Airline Passenger Satisfaction Analysis
Tableau Project Report

Project Title: Airline Passenger Satisfaction Analysis Using Tableau
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Tool Used: Tableau
Dataset Source: Maven Data Challenge
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Abstract

This project analyzes passenger satisfaction in an airline based on demographic details, travel patterns, and service experiences. Using multiple dashboards, the study uncovers how factors such as age, travel type, class, delays, and onboard services influence overall satisfaction.

The insights help management identify improvement areas to boost customer loyalty and operational efficiency.

1. Objectives

The main objectives of this project were:

1. To analyze passenger demographics and travel patterns.
2. To identify the factors that impact passenger satisfaction.
3. To evaluate the effect of flight delays, travel class, and service experience on satisfaction.
4. To present findings in a storytelling manner using Tableau dashboards and storyboards.
5. To provide actionable recommendations for improving airline service quality and customer loyalty.

2. Problem Statement

Airline industries face intense competition and must balance operational efficiency with customer satisfaction.
Despite offering multiple services, airlines struggle with:

- Identifying which service areas directly impact satisfaction.
- Understanding differences between business vs. personal travelers.
- Measuring the impact of delays on loyalty.
- Finding opportunities to convert neutral passengers into satisfied promoters.

This project aims to solve these challenges using data visualization and storytelling dashboards.

3. Dataset Overview

- Source: Airline passenger satisfaction dataset (commonly used in analytics projects).
- Size: 100,000+ passenger records.
- Key Features:
    - Demographics → Age, Gender.
    - Travel Info → Flight distance, Travel class, Type of travel (Business/Personal).
    - Service Ratings → Seat comfort, In-flight service, Cleanliness, Food & Drink, WiFi, etc.
    - Performance Metrics → Departure delay, Arrival delay.
    - Target Variable → Overall Passenger Satisfaction (Satisfied/Neutral/Dissatisfied).

4. Data Cleaning Steps

Before visualization in Tableau, the dataset was cleaned and pre-processed using the following steps:

1. Handling Missing Values: Removed rows with null values in service ratings
2. Removing Duplicates: Checked for repeated passenger entries and removed duplicates.
3. Standardizing Categorical Fields: Ensured values like “Business” vs. “business” were consistent.
4. Derived Columns: Created calculated fields such as *Delay Impact* and *Satisfaction Score*.
5. Outlier Treatment: Filtered extreme values in delays to avoid skewing insights.

This ensured the dataset was reliable for dashboard analysis.

5. Dashboard Storytelling

Page 1: Demographics Overview

- Caption: "Who are our passengers?"
- Insight: Majority of travelers are middle-aged, with business travel dominating.
- Description: The page provides a demographic breakdown of passengers (age groups, gender, and travel type). Understanding the customer base is essential to tailor services.

Page 2: Flight Experience Insights

- Caption: "How do passengers feel onboard?"
- Insight: Service quality (check-in, cleanliness, food, seat comfort) strongly influences satisfaction.
- Description: This page measures satisfaction across service touchpoints. A clear link appears between onboard services and customer happiness.

Page 3: Delays & On-Time Performance

- Caption: "Do delays affect loyalty?"
- Insight: Longer departure/arrival delays result in lower satisfaction.
- Description: This dashboard connects flight punctuality with passenger sentiment. Time reliability emerges as a key driver of trust.

Page 4: Class & Travel Type Analysis

- Caption: "Who enjoys flying more?"
- Insight: Business-class and business-travel passengers report higher satisfaction than economy travelers.
- Description: Service expectations differ by ticket type. Premium passengers tend to be more satisfied, highlighting the need to uplift economy services.

Page 5: Satisfaction Distribution

- Caption: "How satisfied are our passengers?"
- Insight: Overall, satisfaction is moderate, with significant neutral and dissatisfied groups.

- Description: This page shows the overall breakdown of passenger satisfaction ratings. A large neutral segment indicates untapped potential for improvement.

Page 6–10: Detailed Service Insights

- Captions & Insights:
    - Check-in & Boarding → Long queues reduce satisfaction.
    - Cleanliness & Comfort → Higher ratings here increase loyalty.
    - In-flight Services → WiFi, food, and entertainment are major influencers.
    - Staff & Support → Friendly service improves overall experience.
    - End-to-End Journey View → Combining multiple touchpoints gives a holistic satisfaction score.

6. Key Findings

- Business travelers are more satisfied than personal travelers.
- On-time performance strongly influences loyalty.
- Economy class passengers are least satisfied, signaling improvement opportunities.
- Neutral customers are a big conversion opportunity for growth.
- Cleanliness, seat comfort, and staff behavior are top satisfaction drivers.

7. Recommendations

Based on the analysis, the following strategies are recommended:

1. **Reduce Delays** – Implement better scheduling and turnaround management.

2. **Improve Economy Class Experience** – Upgrade seat comfort, meal quality, and boarding processes.

3. **Enhance Service Quality** – Prioritize cleanliness, staff friendliness, and inflight amenities.

4. **Target Neutral Customers** – Use loyalty programs, discounts, or better customer care to move them into satisfied group.

5. **Focus on Digital Services** – Improve WiFi, online check-in, and mobile experience to attract younger travelers.

8. Conclusion

This Tableau project successfully demonstrated how data visualization can reveal powerful insights into airline passenger satisfaction. The dashboards highlight that while business-class passengers are generally satisfied, economy passengers and those affected by delays are at risk of dissatisfaction. By addressing service gaps, reducing delays, and improving customer engagement, airlines can achieve higher satisfaction, loyalty, and overall profitability.

End Note:

This project demonstrates the power of data-driven storytelling in understanding customer behavior. The dashboards not only visualize performance but also provide actionable insights for strategic decision-making.