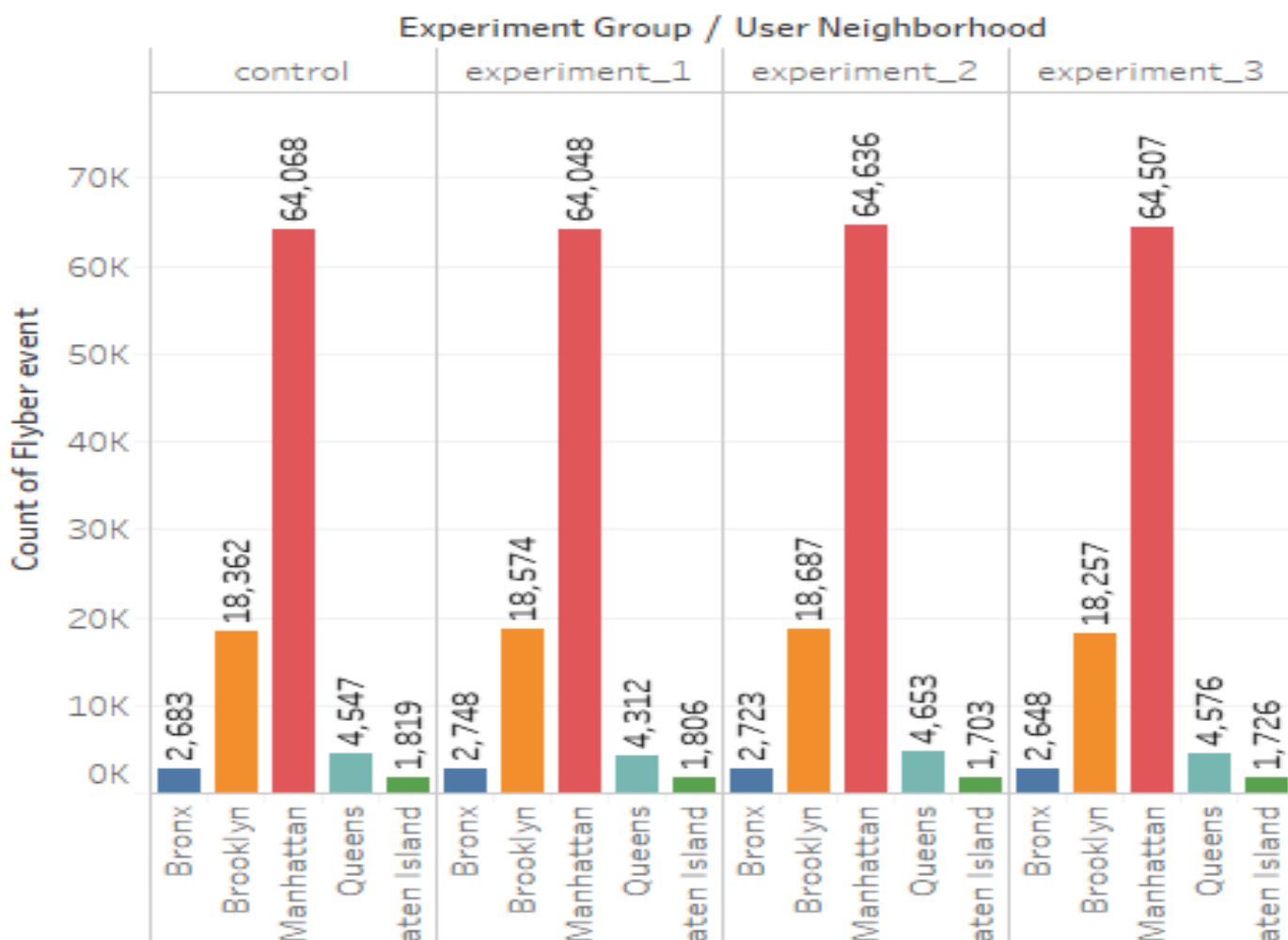
# (Continued)

- Provide a graph showing the funnel from step to step, including drop off rates.



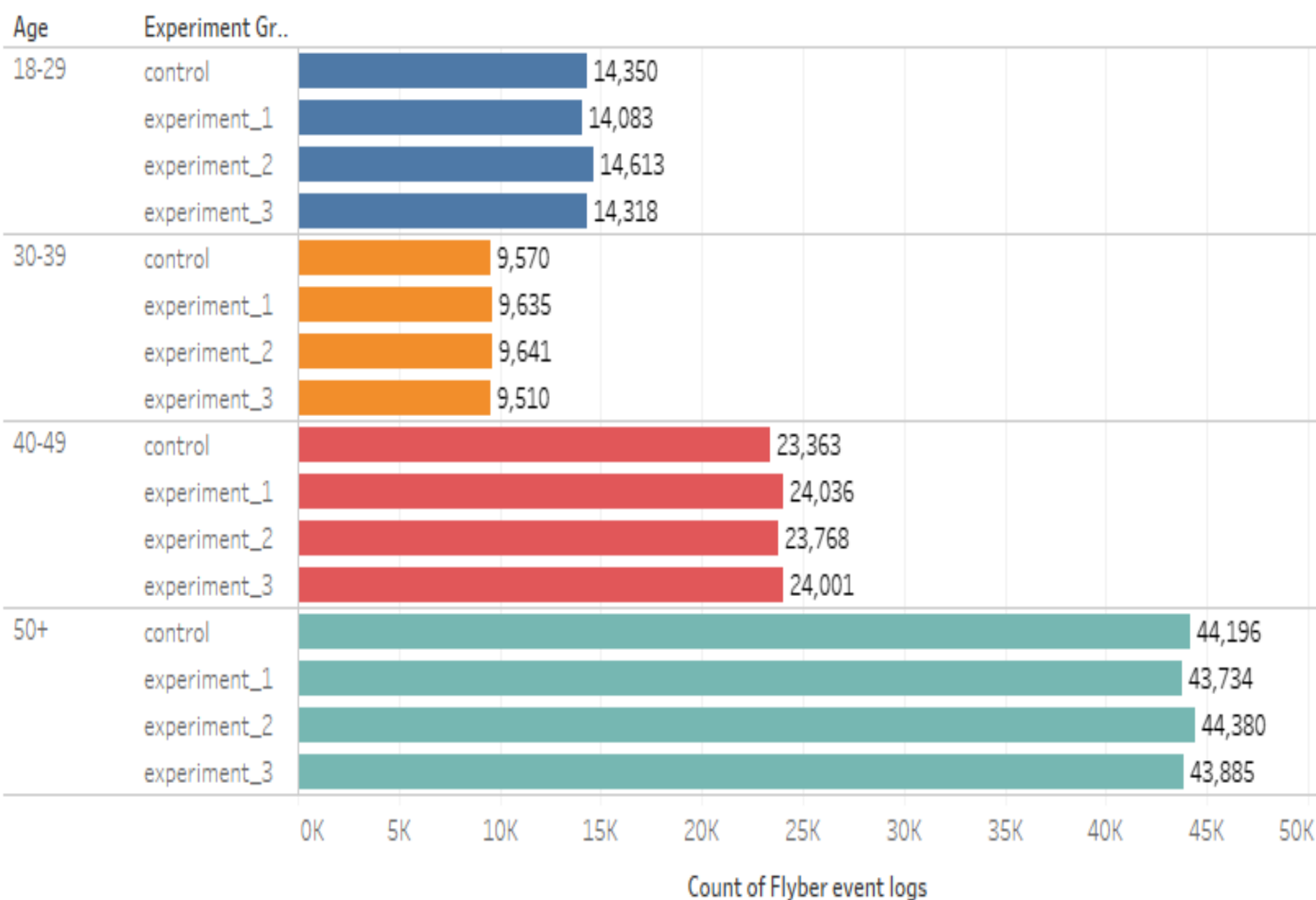
# User Segments

- Identify 2 demographic attributes present in the data that allow for segment analysis
  - The 2 demographic attributes present in the data are:-
    - User Neighbourhood
    - Age
- For each demographic attribute, provide the number of users in each segment group:-
  - User neighbourhood:-



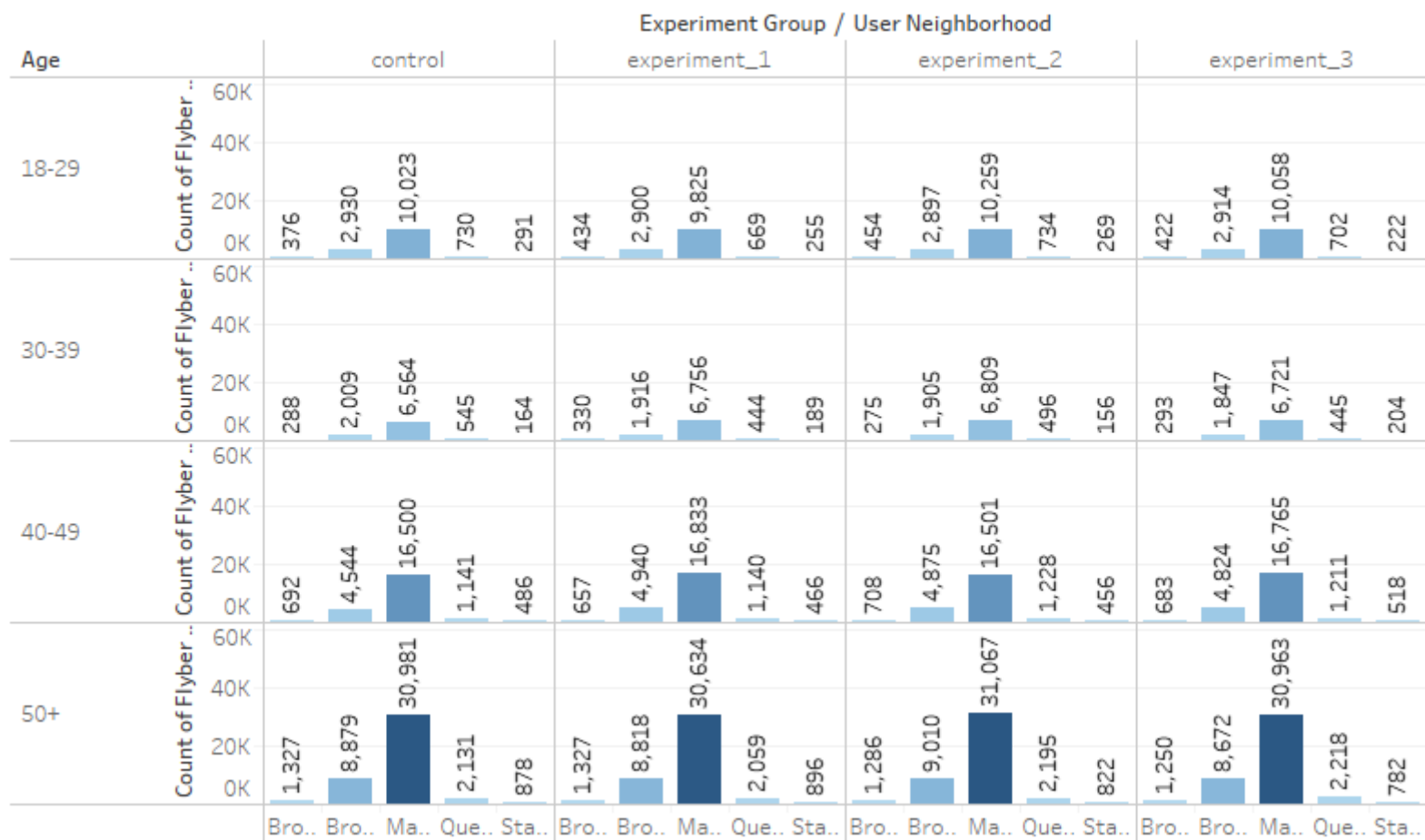
# User Segment(Continued)

- Age:-



# User Segment(continued)

- For each demographic attribute, identify the segment group with the largest number of users





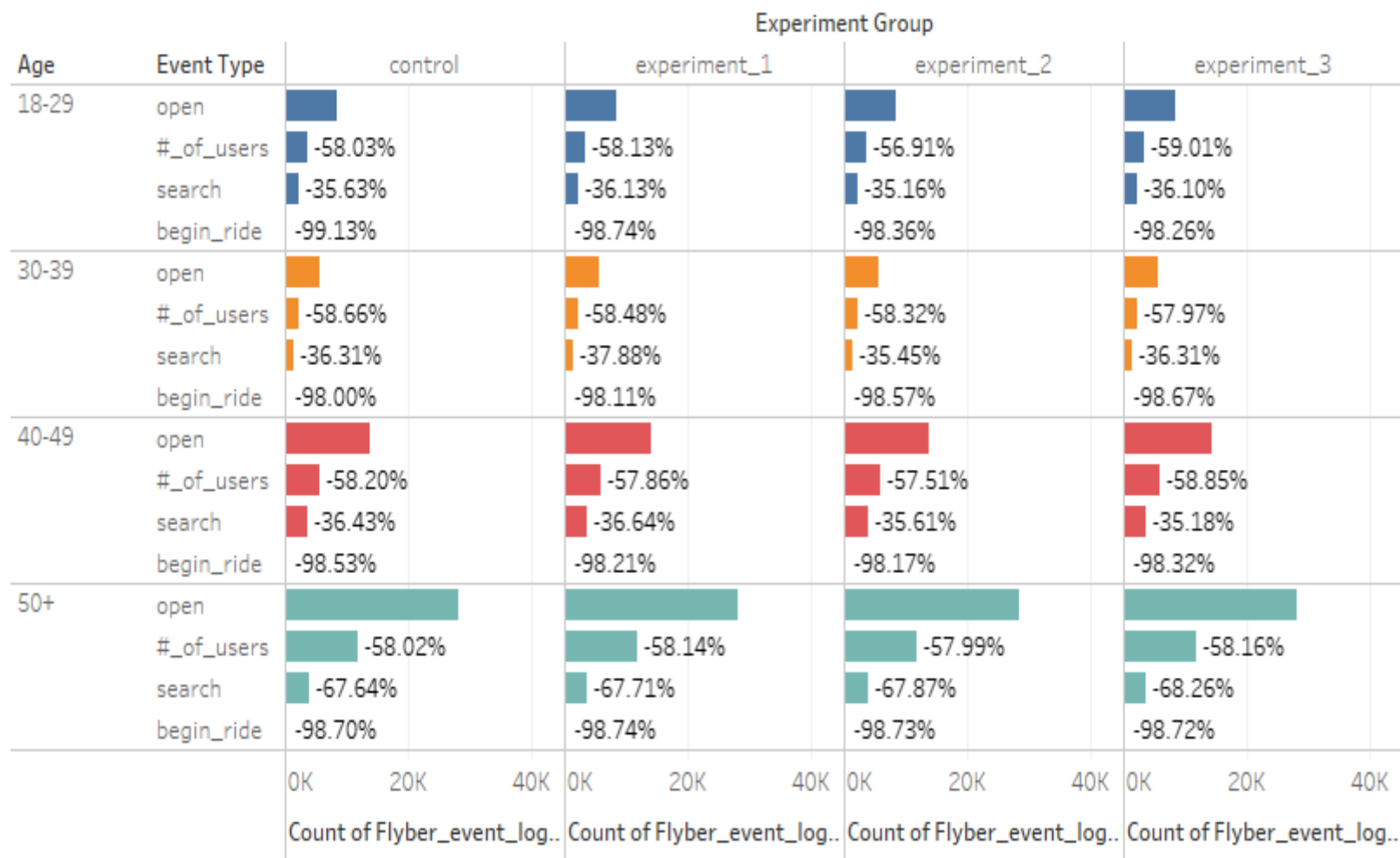
# (Continued)

- For experiment\_1
  - Manhattan:- Has highest user(30, 634) for age group 50+
  - Brooklyn:- Has highest user(8818) for age group 50+
  - Bronx:- Has highest user(1327) for age group 50+
  - Queen:- Has highest user(2059) for age group 50+
- For experiment\_2
  - Manhattan:- Has highest user(31, 067) for age group 50+
  - Brooklyn:- Has highest user(9010) for age group 50+
  - Bronx:- Has highest user(1286) for age group 50+
  - Queen:- Has highest user(2195) for age group 50+
- For experiment\_3
  - Manhattan:- Has highest user(30963) for age group 50+
  - Brooklyn:- Has highest user(8672) for age group 50+
  - Bronx:- Has highest user(1250) for age group 50+
  - Queen:- Has highest user(2218) for age group 50+

# Segment Analysis of Funnel

## Identify Opportunities for Improvement

- Perform a funnel analysis by segment for all identified demographic attributes and describe the results
  - Age:- For age group 50+, there is huge drop from #\_of\_Users to begin\_ride stage.



# Continued

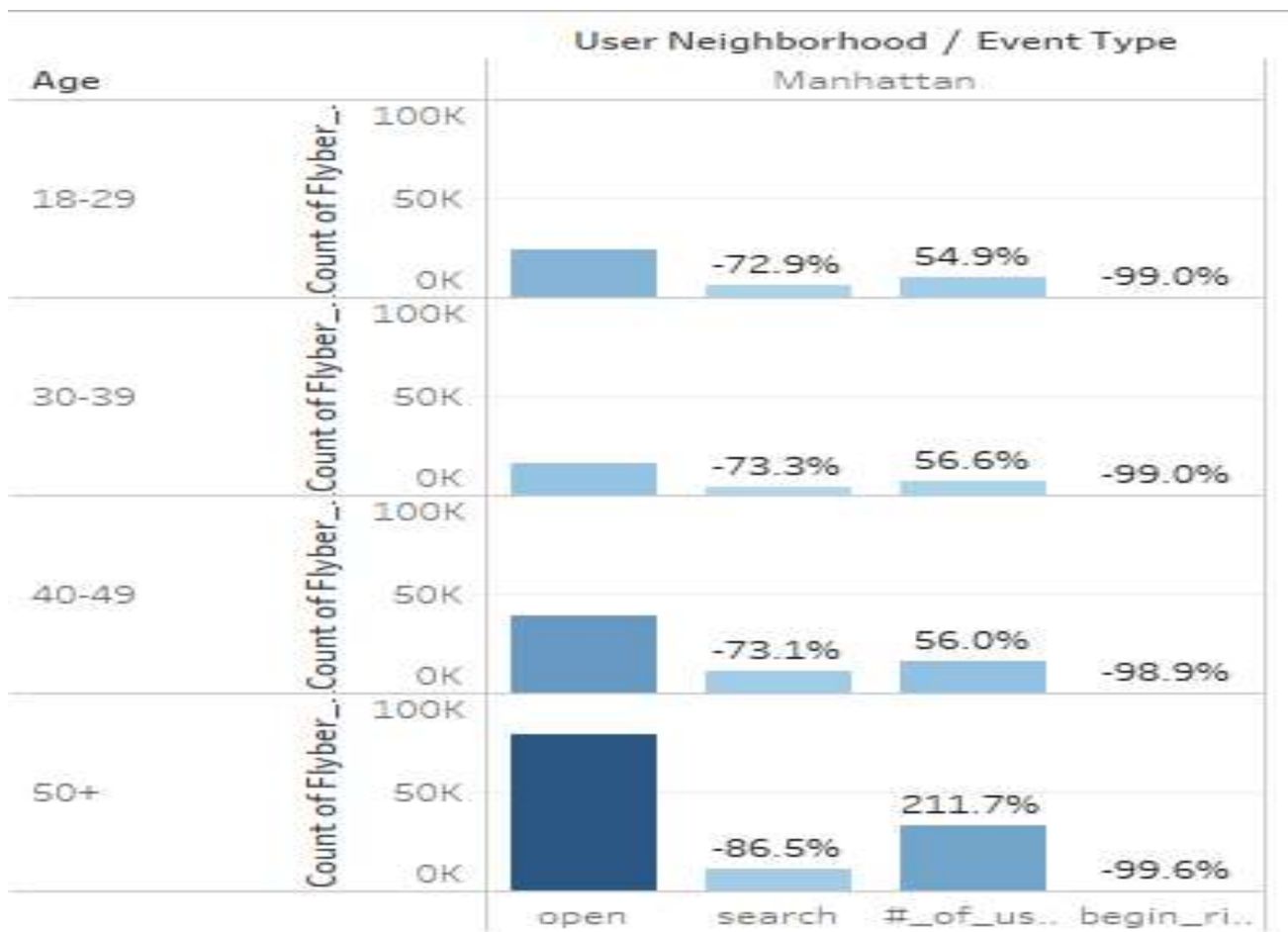
- User Neighbourhod
  - Staten Island has least number of people entering the Island
  - For Brooklyn, Experiment\_1 has the least funnel drop off.
  - Experiment\_2 shows great reduction in funnel drop of for Staten Island.

User Neigh..	Event Type	Experiment Group			
		control	experiment_1	experiment_2	experiment_3
Bronx	open				
	#_of_users	-60.65%	-56.55%	-58.77%	-59.19%
	search				
	begin_ride	-98.05%	-97.65%	-98.60%	-98.76%
Brooklyn	open				
	#_of_users	-58.35%	-57.93%	-57.68%	-58.80%
	search				
	begin_ride	-98.57%	-98.41%	-98.64%	-98.45%
Manhattan	open				
	#_of_users	-57.94%	-58.03%	-57.78%	-58.36%
	search				
	begin_ride	-98.67%	-98.53%	-98.35%	-98.51%
Queens	open				
	#_of_users	-58.68%	-60.16%	-56.86%	-58.65%
	search				
	begin_ride	-98.95%	-98.62%	-98.68%	-98.25%
Staten Island	open				
	#_of_users	-57.21%	-59.73%	-58.08%	-56.05%
	search				
	begin_ride	-98.26%	-98.16%	-99.04%	-98.11%

# Segment Analysis of Funnel(Continued)

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

For “manhattan” we can find that there is huge decrease from open event to search event and also from #\_of\_user to begin ride. Also this is seen for age group 50+





## **Step 3**

Hypothesis & Next  
Steps

# Review Qualitative Data

- Read user interviews to understand “why” any funnel under-performance seen in Step 2 might occur
  - From the interviews it was found:-
    - There are still people who call a taxi service on the phone..
    - There are people who take uber thinking to save money.
    - There are people who are always on the phone, so they just use voice commands to make a booking
    - Some people found this difficult to follow the instructions.
- List your hypothesis for what customer need is being under-served
  - Customers need better phone(voice command) support
  - We need to make rides cheaper as much as possible.
  - Need to make flyber service as comfortable as their private vehicle.
  - App instructions need to be more User friendly

# Review Qualitative Data(continued)

- Provide 3 or more quotes as evidence for this hypothesis
  - I just hail a taxi or tell my phone to call a cab to go to a certain address (I'm always on the phone, so I just use voice commands with my phone most of the time)
  - If the timing isn't different, I'll take a taxi or uber to save money.
  - Before Flyber, I'd call a taxi service on the phone.
  - I have a personal car service on call. My assistant books Flyber whenever I'd be travelling during peak NYC traffic hours. Time is money and Flyber saves me time! But I let my assistant actually book the Flyber because the first few times I tried booking, the instructions were too small.
  - Drive my car or call a taxi service.

# Suggested Features & Experimentation Plan

- Share your hypothesis using the following format:  
We believe [observed quantitative effect] Because [hypothesized user “why”] And that by [general change/opportunity for Flyber to improve] for [targeted cohort] we will see [expected effect ]
  - We believe providing better voice command support will have better response because there are people who are always on call and they prefer call service and so we will see rise in ride numbers of such Customers who need better phone(voice command) support.
  - We believe having some cheaper plans for daily people who prefer to to use flyber on daily basis will have better response because there are people who find the fair too high so we will see rise in ride numbers for Customers who are regular.



# Suggested Features(Cont.)

- Suggest 2 or more features that would match your hypothesis and determine a plan for multivariate testing, including describing the control and experimental conditions
  - Including \*booking a ride instructions
  - Having some discount code.
- To plan a multivariate testing, we will record how many people tap on “discount code” link and if given percentage increase in ride booking numbers.
- Determine who should be exposed to the experimental changes
  - Those people should be exposed to the experimental changes who leave the funnel just after making a search i.e just before making a booking.
- List any additional metrics that would be helpful to collect from your suggested features
  - Increase in conversion rate
  - Frequency of visit of a customer.



# 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.**