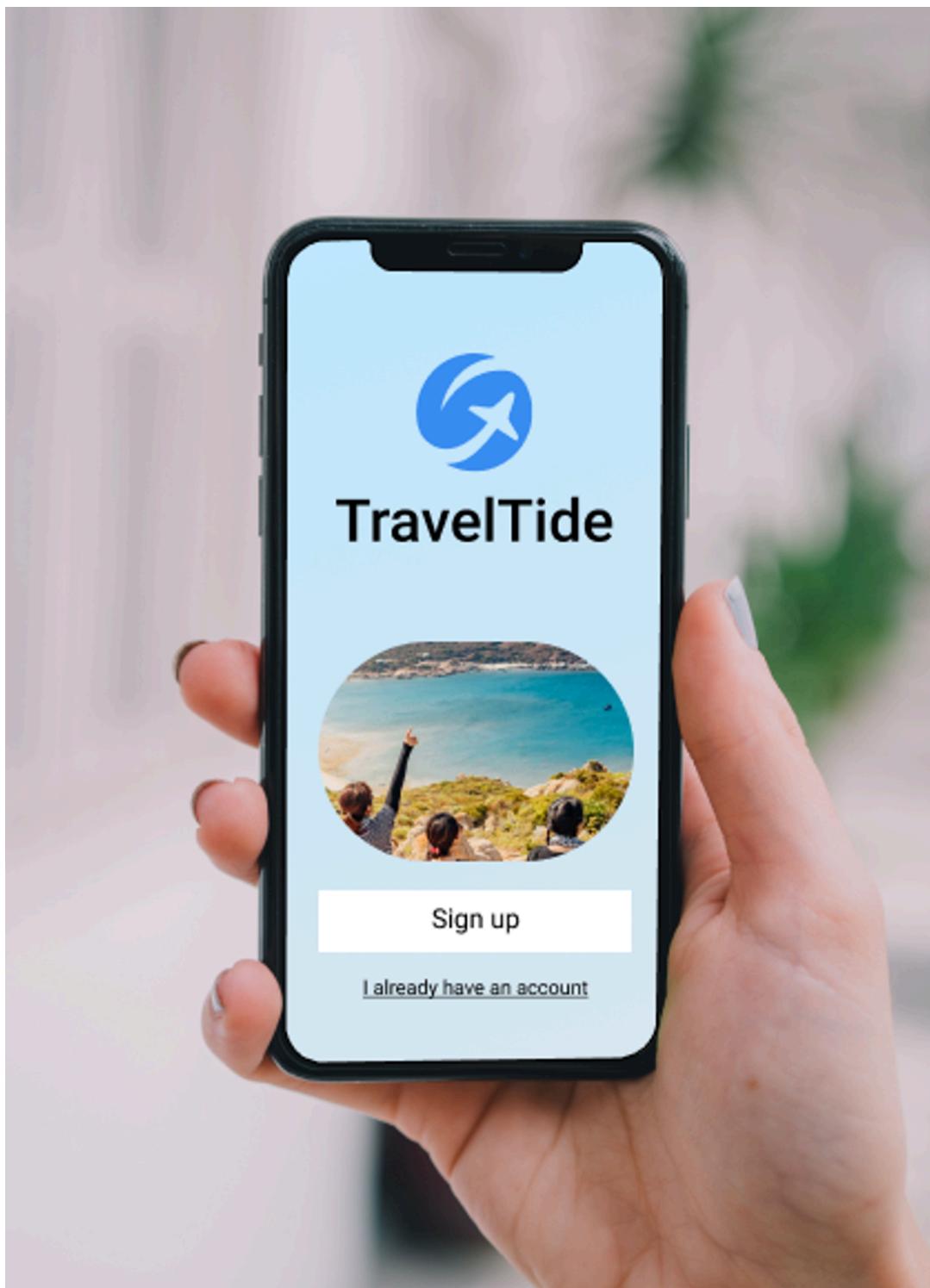


TravelTide Summary



Overview

This report offers a deep dive into our customers' travel behaviors and preferences. By analyzing our extensive data, we aim to uncover what drives our travelers and how to keep them engaged. Our approach segments customers into distinct groups or "traveler group," allowing for the customization of rewards and incentives that feel uniquely tailored to each group. This analysis distills vast data into clear, actionable metrics that shed light on travel patterns, service preferences, and responsiveness to promotions. The ultimate goal is to enhance customer loyalty and drive business success by keeping our travelers engaged with our services.

Approach and Data Analysis

This section outlines how customer segmentation can be applied within TravelTide to create targeted rewards and incentives. By categorizing customers based on their behaviors and preferences, we can significantly improve customer satisfaction and loyalty.

Our objective is to leverage segmentation to deliver personalized perks that boost loyalty, engagement, and overall satisfaction. We aim to offer at least five specific perks:

Reward Offerings:

- Exclusive Discounts
- 1 Night Free Hotel with Flight
- No Cancellation Fees
- Free Hotel Meal
- Free Checked Bag

Data Processing and Metrics Creation

Starting with a dataset of 50,570 sessions, we distilled the information into 5,998 unique customers, using PostgreSQL to generate key metrics. This process was essential for simplifying the raw data into manageable and insightful variables.

Note: The SQL script file is in SQL folder.

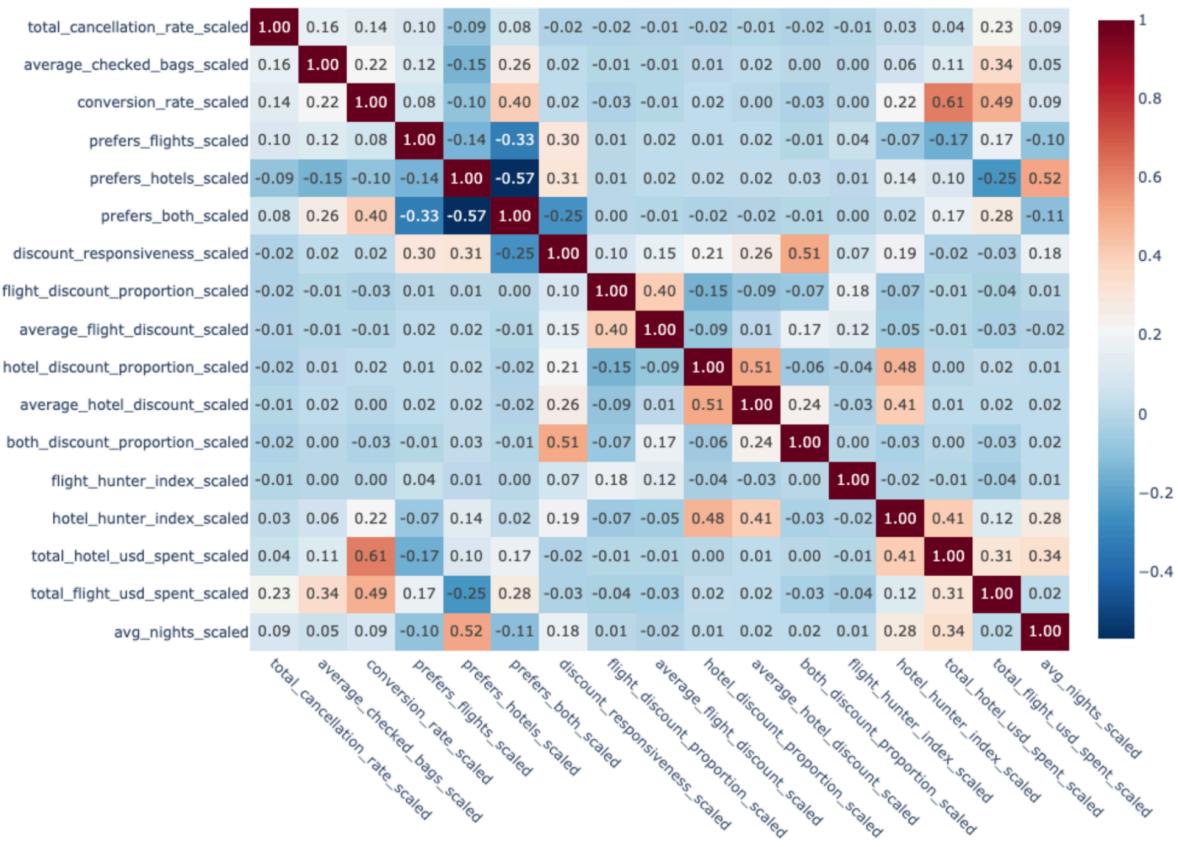
Key Metrics for Analysis

To determine the most suitable perks for each customer, we focused on the following aggregated metrics:

- Flight/Hotel/Both Preferences
- Average Nights
- Age Group
- Conversion Rate
- Cancellation Rate
- Total Sessions

- Total Trips Booked
- Engagement (Click Efficiency)
- User Activity Level
- Average Checked Bags
- Discount Responsiveness
- Proportions of Discounts (Flights/Hotels/Both)
- Average Offers Received
- Flight Hunter Index
- Hotel Hunter Index

Correlation Matrix of Metrics



Cluster Labels

- Cluster 0: "1 Night Free Hotel with Flight"

Reasoning:

- High **both_discount_proportion_scaled** and **average_hotel_discount_scaled**: Indicates strong value placed on combined bookings and hotel-related perks.
- Moderate **avg_nights_scaled** and low **total_flight_usd_spent_scaled**: Reflects a tendency to use combined offers that include both flights and hotels.
- The cluster's characteristics align well with a perk offering a free hotel night when booking with a flight.

- Cluster 1: "Exclusive Discounts"

Reasoning:

- High **discount_responsiveness_scaled** and **total_hotel_usd_spent_scaled**: Indicates a strong reaction to discounts and significant spending on hotels.
- High **total_flight_usd_spent_scaled** and **avg_nights_scaled**: Shows that these travelers are highly responsive to discounts and tend to book multiple nights and flights.
- The cluster is characterized by a strong affinity for exclusive discounts, fitting the "Exclusive Discounts" label.

- Cluster 2: "No Cancellation Fee"

Reasoning:

- High **total_cancellation_rate_scaled** and low **conversion_rate_scaled**: Indicates frequent cancellations and a lower overall conversion rate.
- Negative **hotel_discount_proportion_scaled** and **average_hotel_discount_scaled**: Suggests a lack of strong hotel discount focus, but high variability in cancellations.
- The characteristics fit well with the perk of no cancellation fees, catering to their need for flexibility.

- Cluster 3: "Free Checked Bag"

Reasoning:

- High **prefers_hotels_scaled** and high **avg_nights_scaled**: Indicates a strong preference for hotels and longer stays, with lower interest in flight discounts.
- Negative **average_checked_bags_scaled**: Reflects a travel pattern that would benefit from perks enhancing flight convenience.
- The focus on hotel preferences and the free checked bag perk align with this cluster's characteristics.

- Cluster 4: "Free Hotel Meal"

Reasoning:

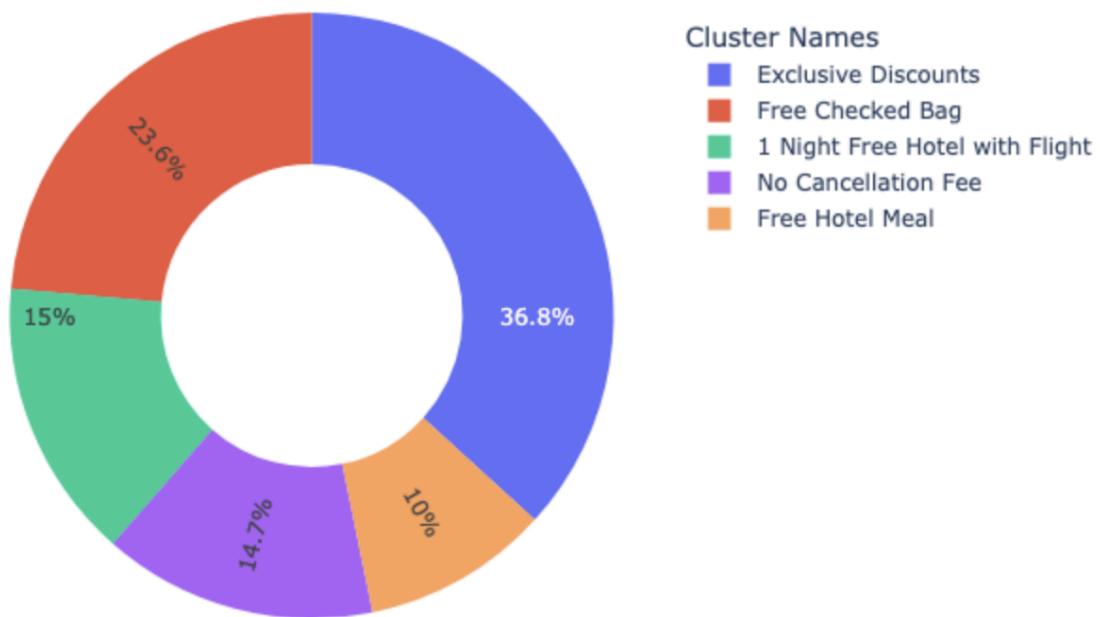
- Low **total_hotel_usd_spent_scaled** and high **prefers_hotels_scaled**: Indicates a preference for hotel perks but less overall spending on hotels.
- Highly negative **avg_nights_scaled** and low **discount_responsiveness_scaled**: Suggests they value hotel-related perks but are less influenced by discounts.

- This cluster's strong hotel preference and focus fit well with the "Free Hotel Meal" perk.

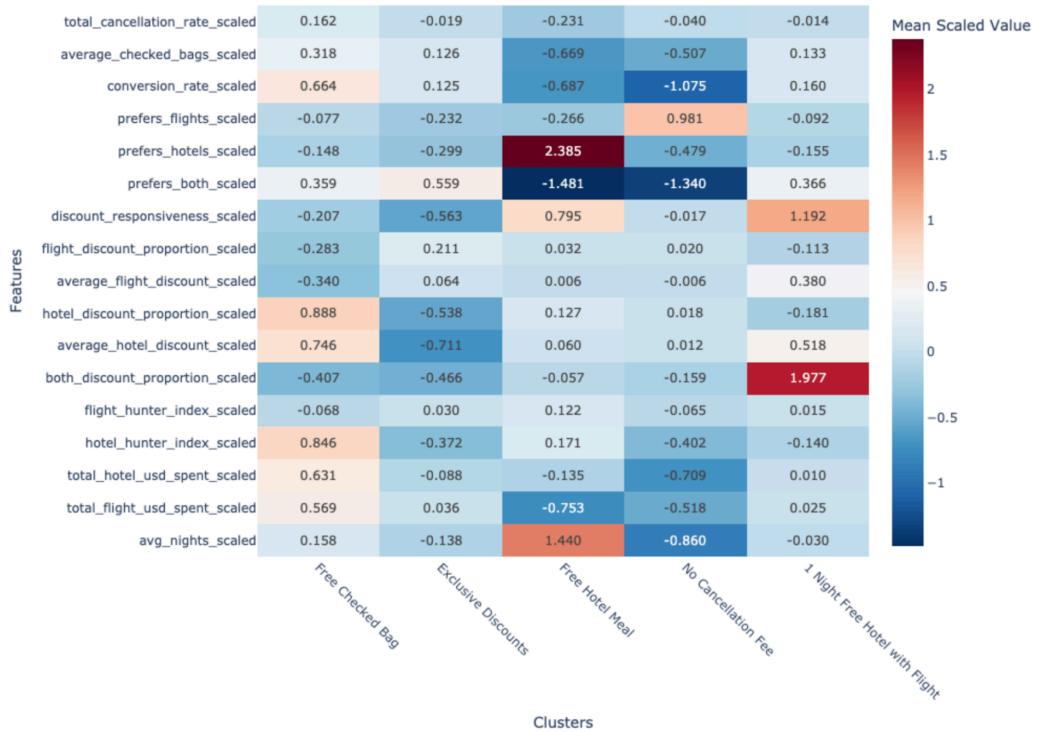
In summary:

- **Cluster 0:** 1 Night Free Hotel with Flight
- **Cluster 1:** Exclusive Discounts
- **Cluster 2:** No Cancellation Fee
- **Cluster 3:** Free Checked Bag
- **Cluster 4:** Free Hotel Meal

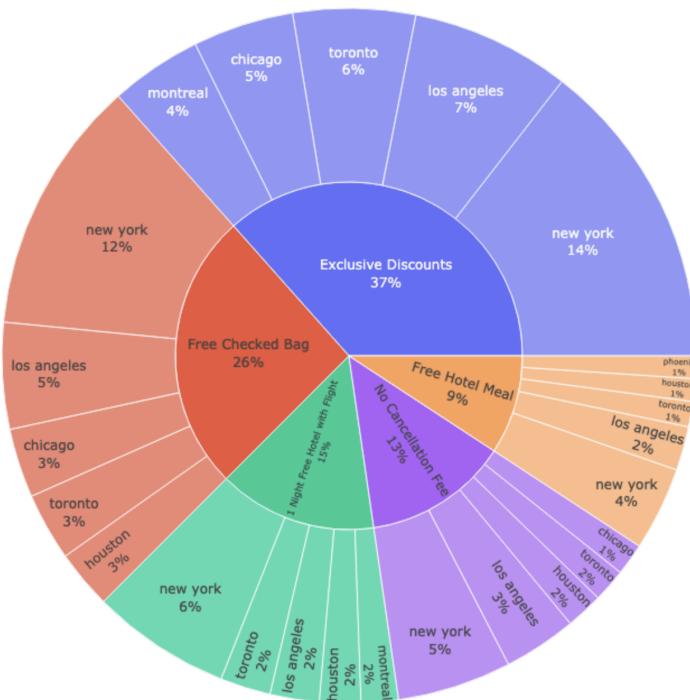
Distribution of Clusters



Traveller Groups Heatmap



Top City Preferences by Perk



Recommendations for the TravelTide Project

Based on the analysis of customer travel behavior, the following recommendations are provided to enhance customer engagement, loyalty, and overall business success:

1. Optimize Customer Segmentation for Targeted Marketing:

- **Refine Clustering Approach:** Use techniques such as the Elbow Method or Silhouette Score to determine the optimal number of clusters for customer segmentation. This will ensure that each customer group is distinct and meaningful, leading to more effective targeting.
- **Experiment with Different Clustering Algorithms:** While KMeans is a good starting point, consider experimenting with other clustering methods, like Hierarchical Clustering or DBSCAN, to capture non-linear relationships or to better handle noise in the data.
- **Incorporate More Behavioral Data:** Enhance segmentation by integrating more dynamic behavioral data, such as recent booking activity, browsing patterns, or responsiveness to past marketing campaigns. This will help in creating more personalized offers.

2. Enhance Data Quality and Feature Engineering:

- **Address Missing Data:** Ensure that all missing values are handled appropriately. Use imputation techniques (mean, median, mode, or advanced methods like KNN imputation) to fill missing data where possible, or exclude unreliable data points.
- **Feature Normalization:** Apply normalization or standardization to all numerical features before clustering to ensure that features are on the same scale, preventing bias toward features with larger ranges.
- **Create Derived Features:** Develop new features that may provide more insights into customer behavior. For example, consider creating features like "recency of last trip," "frequency of trips," or "average lead time for bookings."

3. Personalize Marketing Strategies:

- **Develop Tailored Offers for Each Segment:** Based on the customer segmentation, create customized offers that align with each group's preferences. For example, frequent business travelers might value free checked bags or flexible cancellation policies, while leisure travelers may prefer exclusive discounts or free hotel nights.
- **Use Dynamic Content Personalization:** Implement dynamic content in marketing communications (e.g., emails, push notifications) that adapts based on the customer's segment. Highlight benefits most relevant to their behavior and preferences, such as specific discounts or rewards that align with their past booking patterns.

4. Leverage Predictive Analytics for Customer Retention:

- **Predict Churn Risk:** Develop a model to predict the likelihood of customer churn based on past behavior, such as declining booking frequency or increasing cancellation rates.

Proactively target these customers with retention-focused offers (e.g., exclusive discounts, loyalty rewards).

- **Forecast Future Demand:** Use time-series forecasting techniques to predict demand for certain destinations, hotels, or flights. This can help in better managing inventory, pricing, and targeted marketing campaigns.

5. Improve Engagement Through Enhanced User Experience:

- **Optimize the Booking Funnel:** Analyze conversion rates at each step of the booking process to identify any friction points. Use A/B testing to optimize key elements of the user journey, such as page layouts, call-to-action buttons, or payment options.
- **Utilize Gamification:** Introduce gamification elements (e.g., points, badges, leaderboards) to increase engagement. Reward customers for specific actions, such as booking during off-peak periods or sharing their travel experiences.

6. Expand Reward Offerings:

- **Diversify Incentives:** Beyond the current rewards (exclusive discounts, free hotel nights, etc.), consider introducing new incentives based on customer feedback, such as loyalty points, concierge services, or upgrades.
- **Create Tiered Loyalty Programs:** Develop a tiered loyalty program that offers progressively better rewards as customers increase their engagement. This can encourage repeat bookings and higher spending levels.

7. Validate and Iterate on Findings:

- **Conduct A/B Tests:** Implement A/B testing to validate the effectiveness of different marketing strategies and offers. Use metrics like click-through rates, conversion rates, and customer satisfaction scores to gauge success.
- **Iteratively Improve Segmentation:** Regularly update customer segmentation models to reflect changes in customer behavior or market conditions. Continuously collect data and refine models to ensure they remain accurate and relevant.

By implementing these recommendations, TravelTide can achieve a more granular understanding of its customer base and deliver highly personalized experiences that drive engagement, loyalty, and revenue growth. The focus should be on continuously refining data-driven customer segmentation, enhancing marketing strategies, and leveraging predictive analytics to anticipate customer needs and preferences. Ultimately, these actions will position TravelTide to stay competitive in a dynamic travel market and foster long-term customer relationships.