Airline Passenger Satisfaction Visual Analysis

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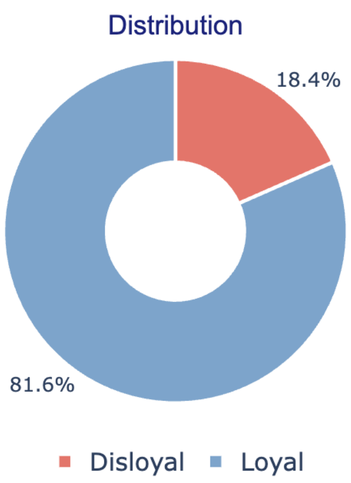
Scope

During holidays and vacation seasons, more people travel by air around the world. As a result, airline companies face a more competitive environment than usual. To attract more customers, they seek to improve and adapt their services. Our tool helps airlines analyze different types of customers and identify which service factors impact their satisfaction the most. With these insights, airlines can make data-driven adjustments to improve customer experience and stay competitive.

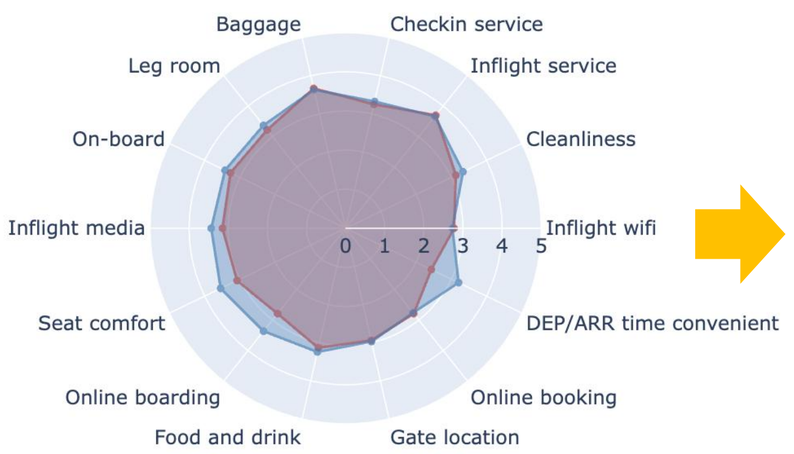
Dataset Overview

Kaggle airline dataset with 25,976 passengers and 25 variables. Features 14 service factors with real-time analysis and configurable sampling for optimal performance.



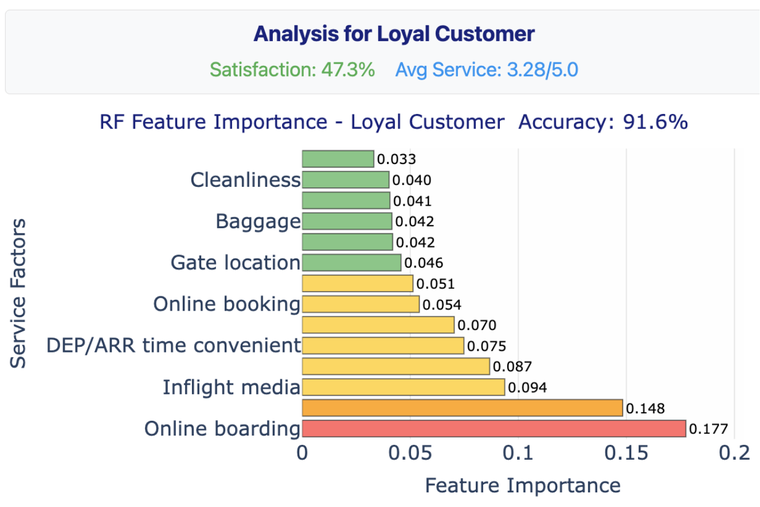
Service Quality Radar

Average satisfaction scores for various service factors, grouped by customer characteristics (gender, class, customer type, travel purpose, age groups).



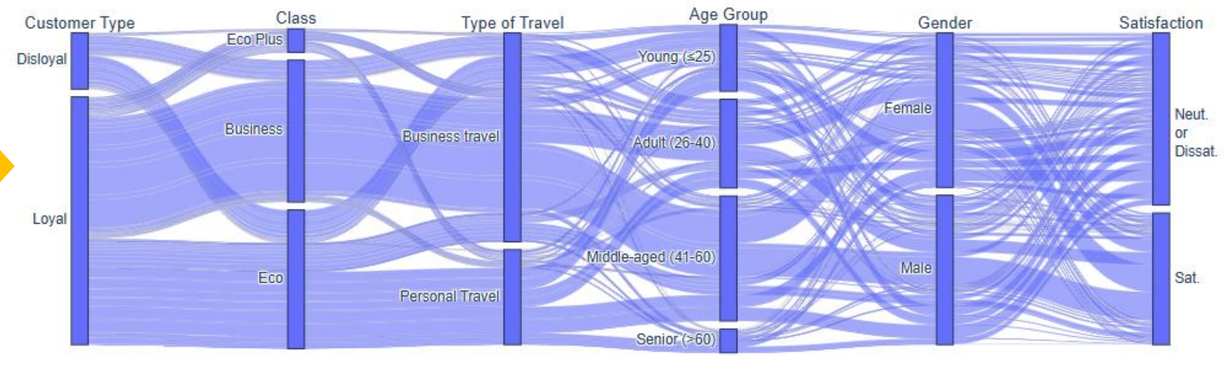
Service Factor Rankings

Random Forest identifies service factors most impacting satisfaction. Helps prioritize improvements based on subgroup analysis.



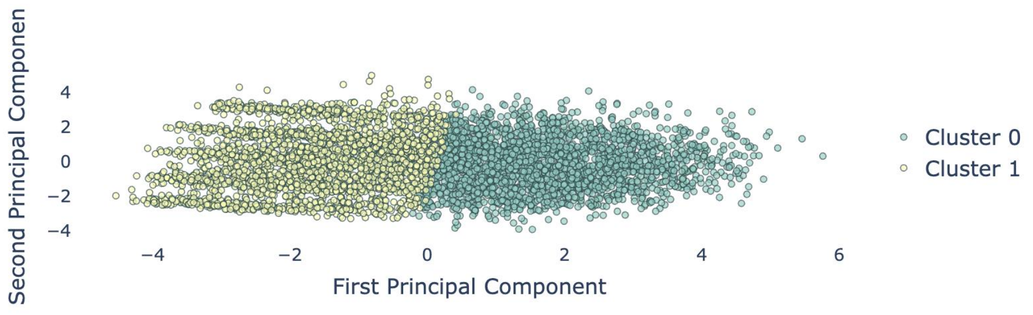
Parallel Categories

Interactive flow visualization of relationships between passenger demographics, travel characteristics, and satisfaction outcomes.



Passenger cluster Analysis

Automatically groups passengers into distinct segments using K-Means clustering and PCA visualization.



User Tasks Addressed

- Compare patterns across demographics
- Identify service drivers by passenger subgroup
- Explore multi-factor satisfaction relationships
- Identify distinct passenger groups
- Prioritize improvement investments

Technical Implementation

- Frontend: Python Dash with Plotly visualization
- ML Models: Random Forest analysis, K-Means clustering
- Features: Real-time updates, interactive filtering
- Performance: Configurable data sampling

Future Work

- Real-time data integration
- Extended to other transportation domains
- Advanced ML models for deeper insights