DS Mastery Project

TravelTide: Retain & Reward

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Company Profile & Project Presentation

About TravelTide
AI-powered travel platform for personalized trip planning.

Main strength
Very attractive due to a large inventory and powerful search

Biggest challenge
Customer retention

Project goal
Design a personalized rewards program through customer segmentation to increase customer retention

Analysis Workflow

Initial raw data
Session dataset containing ~5.4M records

Data filtering
Kept only sessions **after 01/01/2023** (Final working dataset: ~49K records)

Data cleaning
Performed feature engineering (e.g. user age, trip duration, trip distance,...)

Exploratory Data Analysis (EDA)
1) **EDA at session level**
2) Aggregated sessions at user level (~6K users)
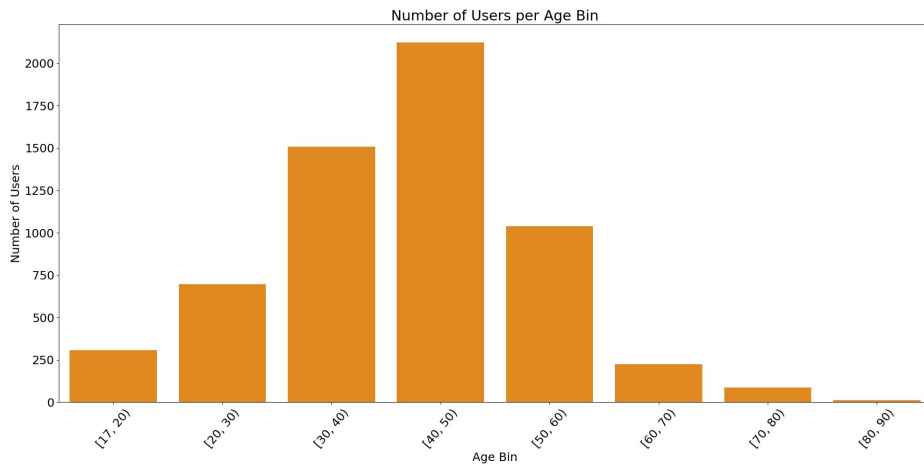3) **EDA at user level**

User segmentations
1) Booking and Travel Behaviour segmentation (based on trip duration, booking timing, and engagement)
2) RFM segmentation (recency, frequency, and spending level)

Final outcome
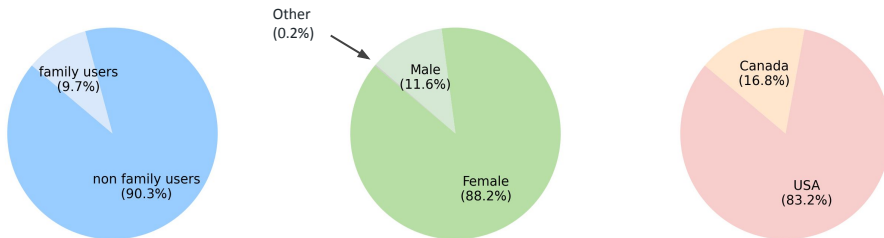Combined both segmentations to assign relevant perks

Getting to Know Our Customers
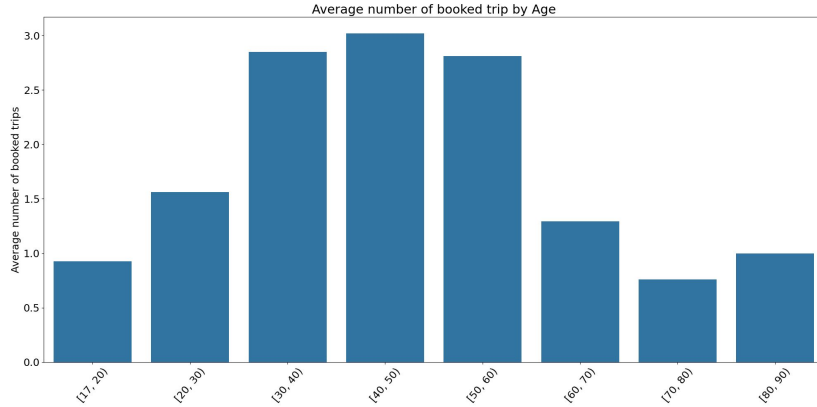
Number of Users per Age Bin

Customer Profile Highlights

- Majority aged 30–60, peak 40–50
- Mostly non-family travelers
- Predominantly female
- Mainly from the USA

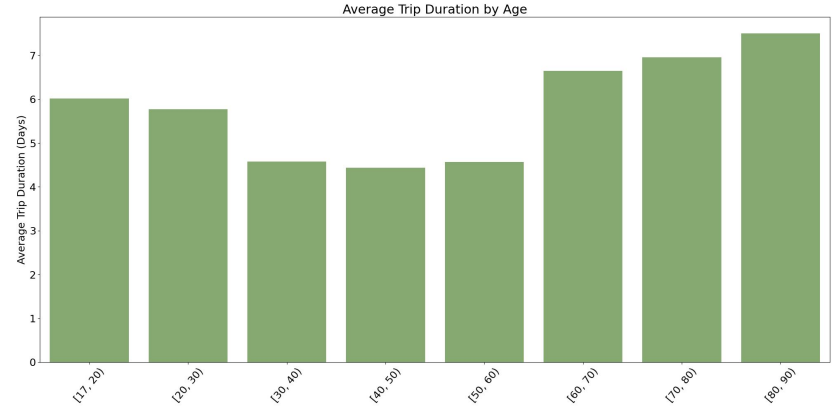(A family user is someone who travels with children at least once every 3 trips)

Notable Trends in User Booking Behavior

Average number of booked trip by Age

Average Trip Duration by Age

- Users < 30 and 60+ make fewer bookings on average.

- Users aged 30–60 have more frequent bookings.

- Older users (60+) tend to take slightly longer trips.

- Trips in the 30–60 age group are slightly shorter on average.
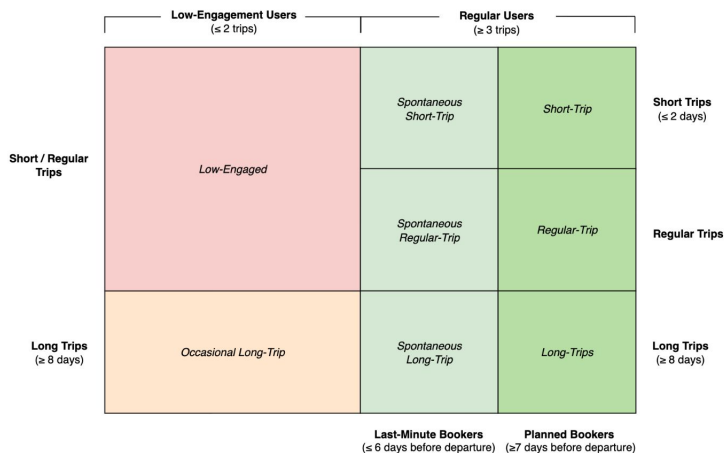
Notable Trends in User Booking Behavior

Average Distance from home by Booking Status

Average Duration (days) by Booking Status
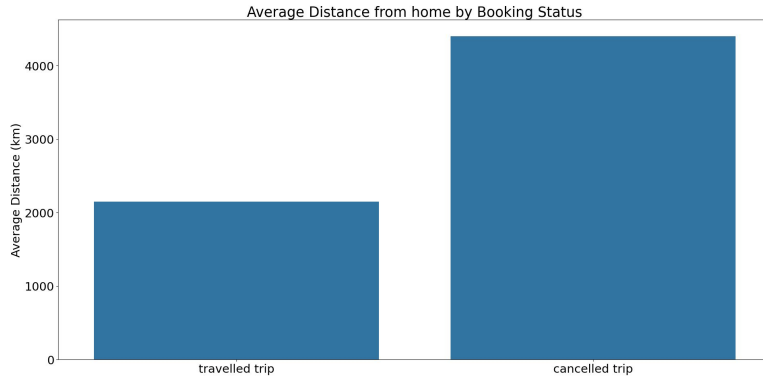
- Canceled trips tend to be longer in distance.

- Canceled trips tend to be longer in duration.
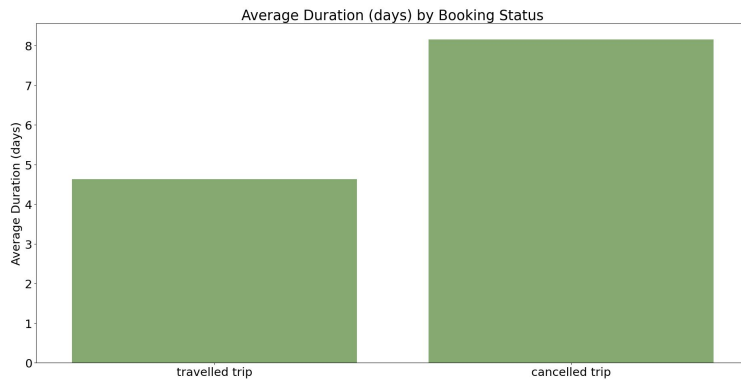
Segmentation: Criteria

Booking and travel behaviour Segmentation

1) **Divide based on the engagement:**
   a) Low-Engagement (≤ 2 trips)
   b) Regular Users (≥ 3 trips)

2) **Split Regular users into**
   a) Last Minute Bookers (≤ 6 days before departure, on average)
   b) Planned Bookers (≥ 7 days before departure, on average)

3) **Split regular users based on average trip length:**
   a) Short-Trip (≤ 2 days)
   b) Long-Trip (≥ 8 days)
   c) Regular-Trip

4) **Split Low-Engagement users based on average trip length:**
   a) Long-Trip (≥ 8 days)
   b) Short/Regular Trips

1) **Calculate R, F and M scores for each user**

2) **Assign "low" / "high" labels**
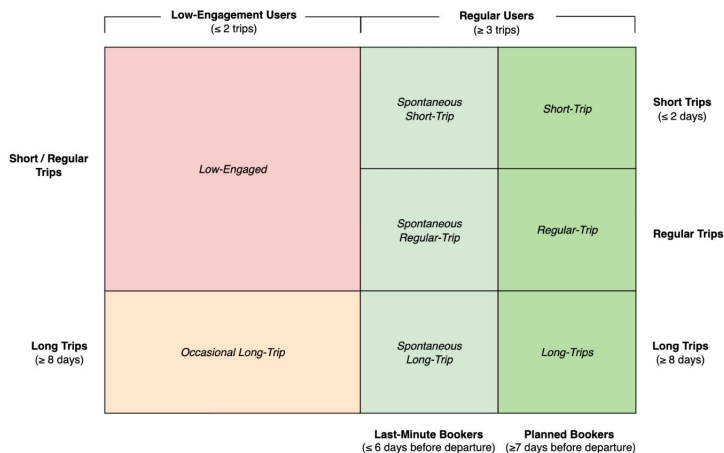
3) **Split the users in 8 segments**

RFM Segmentation

Segmentation: Criteria

Booking and travel behaviour Segmentation

	Low-Engagement Users (≤ 2 trips)	Regular Users (≥ 3 trips)	
Short / Regular Trips	Low-Engaged	*Spontaneous Short-Trip*	*Short-Trip*	**Short Trips** (≤ 2 days)
		Spontaneous Regular-Trip	*Regular-Trip*	**Regular Trips**
Long Trips (≥ 8 days)	*Occasional Long-Trip*	*Spontaneous Long-Trip*	*Long-Trips*	**Long Trips** (≥ 8 days)

Last-Minute Bookers (≤ 6 days before departure)　　**Planned Bookers** (≥7 days before departure)
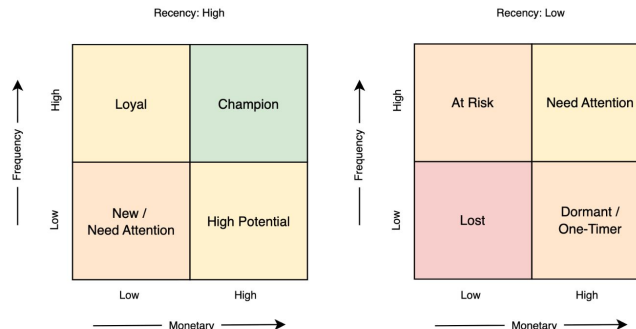
Both segmentations are applied simultaneously.

Each user is defined by a combination of RFM and "booking and travel behaviour"

RFM Segmentation

Recency: High

	Low	High
High	Loyal	Champion
Low	New / Need Attention	High Potential

Frequency ↑　　　Monetary →

Recency: Low

	Low	High
High	At Risk	Need Attention
Low	Lost	Dormant / One-Timer

Frequency ↑　　　Monetary →
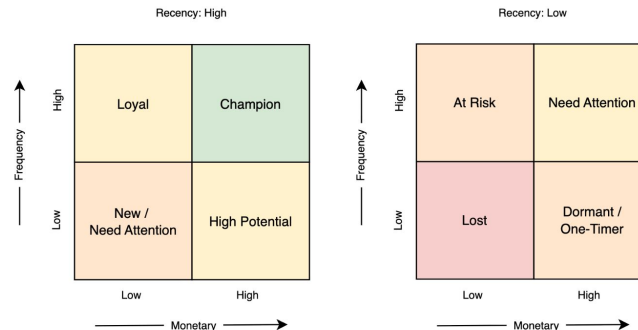
Segmentation: Users Distribution

RFM Segmentation

Vulnerable Users: 69.6%

Segment	Percentage
lost	(22.5%)
new / need attention	(5.9%)
high potential	(3.4%)
loyal	(3.2%)
at risk	(4.6%)
inactive	(9.4%)
dormant / one-timer	(8.1%)
champion	(23.8%)
need attention	(19.1%)
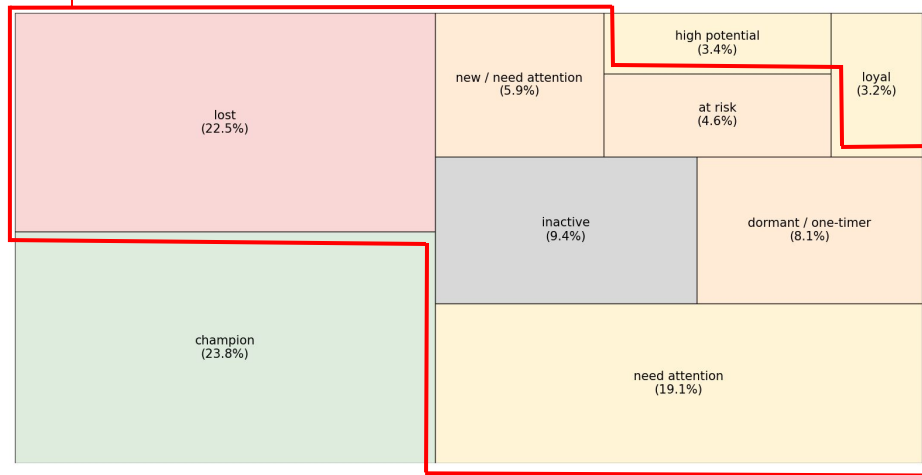
Segmentation: Users Distribution

Booking and travel behaviour Segmentation

occasional long-trip (10.3%)
low-engaged (89.7%)

low-engaged (100.0%)

occasional long-trip (8.1%)
low-engaged (91.9%)

occasional long-trip (45.8%)
low-engaged (54.2%)

last-minute booker (40.2%)
planned booker (59.8%)

last-minute booker (34.9%)
planned booker (65.1%)

last-minute booker (31.0%)
planned booker (69.0%)

occasional long-trip (33.7%)
low-engaged (66.3%)

last-minute booker (36.0%)
planned booker (64.0%)

lost (22.5%)

new / need attention (5.9%)

high potential (3.4%)

at risk (4.6%)

loyal (3.2%)

inactive (9.4%)

dormant / one-timer (8.1%)

champion (23.8%)

need attention (19.1%)

RFM Segmentation

Segmentation: Perks

Booking and travel behaviour segmentation

Type	Characteristics	Benefits
Last Minute Booker Perks	improve speed, low friction, and immediate risk reduction.	1) Priority real-time support 2) Simplified changes, cancellations, and rebooking 3) Pre-built packages by trip duration and family-ready options when applicable.
Planned Booker Perks	Comfort and Convenience	1) Priority access to offers. 2) The ability to hold or lock travel options for a limited time before booking. 3) Pre-built packages by trip duration and family-ready options when applicable.

RFM segmentation

Champions (31% Last-minute, 69% Planned bookers)
GOAL: reward loyalty and reinforce the sense of exclusivity.
HOW: **Perks provided <u>free of charge</u>**.

Loyal (35% Last-minute, 65% Planned bookers)
GOAL: To encourage them to spend more, making them feel privileged
HOW: **Perks with a <u>loyalty-friendly discount</u>**

Need Attention (36% Last-minute, 64% Planned bookers)
GOAL: reactivate them
HOW: **Perks <u>temporarily free of charge</u>**
    In addition: Time-Limited Discounts / Offers

At Risk (40% Last-minute, 60% Planned bookers)
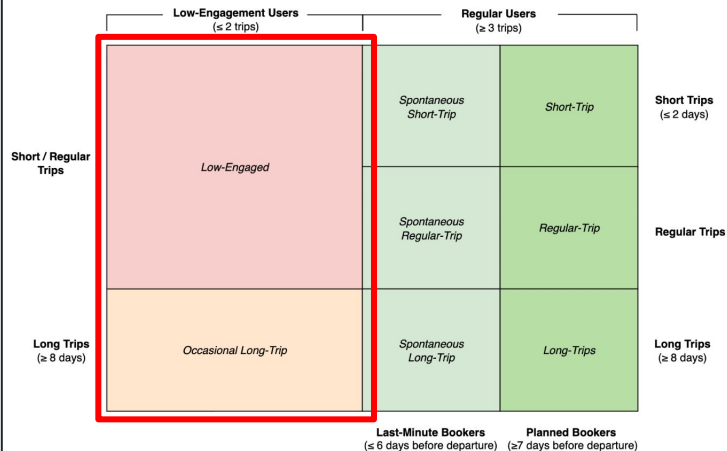GOAL: reactivate them and eventually encourage them to spend more
HOW: **Perks with a <u>temporary discount</u>**
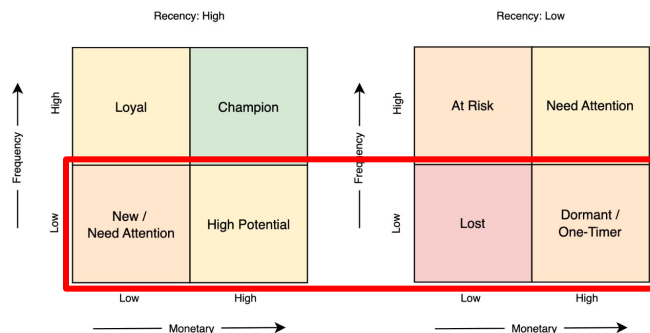   *In addition*: Time-Limited Discounts / Offers

Segmentation: Perks

Booking and travel behaviour segmentation

Type	Characteristics	Benefits
Low Engaged	encourage more bookings	1) Repeat-Purchase Benefits 2) Time-Limited Offers
Occasional Long-Trip	low engagement is likely a **natural behavior** due to their travel style. Perks should aim to make the booking smooth and convenient.	1) Pre-Built Packages, including family-oriented options when traveling with children. 2) Time-Limited Offers: for shorter trips to stimulate engagement.

RFM segmentation

High-Potential (54% Low-Engaged, 46% Occasional Long-trip)
GOAL: slightly increase booking frequency or encourage/simplify next booking
HOW: **Proper Perks**

New / Need Attention (92% Low-Engaged, 8% Occasional Long-trip)
GOAL: encourage their next bookings to increase both monetary value and frequency.
HOW: **Proper Perks**
 In addition: Onboarding programs to guide them through the platform

Dormant / One-Timer (66% Low-Engaged, 34% Occasional Long-trip)
GOAL: reactivate them with a new booking, and only afterwards focus on frequency.
HOW: **Time-Limited Offers**: small, short-term incentives on the next booking to <u>create urgency</u>
 In addition: (after reactivation) Proper Perks

Lost (90% Low-Engaged, 10% Occasional Long-trip)
GOAL: test their reactivation
HOW: **Time-Limited Offers**: small, short-term incentives on the next booking to <u>create urgency</u>

Conclusions

Project goal: design a personalized rewards program through customer segmentation to improve customer retention

Data used: user dataset containing ~6K records

Segmentation approach:

- Booking and travel behaviour segmentation (trip characteristics, booking timing, engagement level)
- RFM segmentation (recency, frequency, monetary value)

Results: Combined both segmentations to assign the most relevant perks to each user segment

Future improvements: include CLTV-based segmentation, more granular splits by age and other user attributes.

Thank you for your attention!