Executive Summary

British Airways operates in a highly competitive airline industry, where passenger satisfaction directly affects loyalty, brand perception, and business growth. This project analyzed passenger feedback collected from 2016 to 2023, including overall trip ratings, six service categories, and recommendation behavior, across diverse aircraft families, routes, and traveler segments.

Key patterns include a decline in both overall ratings and service experience over time, decreasing recommendation rates, and strong variation in satisfaction across aircraft types and service categories. The A320 family dominates in review volume, while the B777 shows significant gaps between passenger perception and operational service quality. Passengers tend to rate at satisfaction extremes, with Value for Money emerging as the most critical driver of negative recommendations.

The findings were translated into a dynamic, interactive Tableau dashboard, enabling stakeholders to explore metrics by service category, aircraft, traveler type, and geography. The insights provide actionable intelligence to enhance operational performance, improve passenger experiences, and optimize recommendation behavior.

Problem Statement

British Airways operates in a highly competitive airline industry, where passenger satisfaction is critical for retention, loyalty, and business growth. Passengers now provide feedback through multiple channels — surveys, online reviews, social media, and direct communications — generating a large volume of data that is difficult to interpret without structured analysis.

Passenger recommendations, reflecting whether travelers advocate the airline to others, are a vital indicator of potential business growth. Without a clear understanding of satisfaction drivers and recommendation behavior, opportunities for operational improvements may be missed.

Objective

The objective of this project is to transform raw passenger feedback into actionable insights for operational and strategic decision-making. Specifically, the project aims to:

- Detects trends and patterns in overall ratings and service experiences across time, aircraft families, routes, and traveler segments.
- Understand passenger recommendation behavior to identify drivers of positive and negative advocacy.

- Distinguish between overall trip ratings (1–10) and operational service quality averages (1–5) to ensure accurate interpretations.
- Provide a dynamic, interactive dashboard allowing stakeholders to explore data by service category, aircraft type, traveler profile, and geography.

These objectives enable British Airways to make data-driven decisions to enhance passenger satisfaction, improve service quality, and leverage positive recommendations to strengthen business outcomes.

Data Overview

The analysis leveraged two primary datasets:

1. **BA Reviews:** Passenger feedback collected via surveys, including overall trip ratings and six service categories — Seat Comfort, Cabin Staff Service, Food & Beverages, Ground Service, Value for Money, and Entertainment. Traveler information such as seat type, traveler type, and route details is also included.
2. **Countries Reference:** Country-level metadata including country names, codes, continents, and regions, enabling geographic analysis.

The combined dataset spans **2016 to 2023**, covering a diverse set of aircraft families, routes, and passenger segments. Key variables include overall ratings (1–10), service category ratings (1–5 average), recommendation status (Yes/No), aircraft family, traveler type, seat type, and temporal attributes (year and month).

Methodology

The analysis followed a structured approach encompassing data preparation, transformations, feature engineering, metric calculation, and descriptive analytics.

Data Preparation:

- Passenger service experience data contained values from -1 to 5; -1 was interpreted as "Not Rated."
- Ensured all categories were accurately represented for meaningful analysis.

Data Transformation & Feature Engineering:

- **Ratings Categorization:** Overall ratings (1–10) grouped into Very High, High, Neutral, Low, Very Low.

- **Service Experience Categorization:** Each service category grouped into High Satisfaction, Low Satisfaction, Neutral, and Not Rated.
- **Overall Service Experience:** Computed as the average of all six service categories.
- **Temporal Features:** Extracted year and month from review dates for trend analysis.

Metrics Used:

- Overall Trip Rating (1–10)
- Overall Service Experience (1–5 average)
- Service Category Ratings
- Rating Categories
- Recommendation Status (Yes/No)
- Counts / Review Volume

Analytical Techniques:

- **Descriptive Analysis:** Focused on aircraft families, examining averages and counts to evaluate both ratings and service experience.
- **Trend Analysis:** Monitored changes in ratings, service experience, and recommendations across 2016–2023.
- **Category Analysis:** Evaluated satisfaction levels within each service category.
- **Comparative Analysis:** Identified discrepancies between overall ratings and average service experience across aircraft families.

Key Insights / Findings

1. Temporal Trends:

- Both overall ratings and average service experience declined from 2016 to 2023, with sharper drops post-2019.
- High Satisfaction counts fell steadily over the years.

2. Recommendation Patterns:

- Recommendations declined from 49% in 2016 to 40% in 2023; non-recommendations increased from 50% to 60% while overall Recommendation Distribution was 56% Not Recommending and 44% Recommending.
- Drivers:
  - Entertainment: Low satisfaction → No recommendation; High satisfaction → Yes recommendation.
  - Food & Beverages: Low/Not Rated → No; High → Yes.

○ Value for Money: Low satisfaction → No.
○ Seat Comfort: Improved satisfaction → Higher recommendations.

3. Aircraft Family Insights:

- **A320:** Most reviews, highest proportion of very high ratings, but fourth in average rating (4.15).
- **B787:** Third in average rating (4.16), consistently high satisfaction.
- **A380:** Fifth in average rating (3.9); limited deployment affects passenger experience.
- **B777:** Largest discrepancy between overall rating (7.6) and service experience (1.8).

4. Ratings by Traveler & Seat Type:

- Very low ratings mostly from Couples and Solo Travelers.
- By seat type, very low ratings are common among Business and Economy passengers.

5. Passenger Behavioral Patterns:

- Passengers rate at extremes (high or low satisfaction).
- Low satisfaction heavily influences overall trip ratings and recommendation behavior.

6. Service-Specific Observations:

- Value for Money: Highest low satisfaction, main driver of negative recommendations.
- Seat Comfort: Improved satisfaction correlates with increased positive recommendations.

7. Integrated Insight:
 Passenger satisfaction and recommendations are influenced by service quality, aircraft type, traveler profile, and time trends. Value for Money and certain aircraft experiences are critical drivers of negative feedback, while seat comfort and select aircraft families drive positive recommendations.

Conclusion / Next Steps

This analysis offers a comprehensive understanding of British Airways passenger satisfaction and recommendation behavior over 2016–2023. The decline in ratings, coupled with shifts in recommendations, highlights areas for operational improvement. Differentiating overall trip ratings from average service experience ensures clarity in interpreting passenger perceptions versus operational performance.