



Travel_Tide Project

Data-Driven Insights for Customer Retention

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WHAT WE ARE WORKING ON

Introduction

- E-booking startup TravelTide is a hot new player in the online travel industry.
- The **Travel_Tide** project enhances customer retention by analyzing user behavior to develop a personalized rewards program.

Objective

This analysis aims to segment Travel_Tide customers based on behavior to enhance loyalty and business performance. It focuses on:

- Identifying customer personas through behavioral traits.
- Developing targeted perks and recommendations to improve engagement.



Methodology

- The analysis employs K-Means clustering, an unsupervised machine learning algorithm, to group customers based on key behavioral attributes. The following steps were undertaken:

- **Data Collection & Cleaning:**

- **Exploratory Data Analysis (EDA):**

- **Feature Engineering:**

- **Demographics** User Engagement **Discount** **Responsiveness** Booking Behavior Spending & Loyalty **Travel Preferences** Seasonality & Trends

- **Clustering Analysis:**

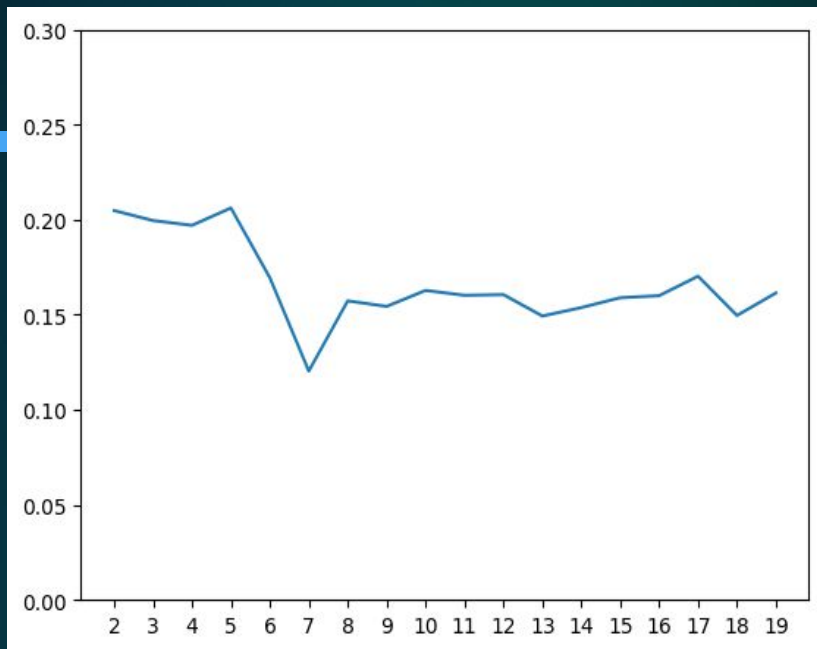
- Data Scaling **Principal Component Analysis (PCA)** Evaluating Cluster Validity

Applying K-Means Clustering

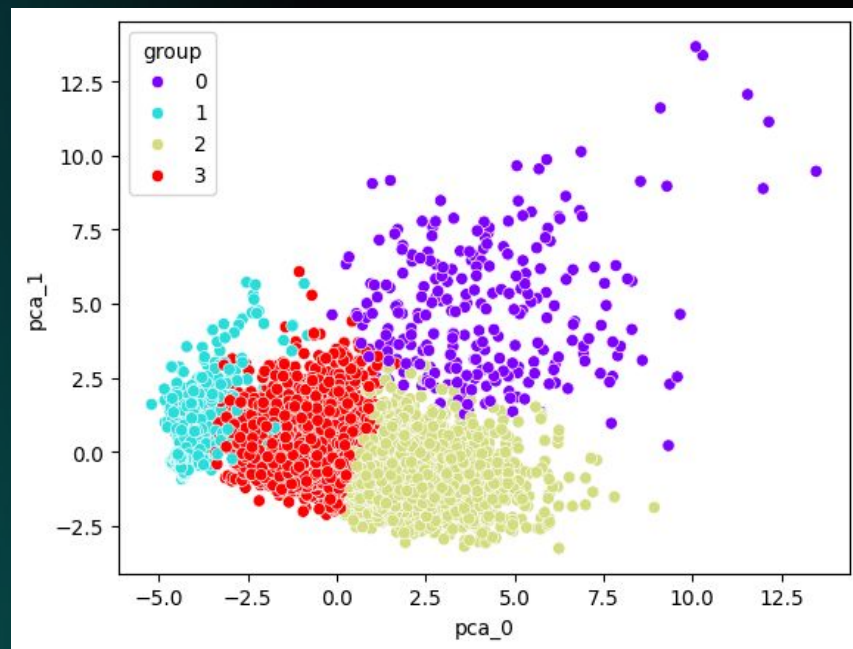
Visualization & Interpretation



K Means Clustering



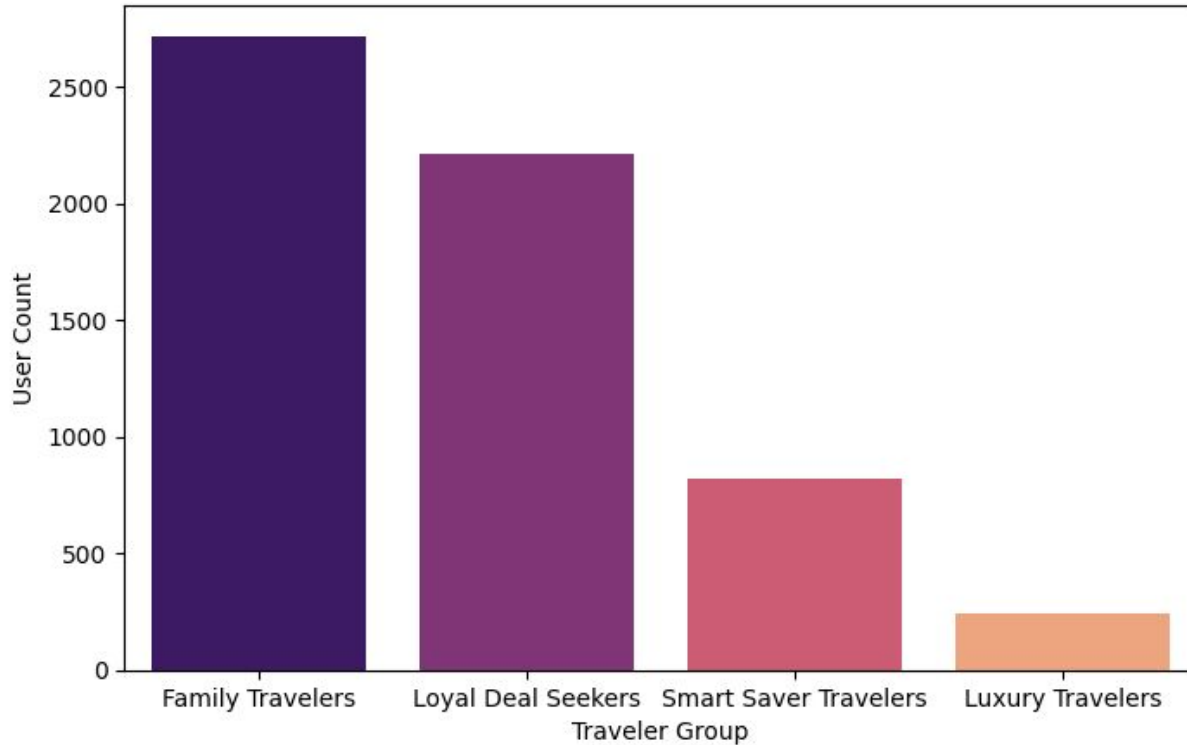
Silhouette Score



Clusters



Distribution of Users



Total Users: 5987

Family Travelers: 2715

Loyal Deal Seekers: 2210

Smart Saver Travelers: 817

Luxury Travelers: 245



Key Findings

Group 0 Characteristics: Family Travelers

- **Moderate Travelers with Low Engagement:** This group books fewer flights and hotels, spends modestly, and has a moderate loyalty score of 0.45, indicating low engagement with the platform and a moderate response to discounts.
- **Family-Oriented:** Significant portion (87.8%) females with 43% married and 27% having children, many users likely travel with family. Offering **family-focused perks** would appeal to this segment.
- **Perk Assigned:**
A **"Family Discount"** that provides a discount for bookings involving multiple travelers (e.g., **10-15% off for bookings of 2 or more people**).



Key Findings

Group 1 Characteristics: Loyal Deal Seekers Travelers

- **Moderate Engagement & Booking Frequency:** Users interact moderately with the platform (page click rate of 7.93) but book infrequently, averaging 3.88 flights and 13.17 nights with a trip duration of 4.26 days.
- **Diverse Travel Distances:** Users travel a wide range of distances, from short domestic trips to long-haul international flights, with an average flight distance of 2,141 km.
- **Moderate Spending:** Total spending averages 4,068.59 USD, with each booking typically costing 65.66 USD, indicating a moderate spending pattern.
- **Strong Loyalty:** Despite booking less frequently, users maintain a high loyalty score of 0.94, suggesting strong platform loyalty.
- **Perk Assigned:**
"Loyalty Upgrade" that offers complimentary upgrades (e.g., seat or room upgrades) for their next booking to encourage higher engagement.



Key Findings

Group 2 Characteristics: Smart Saver Travelers

- **Moderate Engagement & Booking Patterns:** Average page click rate of 8.00 and 362 days since the last booking, with low interest in checked bags and seat selection. They book an average of 3.92 hotels, including some longer stays.
- **Discount & Spending:** Only 10.4% are responsive to discounts, indicating they value more than just promotions. Average total spending is \$774.53, with \$71.86 per booking, reflecting a budget-conscious but regular traveler.
- **Loyalty & Travel Preferences:** Moderate loyalty score of 0.07, preferring shorter trips with an average flight distance of 12 kms suggesting regional travel with infrequent but cost-sensitive bookings.
- **Assigned Perk:**

"Budget-Friendly Weekend Getaways" or "Discount on Short Trips"



Key Findings

Group 3 Characteristics: Luxury Travelers

- **User Engagement:** Group 3 has a moderate engagement with a page click rate of 7.35, but their bookings are less frequent (average days since last booking: 421 days), likely for longer, planned trips.
- **Spending & Booking Patterns:** They spend an average of \$9,880.46 per user, with \$244.55 per booking, showing moderate spending. They book more checked bags and seats (indicating family/group travel), and often book multi-night stays (average of 2.91 hotels).
- **Travel Preferences & Loyalty:** Group 3 travels long distances (average flight distance: 7,334 miles) for international or special event trips. They have a moderate loyalty score of 0.58, suggesting some level of brand loyalty but less engagement than more frequent users.
- **Assigned Perk:**

"VIP Travel Experience" or "Premium Travel Upgrades"



Recommendation

- **Recommendation 1:** Optimize platform UX/UI for mid-tier users to encourage more frequent bookings and spending. Enhancing search filters and booking processes can drive conversions.
- **Recommendation 2:** Continuously monitor customer behavior and refine segmentation models for improved personalization. Utilizing real-time data can improve marketing strategies.
- **Recommendation 3:** A/B test different engagement strategies to determine the most effective approach for each segment.

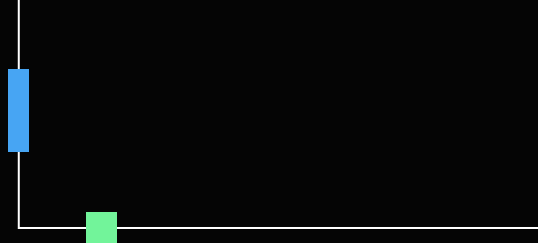
References

Google Jupyter Notebook

<https://colab.research.google.com/drive/1emoDgRAdbCrDOeQRRiHWeSVSfpfOrn4I?usp=sharing>

Project Report

https://docs.google.com/document/d/1RGuCL7QfzcOe53M69zU2_gPWd_9NHeJ3c_Pm_GpjTew/edit?usp=sharing



THANK YOU

'Without data, you're just another person with an opinion'
— W. Edwards Deming

