Applying Iterative Design Principles to a Live Product

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Step 1

Select KPIs

&

Evaluate Previous Multivariate Experiment Results

Select KPIs for Flyber Analyses

- KPI: What is the percentage of conversion to Begin Ride?

  Calculated on:

  Total Counts of ‘Begin_ride’/Total Counts of ‘Open’

  Because this can help us to learn what is our customer activation and identify possible improvements.

  KPI: How many rides began in total

  Calculated on:

  Total Count of ‘Begin_ride’

  Because this can give us information on how much total revenue we generated.

- Other KPIs cannot be calculated:

  How many time users spent on each session?

  What is the total revenue for each trip?

Describe the First Multivariate Experiment

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

The elements being tested here is the user interface.

Feature 1: Button ‘Book Flight’ or ‘Fly Now’

Feature 2: “Tip included’ or No.

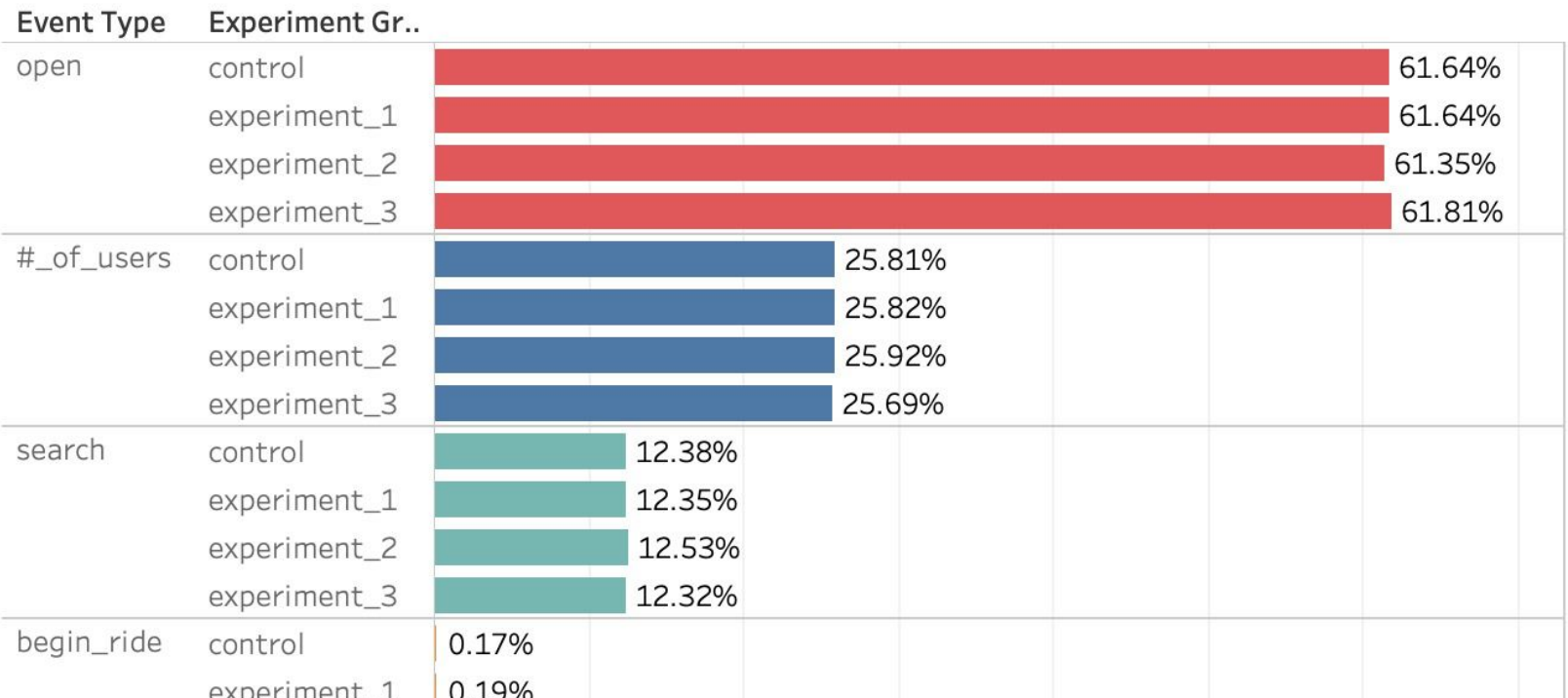
Review Multivariate Test Results: Visualization

- 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)

Number of Records By Experiment and Event Group

	Event Type			
Experiment Gr..	#_of_users	begin_ride	open	search	Grand Total
control	23,612	154	56,390	11,323	**91,479**
experiment_1	23,626	172	56,390	11,300	**91,488**
experiment_2	23,953	180	56,688	11,581	**92,402**
experiment_3	23,557	171	56,687	11,299	**91,714**

Conversion Rate For Each Step



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
- List the test results (p value) for each experiment compared to the control
- 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
- Based on your statistical significance calculations, recommend if any of the experiments should be expanded

Review Multivariate Test Results: Significance Test

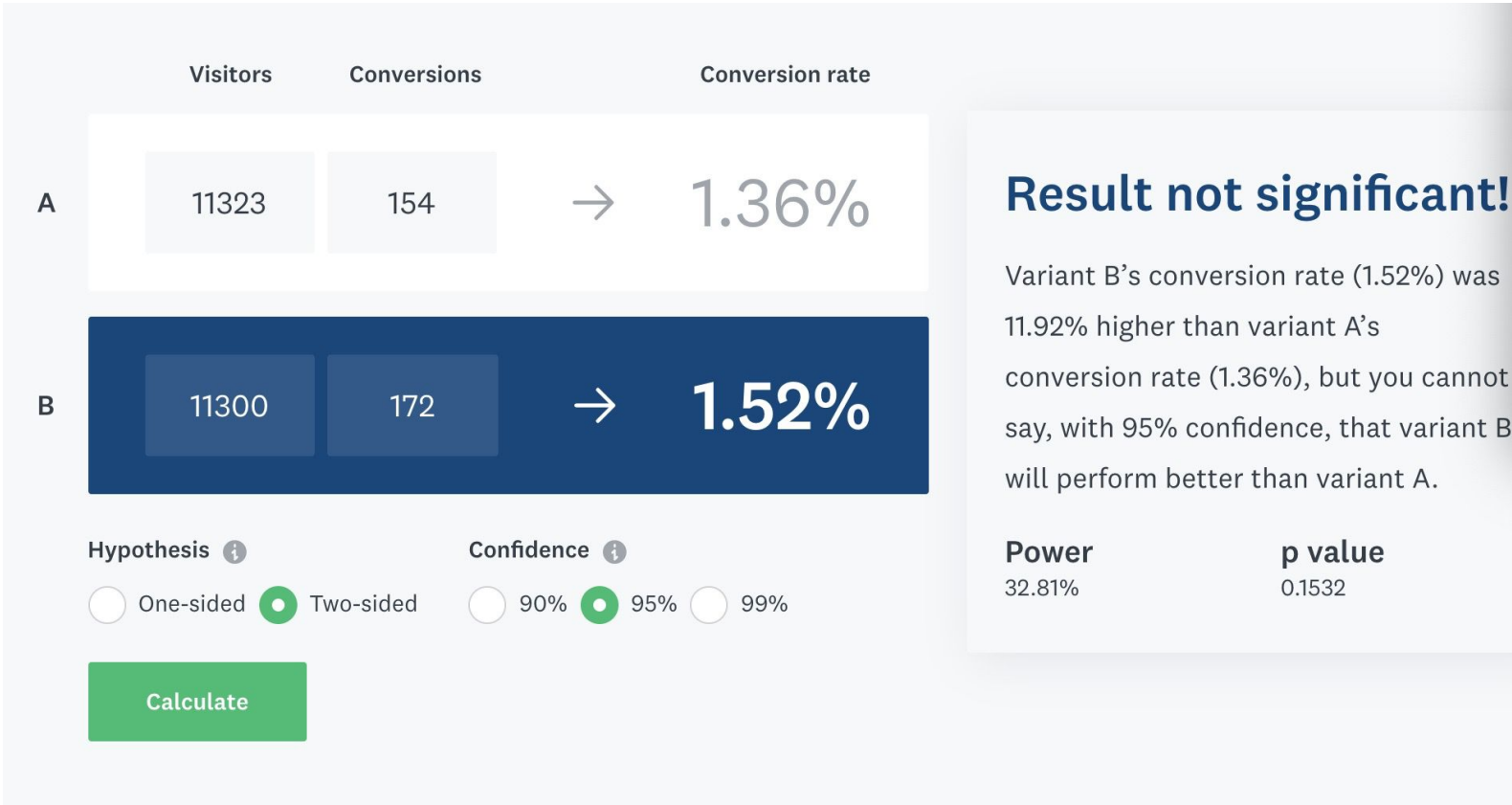
Determine if there was a significant difference between the experiments and control states.

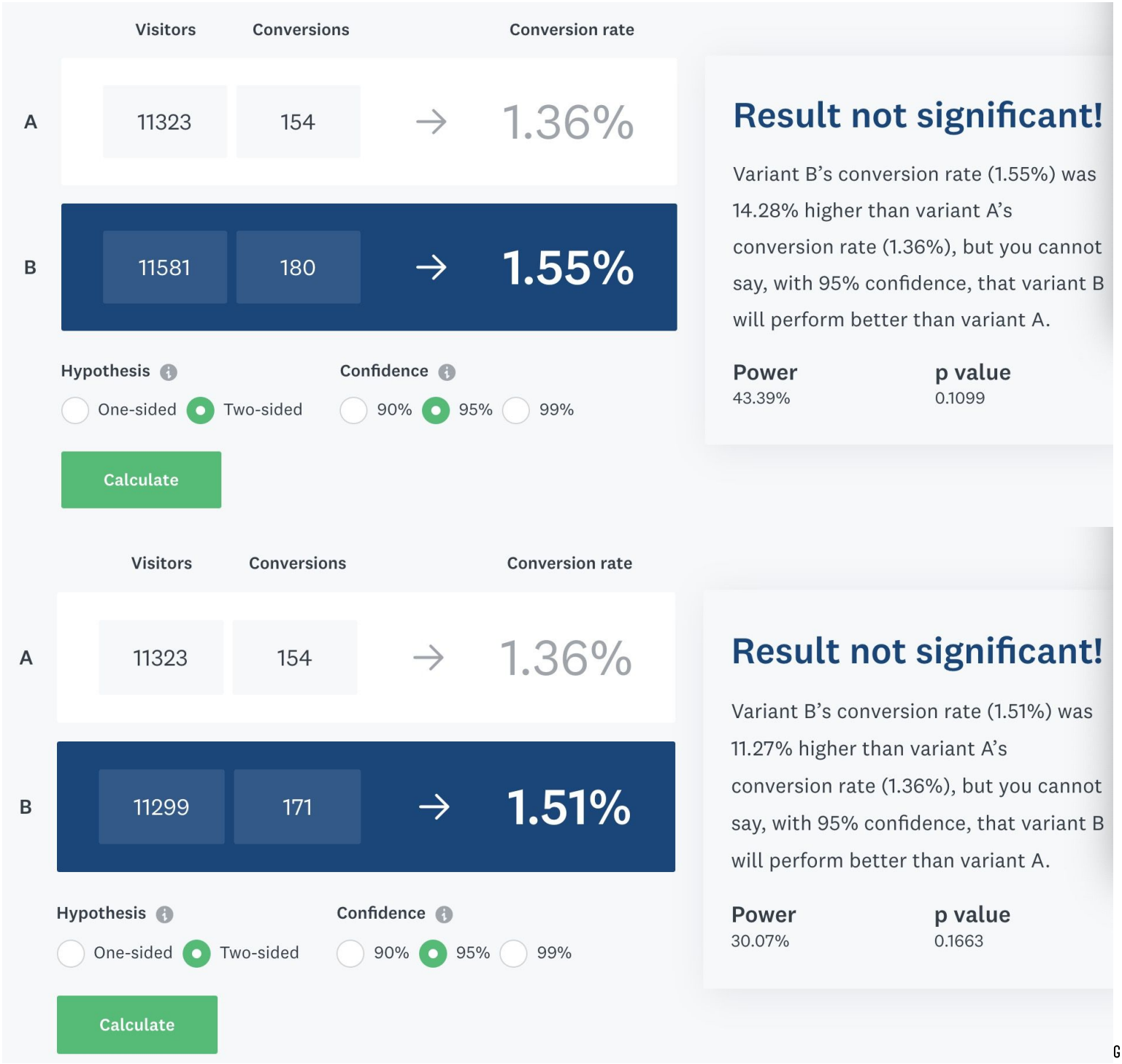
- In the analysis, I pick one variable to test: search for a ride.The goal is Number of searches that translate into confirming a ride (Begin Ride)
- The test split users into 4 groups: Control, Experiment 1, Experiment 2, abd Experiment 3.
- The significant level for the experiment is 95%.
- The detailed test result and P-value are listed in the next slides.
- Conclusion: Based on my statistical significance calculations, the results for all three experiments are not significant. Thus I do not recommend expand any experiments.

Multivariate Test Results: Significance Test

Search vs. Begin Ride

Experiment Gr..	Event Type: begin_ride	Event Type: search
control	154	11,323
experiment_1	172	11,300
experiment_2	180	11,581
experiment_3	171	11,299




Visitors
Conversions
Conversion rate
A
11323
154
1.36%
B
11581
180
1.55%
Hypothesis
One-sided
Two-sided
Confidence
90%
95%
99%
Calculate
Result not significant!
Variant B's conversion rate (1.55%) was 14.28% higher than variant A's conversion rate (1.36%), but you cannot say, with 95% confidence, that variant B will perform better than variant A.
Power
43.39%
p value
0.1099
Visitors
Conversions
Conversion rate
A
11323
154
1.36%
B
11299
171
1.51%
Hypothesis
One-sided
Two-sided
Confidence
90%
95%
99%
Calculate
Result not significant!
Variant B's conversion rate (1.51%) was 11.27% higher than variant A's conversion rate (1.36%), but you cannot say, with 95% confidence, that variant B will perform better than variant A.
Power
30.07%
p value
0.1663

Step 2

Funnel & Cohort Analyses

User Funnel

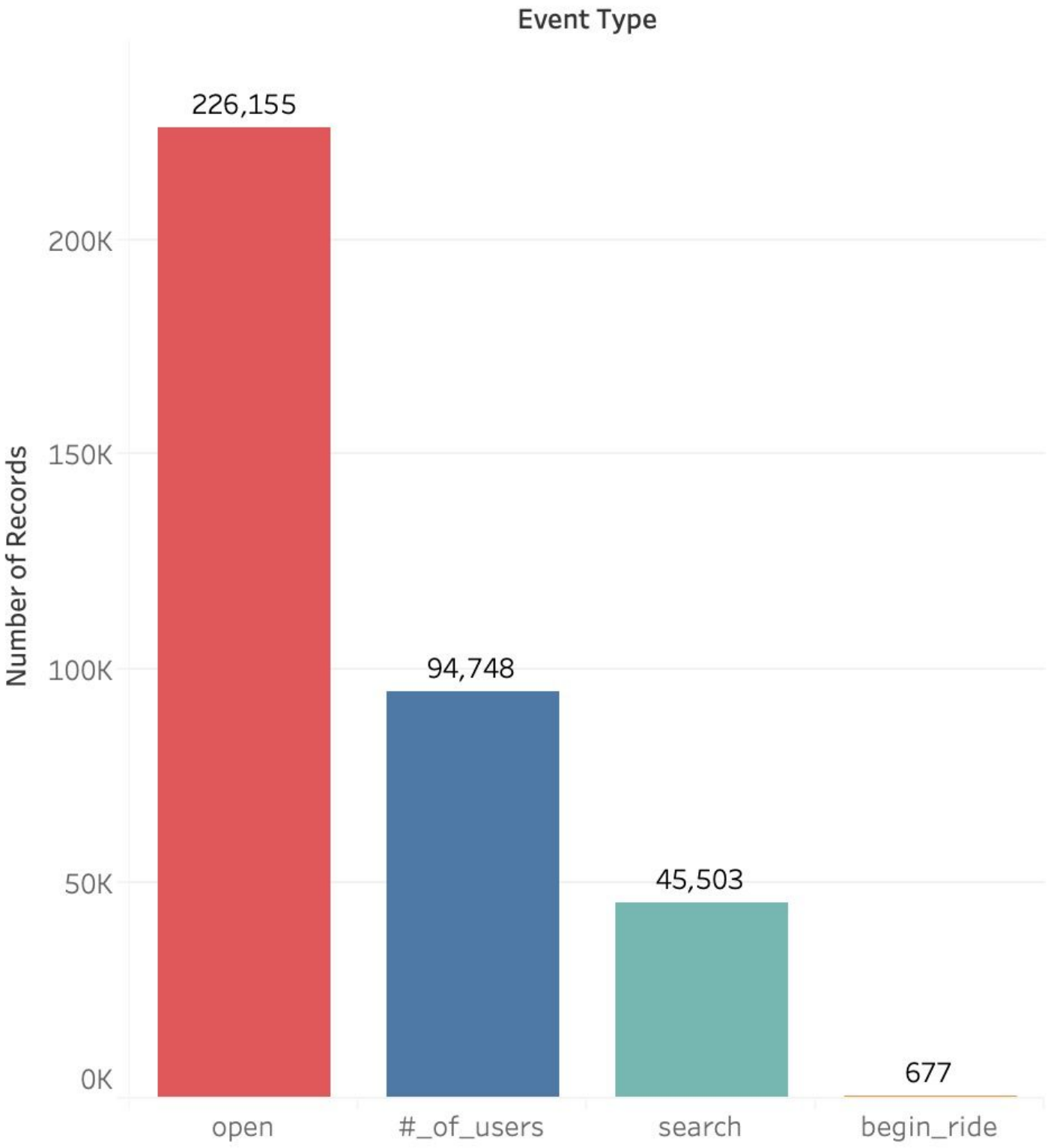
Identifying the different stages the user funnel

- The Stages in the Funnel are :

  Open, Enter # of Users, Search, Begin Ride

- Please see next slides for Graphs Details

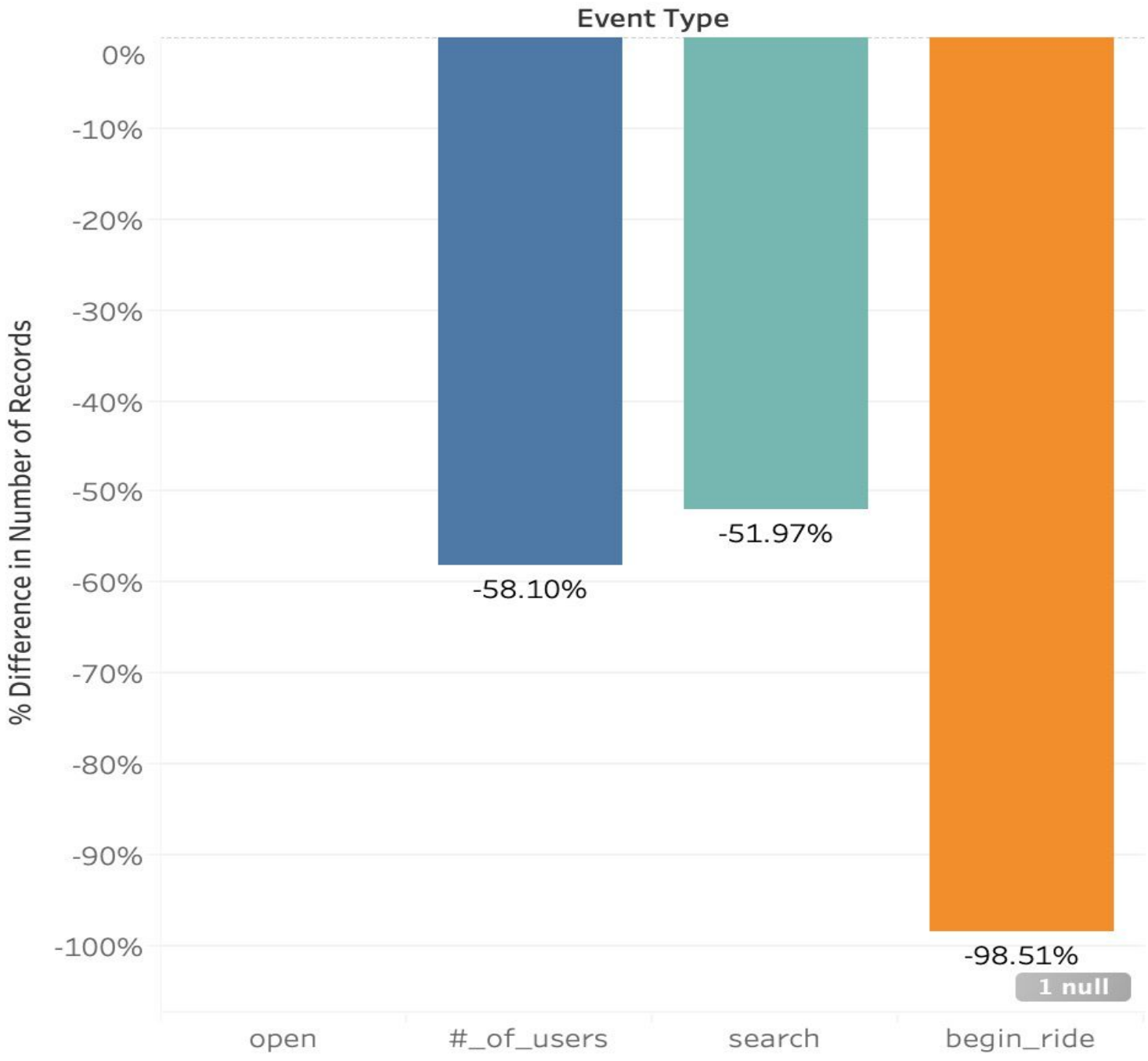
User Funnel


Event Type
Number of Records
200K
150K
100K
50K
0K
226,155
94,748
45,503
677
open
#_of_users
search
begin_ride

User Funnel

Event Type	Number of Records	% Difference in Number of Records from the Previous along Event Type
open	226,155	
#_of_users	94,748	-58.10%
search	45,503	-51.97%
begin_ride	677	-98.51%

Drop Off rate in Each Step



User Segments

- Identify 2 demographic attributes present in the data that allow for segment analysis
- For each demographic attribute, provide the number of users in each segment group
- For each demographic attribute, identify the segment group with the largest number of users

User Segments - Age

We took a look at the Drop off rate at each stage for different Age group. We can see the largest cohort group is users with age 50+. But at the meantime, this group of users experienced highest drop off rate from Open stage to the next stage, and has the smallest overall conversion rate. We did not see significant discrepancy in other Age groups.

Drop Off rate By Age

	Age			
Event Type	18-29	30-39	40-49	50+
open				
#_of_users	-58.02%	-58.36%	-58.11%	-58.08%
search	-35.75%	-36.49%	-35.97%	-67.87%
begin_ride	-98.62%	-98.34%	-98.30%	-98.72%

Total Records By Age

	Age			
Event Type	18-29	30-39	40-49	50+
open	33,878	22,760	56,256	113,261
#_of_users	14,222	9,477	23,566	47,483
search	9,138	6,019	15,090	15,256
begin_ride	126	100	256	195

User Segments - Neighbor

We took a look at the Drop off rate at each stage for Neighborhoods. We can see the largest cohort group is users in Manhattan. And we did not see significant differences in Drop Off rate among neighborhoods.

Drop Off rate By Neighborhood

	User Neighborhood				
Event Type	Bronx	Brooklyn	Manhattan	Queens	Staten Island
open					
#_of_users	-58.79%	-58.19%	-58.03%	-58.58%	-57.80%
search	-51.85%	-52.24%	-51.94%	-51.23%	-52.67%
begin_ride	-98.27%	-98.52%	-98.52%	-98.63%	-98.39%

Total Records By Neighborhood

	User Neighborhood				
Event Type	Bronx	Brooklyn	Manhattan	Queens	Staten Island
open	6,693	45,583	158,366	11,172	4,341
#_of_users	2,758	19,059	66,471	4,628	1,832
search	1,328	9,103	31,948	2,257	867
begin_ride	23	135	474	31	14

Segment Analysis of Funnel

Identify Opportunities for Improvement

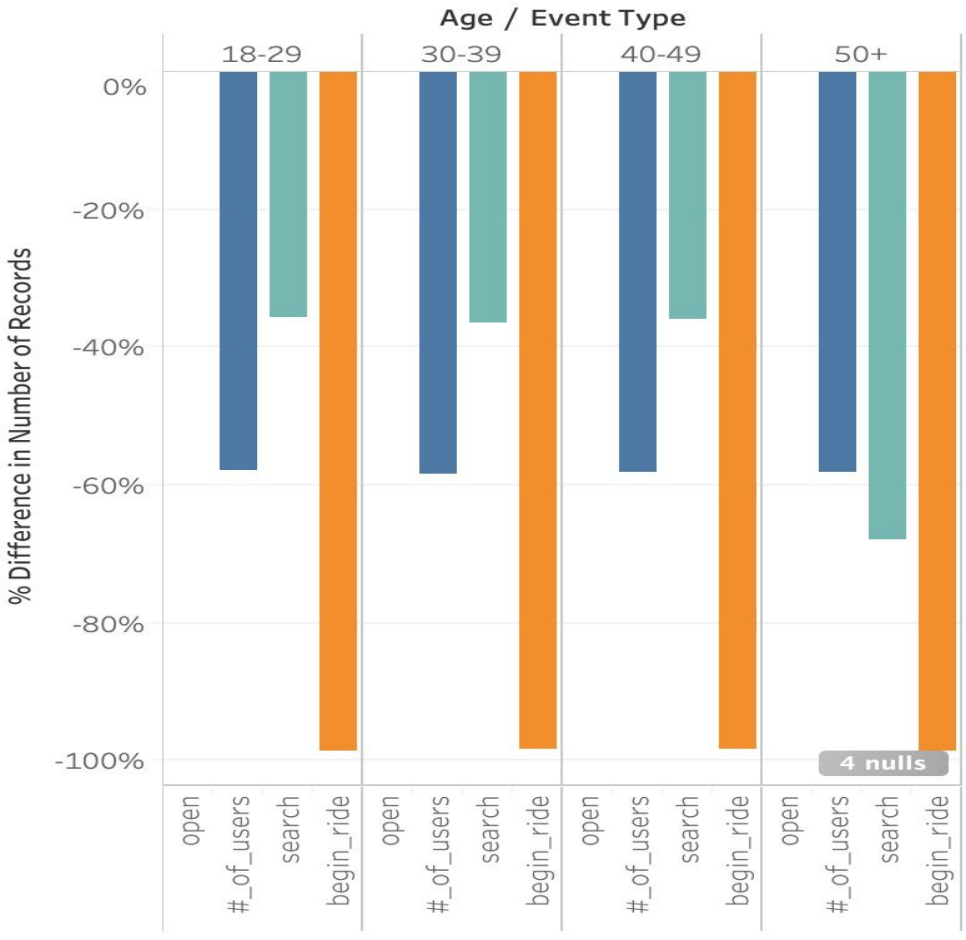
- Perform a funnel analysis by segment for all identified demographic attributes and describe the results
- If underperformance for a segment in an attribute is identified, add a visual showing the average funnel conversion by segment group for that demographic

Segment Analysis of Funnel

Identify Opportunities for Improvement

- The table showed that for age 50+, there is a larger drop off rate in Search stages than for other age groups.
- Considering age 50+ also is the largest cohort group, I think we there exists opportunities for our service. Thus I think we should conduct experiments on Search Stages, to find out how can we improve the activation rate in this stage.

Drop Off rate By Age



Step 3

Hypothesis & Next Steps

Review Qualitative Data

- The user interview shows that for user with age 50+, one of the main concern in that the App is not user-friendly to them. They have to use the Flyber service with others' assistance and they don't want to bother with App.
- Evidence:

  User Robbie Gates (age 67):

  "Honestly, I thought about using Flyber to suprise my grandson or granddaughter with a visit to one of their sporting games. Luckily my daughter was around to help me book the ride. I usually just use Uber because it remembers my addresses and has all my favorite places saved, so I guess I always just open that up since it is so convenient and saves me time. Though now that I say that, I really should use Flyber again since it would save more time when it comes to fighting traffic!"

  (See next slides for more)

Review Qualitative Data

- User Louis Jones (age 70)

  “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.”

- User Charlie Johnson (age 75):

  “I call up our local pilot, Bob. He's not always available but I don't need to fiddle around with an app and hitting tiny buttons. He knows where I tend to be and where I want to go.”

Suggested Features & Experimentation Plan

- We believe the large drop off rate we observed in the Search stage for users with age 50+ is because the app is not very user-friendly for them.(For example, the instruction is too complicated and letters are difficult to read.) And by improve the user experience for the app service for users with age 50+, we will see drop off rate decrease to 36.0% from 67.9% in the search stage.
- 1. We can add Voice Input function in the app.
- 2. We can add Large font size version in the app.
- We should create unbiased control and test groups by randomly assigned new users with age 50+.

For feature 1:

Control Group: Same as Before

Experiment Group: Add Voice Input on Search column..

And we should track whenever the feature was used, and total clicks on each Stage.

(See next slides for feature 2)

Suggested Features & Experimentation Plan

For feature 2:

Control Group: Same as Before

Experiment Group: Add the Large Font size version in the app.

We should track for how many time Large Font size version used in the group and in which step being used.Total clicks for each step.

- The target users are new users with age 50+. And we measure our results of each stage only for users with age 50+, record their experiment group and usage of new feature. (Add voice input)

Metrics:

1. How many times new features was implemented and in which stage. (Whenever new features triggered.)
2. Event type for each user sessions;
3. How many time the users spent on the Search Step.
4. Customers' rating for the app.

Appendix

Raw Data

Additional Info

Drop Off rate by Day

	Event Time							
Event Type	5	6	7	8	9	10	11	12
open								
#_of_users	-58.51%	-58.12%	-58.16%	-57.99%	-58.03%	-57.93%	-57.96%	-58.55%
search	-52.95%	-52.00%	-51.61%	-51.77%	-52.43%	-51.15%	-51.96%	-52.87%
begin_ride	-98.41%	-98.54%	-98.21%	-98.51%	-98.80%	-98.69%	-98.36%	-98.53%