TravelTide-Mastery-Project (Detailed Report)

This project is about TravelTide customer data, that has to be segmented according to business needs and deliver data-driven recommendations based on your findings.

Introduction

E-booking startup TravelTide is a new player in the online travel industry. Certain aspects of the TravelTide customer experience are underdeveloped, resulting in poor customer retention. Now a marketing campaign should be designed and executed with a personalized rewards program that keeps customers returning to the TravelTide platform. 5 different perks have to be assigned to customers:

- Free hotel meal
- free checked bag
- no cancellation fees
- exclusive discounts
- 1 night free hotel with flight

Planning

The data provided by TravelTide:

	flights	hotels	sessions	users
key	trip_id	trip_id	session_id	user_id
dim/fact	fact	fact	fact	dim
#columns	1.901.038	1.918.617	5.408.063	1.020.926
#rows	13	7	13	11

Users: contains data about users of TravelTide, e.g. demographic data
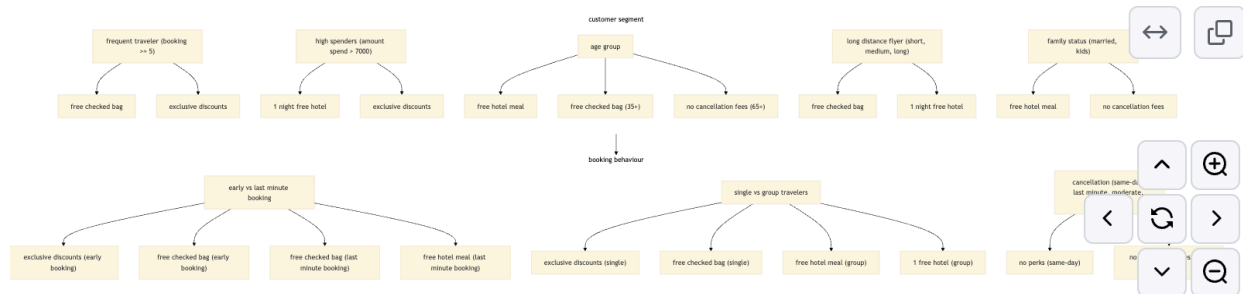**Sessions:** session details, e.g. clicks, sessionID, booking and cancellation information
Flights: flight data, e.g. departure / arrival date, home / destination airport, bags checked in
Hotels: hotel data, e.g. name and location of the hotel, check-in/check-out date, number of rooms, etc.

Workflow for assigning an individualized perks

1. Identification of active users Users with more than 7 sessions since January 4, 2023
Reduction of user data from more than 5 million to 5998

2. Data exploration and finding groups which can be assigned for a perk
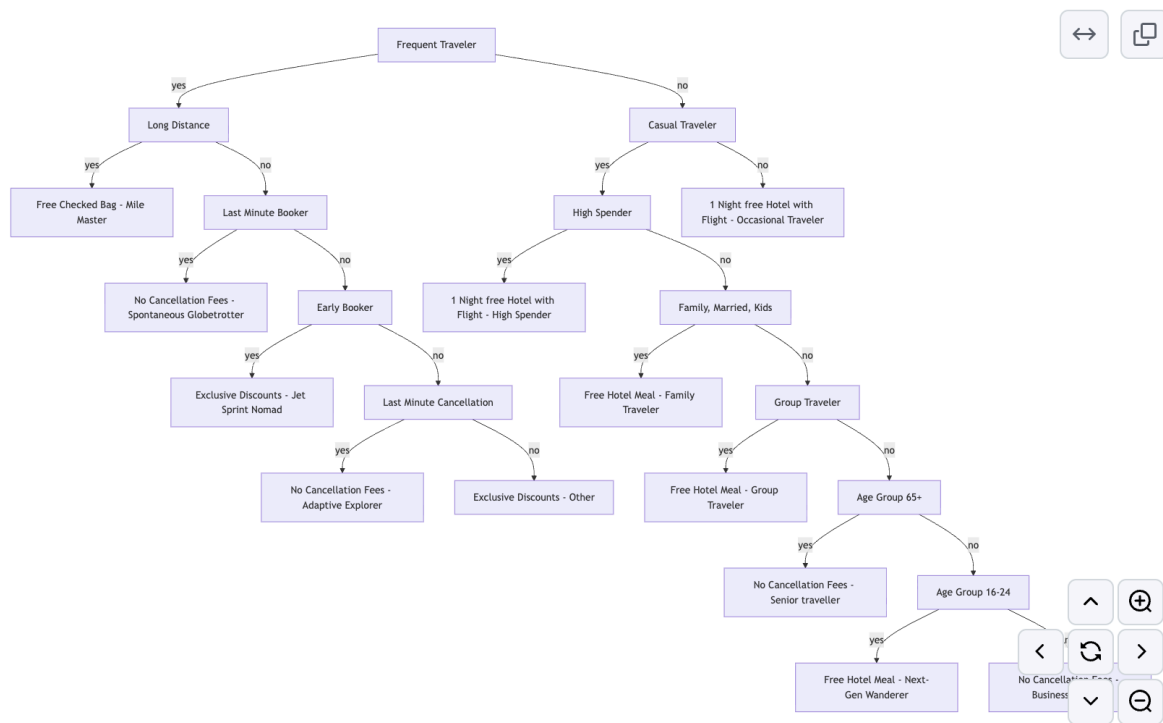

Rule Set for User Group Creation

Segment	Characteristic
Age Group	16-24, 25-34, 35-44, 45-54, 55-64, 65+
Travel Frequency	frequent traveler (>= 5 bookings), casual traveler (2-4 bookings), low-frequent traveller (1 booking)
Spend	High spender (total cost > 7000 USD
Flight Distance	short-haul-flyer (avg < 500 miles), medium-haul-flyer (avg 500-2500 miles), long-haul-flyer (avg > 2500 miles)
Booking Time	Last minute booker (< 7 days), Early booker (7-60 days), Moderate early booker (60-180 days), Super early booker (> 180 days)
Cancellation	Same-Day Cancellers, Last-Minute Cancellers (1-7 days), Moderate Cancellers (8-30 days), Early Cancellers (30+ days), No Cancellation
Travel Party	Solo traveler, Family/Group traveler, Solo and group traveler
Family	married, children, not married, children, married, no children, not married, no children

3. Additional Calculations and data changes
- re-calculation of the nights spent in a hotel without taking into consideration the time NULL values only for cancellation sessions and hotel_booked = false
- age: calculated base on birthdate and session_end
- time_since_signup: calculated as difference between sign_up_date and session_end
- duration_stay: calculated in hours either from return_time and departure_time or check_in_time and check_out_time
- add cancellation data to appropriate session_id

- avg_days_to_cancellation using session_end of cancelled session and session_start
- avg_session_duration: difference of session_end and session_start
- cost_flight: using base_fare_usd taking into consideration seats and flight_discount_amount
- cost_hotel: using hotel_per_room_usd taking into consideration nights and hotel_discount_amount
- avg_days_to_travel: difference of flight departure ot hotel check_in and session_end
- travel_party: 100 --> group/family 1 --> solo
- avg_distance_miles using longitude and latitude information of home and destination airport and applying the Haversine formula

4. Decision Tree and Customer Group Assignment

 5. Segmentation of customers into groups

After analysis: 10 groups have been built. "Others" include all travelers who could not be assigned to a specific group Metrics used for building the groups: session behaviour, trip behaviour, demographics

6. Perk Assignment

Customer Group	Perk	Why It Matters
Mile Master (Long distance, frequent flyer)	Free Checked Bag	Encourages ongoing loyalty and reduces booking friction.
High Spenders (> 7000 USD on total trips)	Hotel Nights with Flight	Reinforces a premium experience without appearing cheap
Spontaneous Globetrotter (Frequent Flyer, Last-Minute Booker)	No Cancellation Fees	Provides flexibility for spontaneous travelers
Jet Sprint Nomad (Frequent Flyer, Early Booker)	Exclusive Discounts	Inzentivizes advance planning
Group Traveler	Free Meals, Group Discounts	Larger groups appreciate accomodation perks
Family Traveler (Traveler has Children)	Free Meals, Group Discounts	Helps with family budgeting and convenience
Senior Traveler (age >=65)	No Cancellation Fees	Older travelers value flexibility
Adaptive Explorer (Frequent Flyer, Last-Minute Cancellations)	No Cancellation Fees	Supports Flexibility
Next-Gen Wanderer (age 16-24)	Free Hotel Meal	Young Travelers are Price Sensitive
Business Traveler (Middle-Aged, Solo Traveler)	No Cancellation Fees	Business travelers value flexibility