

**OLEKSIY DANILIN, Business Analyst** 

CUSTOMER SEGMENTATION FOR THE REWARDS PROGRAM:

Data Analysis and Feature Engineering

May 2024

**Prepared for:** 





### PROJECT GOALS AND WORKFLOW

PROJECT GOALS

- ✓ Improve customer retention policy
- ✓ Identify distinct customer segments within Traveltide's user base
- ✓ Align these segments with tailored travel perks in Traveltide's rewards program
- ✓ Establish foundations for designing future rewards programs

DATA COLLECTION

- ✓ Defining a user cohort
- ✓ ETL (SQL, Excel, Tableau)

FEATURE ENGINEERING

- ✓ Initial exploratory data analysis (SQL, Tableau)
- ✓ Development and calculation of metrics: feature extraction and transformation (SQL)
- ✓ DEVELOPMENT AND CALCULATION OF INDICES (Excel)
- ✓ DEVELOPMENT OF SEGMENTATION MODEL (Excel)
- ✓ DEVELOPMENT OF INTERACTIVE DASHBOARDS (Tableau)

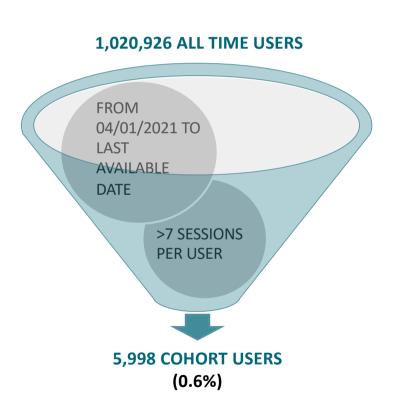
DELIVERY & COMMUNICATION

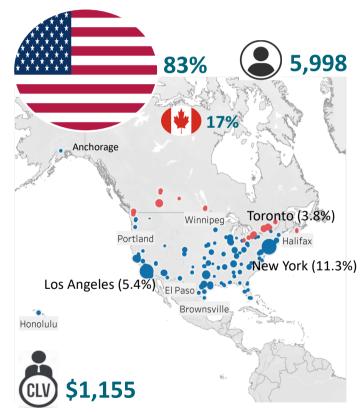
- ✓ EXECUTIVE SUMMARY (.pdf)
- ✓ REPORT (.pdf)
- ✓ PRESENTATION (.pdf)
- ✓ DATASET & SEGMENTATION MODEL (.xls)
- ✓ 7 INTERACTIVE TABLEAU DASHBOARDS



### USER COHORT DEFINITION AND GEOGRAPHIC DISTRIBUTION

### A SMALL AND RATHER NON-REPRESENTATIVE COHORT, UNEVENLY DISTRIBUTED BETWEEN THE USA AND CANADA





May 2024



# At the first stage of feature engineering, no principal differences in the customer behavioral patterns between the US and Canada were found

#### **KEY FEATURE ENGINEERING INPUT METRICS**

#### **DEMOGRAPHY**

- ✓ AVERAGE AGE: 40.8
- ✓ FEMALE: 88%
- ✓ MARRIED: 44%
- ✓ HAS CHILDREN: 33%

### **BROWSING, CONVERSION, VALUE**

- ✓ AVERAGE # OF SESSIONS: 8.2
- ✓ AVERAGE SESSION DURATION: 3.1
- ✓ AVERAGE # OF CLICKS: 14
- CONVERSION RATE (BOOKINGS AS % OF SESSIONS): 36.9%
- ✓ CUSTOMER LIFETIME VALUE: \$1.155

### **BOOKING PATTERNS**

- ✓ AVERAGE # OF BOOKINGS: 2.8
- ✓ COMBINED BOOKING, SHARE: 75%
- ✓ AVERAGE FLIGHT COST: \$538.5
- ✓ AVERAGE HOTEL COST: \$178.3
- ✓ AVERAGE HOTEL STAY: 3.9 days
- ✓ CANCELLATION RATE: 3.6%

### TRAVEL PATTERNS

- ✓ RETURN FLIGHTS: 96%
- ✓ DOMESTIC FLIGHTS, SHARE (US): 77%
- ✓ DOMESTIC FLIGHTS, SHARE (CA): 18%
- ✓ INTERNATIONAL TRAVEL OUTSIDE NORTH AMERICA: only 3% of flights

AS A RESULT OF COUNTRY PROFILES' SIMILARITY, WE DECIDED NOT TO PROCEED WITH CREATING TWO SEPARATE SEGMENTATION MODELS



### **AVERAGE USER'S PROFILE**

- A single woman of 40.9 years with no children who made 2.8 bookings within the study time, 75% of which are combined.
- Generated CLV of US\$ 1,146 within the study period.
- Prefers to travel <u>alone</u>, mostly within the US (<u>77</u>% of flights), to Canada (<u>20</u>%), and other countries (<u>3</u>%).
- Flights are mostly returned (<u>96</u>%), with the average cost standing at US\$ <u>540</u>.
- The hotel cost stands at US\$ <u>178</u> per night, with <u>3.9</u> nights of stay on average.

### (\*)

### AVERAGE USER'S PROFILE

- A single woman of 40.1 years with 60 children who made 2.9 bookings within the study time, 76% of which are combined.
- Generated CLV of US\$ 1,202 within the study period.
- Prefers to travel <u>alone</u>, mostly to the US (<u>79</u>% of flights), inside Canada (<u>18</u>%), and to other countries (<u>3</u>%).
- Flights are mostly returned (<u>95</u>%), with the average cost standing at US\$ <u>530</u>.
- The hotel cost stands at US\$ <u>179</u> per night, with <u>3.8</u> nights of stay on average.

May 2024



# BABY BOOMERS (60-74 YEARS) EXHIBIT THE HIGHEST BROWSING ACTIVITY, BUT THIS ENGAGEMENT DOES NOT TRANSLATE INTO THE HIGHEST BOOKING ACTIVITY OR CLV

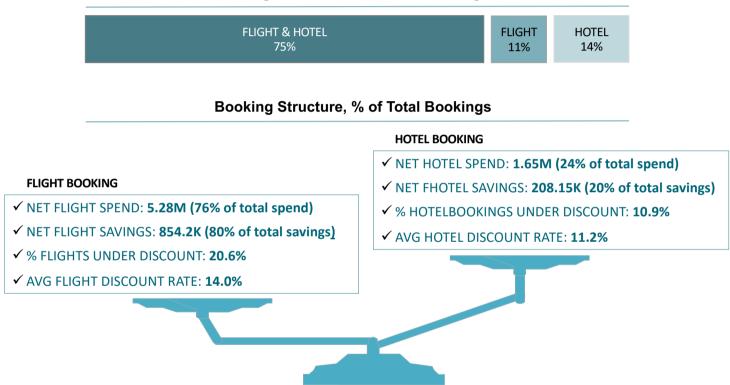


IN THE AGE GROUP SPLIT, BROWSING INTENSITY HAS NO DIRECT IMPACT EITHER ON CONVERSION RATE OR CUSTOMER VALUE GENERATION.



# FLIGHT BOOKING IS A MAJOR CONTRIBUTOR TO TRAVELTIDE'S BUSINESS, INCLUDING THE CASE OF COMBINED FLIGHT & HOTEL BOOKING

### **Booking Structure, % of Total Bookings**



BESIDES UNEQUAL REVENUE SHARE, FLIGHT AND HOTEL BOOKING DEMONSTRATE DIFFERENT CUSTOMER BEHAVIOUR PATTERNS (INCL. DISCOUNTING AND DEAL HUNTING) AND SHOULD THEREFORE BE ANALYZED SEPARATELY

May 2024

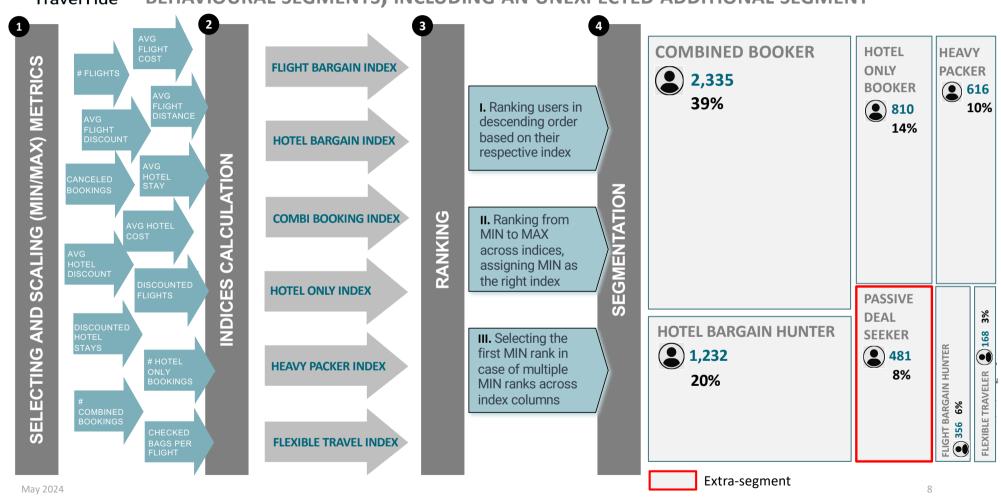


# TO MATCH THE REQUESTED PERKS, A FRAMEWORK OF SIX HYPOTHETICAL SEGMENTS WAS DEVELOPED, INCLUDING INDEX FORMULAE TO CALCULATE THEM

RECOMMENDED PERK	POTENTIAL SEGMEN	T KEY FEATURES	INDICES
FLIGHT EXCLUSIVE DEAL	FLIGHT BARGAIN HUNTER	<ul><li> High # of discounted flights</li><li> Higher than average savings per flight distance</li><li> Combined bookings prevail</li></ul>	AVG FLIGHT DISCOUNT RATE (SCALED)  **SFLIGHTS UNDER AVG FLIGHT SAVINGS PER 100 MILES (SCALED)
HOTEL EXCLUSIVE DEAL	HOTEL BARGAIN HUNTER	<ul> <li>High # of discounted hotel stays</li> <li>Higher than average savings per night of stay</li> <li>Combined and hotel only bookings prevail</li> </ul>	AVG HOTEL DISCOUNT RATE (SCALED)  **STAYS UNDER DISCOUNT X SAVINGS PER 1 NIGHT (SCALED)
FREE HOTEL MEAL	HOTEL ONLY BOOKER	<ul> <li>High # of discounted hotel stays</li> <li>Longer than average duration of hotel stays (6+ nights)</li> <li>Hotel only bookings prevail</li> </ul>	HIGHER THAN AVERAGE % OF HOTEL ONLY BOOKINGS IN BOOKING PORTFOLIO (SCALED)
ONE NIGHT FREE HOTEL NIGHT WITH FLIGHT	COMBINED BOOKER	<ul><li> High # of discounted flights</li><li> Low # of discounted hotel stays</li><li> Combined bookings prevail</li></ul>	HIGHER THAN AVERAGE % OF HOTEL ONLY BOOKINGS IN BOOKING PORTFOLIO (SCALED)
FREE CHECKED BAG	HEAVY PACKER	<ul> <li>Higher than average # of checked bags, flight seats, and hotel rooms (incl. potential group travelers)</li> <li>Combined and flight only bookings prevail</li> </ul>	HIGHER THAN AVERAGE # CHECKED BAGS PER USER PER FLIGHT
NO CANCELLATION FEES  May 2024	FLEXIBLE TRAVELLER	<ul> <li>Higher than average % of cancelled bookings in total booking portfolio</li> <li>All types of bookings</li> </ul>	HIGHER THAN AVERAGE % CANCELLED BOOKINGS IN BOOKING PORTFOLIO

## TravelTide

# SCALING KEY METRICS AND CALCULATING SIX INDICES RESULTED IN SEVEN UNEVEN BEHAVIOURAL SEGMENTS, INCLUDING AN UNEXPECTED ADDITIONAL SEGMENT





# ACROSS THE ESTABLISHED BEHAVIOURAL SEGMENTS, BROWSING INTENSITY DOES NOT CLOSELY CORRELATE EITHER WITH CONVERSION OR VALUE CREATION



BROWSING ACTIVITY IN GENERAL AND # OF SESSIONS IN PARTICULAR ARE NOT THE BEST CRITERIA FOR DEFINING A REPRESENTATIVE USER COHORT



# CONCLUSIONS AND RECOMMENDATIONS: FINDINGS AND NEXT STEPS



## IMPROVE USER SELECTION CRITERIA AND FEATURE ENGINEERING

- Sessions shouldn't define reward program audience: Browsing doesn't always lead to conversion, risking the exclusion of high CLV users with <8 sessions.</p>
- Refine segments: Ensure that the selection is representative and random



## EXCLUDE (BUT NOT IGNORE) PASSIVE DEAL SEEKERS

- ➤ Identified a segment of Passive Deal Seekers: Users who browse but don't book, thus not converting nor adding value
- Exclude them from rewards but develop a separate incentive: Offer "Exclusive discount on first booking" to encourage conversion.

### **RECOMMENDATIONS**



## INTEGRATE A/B TESTING INTO THE CAMPAIN

- Run A/B tests to validate each targeted perk's effectiveness.
- Measure success with metrics like conversion rate and customer value.



### PROCEED WITH DEVELOPING A SUPERVISED MACHINE LEARNING MODEL

- ML model (an automated recommendation system) could be an option, to be refined with new data from the trial reward campaign
- Benefits: not only enhanced targeted marketing, but also better customer insights, improved retention and resource allocation.



### THANK YOU FOR YOUR ATTENTION!

## QUESTIONS?



**COMMENTS?** 

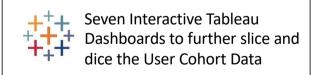
## PROPOSALS?



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### **CLICK HERE:**



https://public.tableau.com/app/profile/oleksiy.danilin/viz/Travel\_Tide\_Dashboards/USERCOHORTDEMOGRAPHY

### **CLICK HERE:**



All the project's deliverables, incl. report, dataset/model, dashboards and SQL code

https://github.com/oleksiy-danilin/TravelTide