UK Train Rides Analysis Report

This report presents an analysis of train ride data aimed at understanding key trends, identifying challenges, and uncovering opportunities to improve service quality and revenue. The insights are derived from a detailed exploration of the provided dataset, focusing on passenger behavior, route popularity, revenue generation, and punctuality.

Data Overview:

The dataset comprises information about train rides, including departure and arrival times, ticket classes, ticket types, reasons for delays, and pricing details. Key initial observations include:

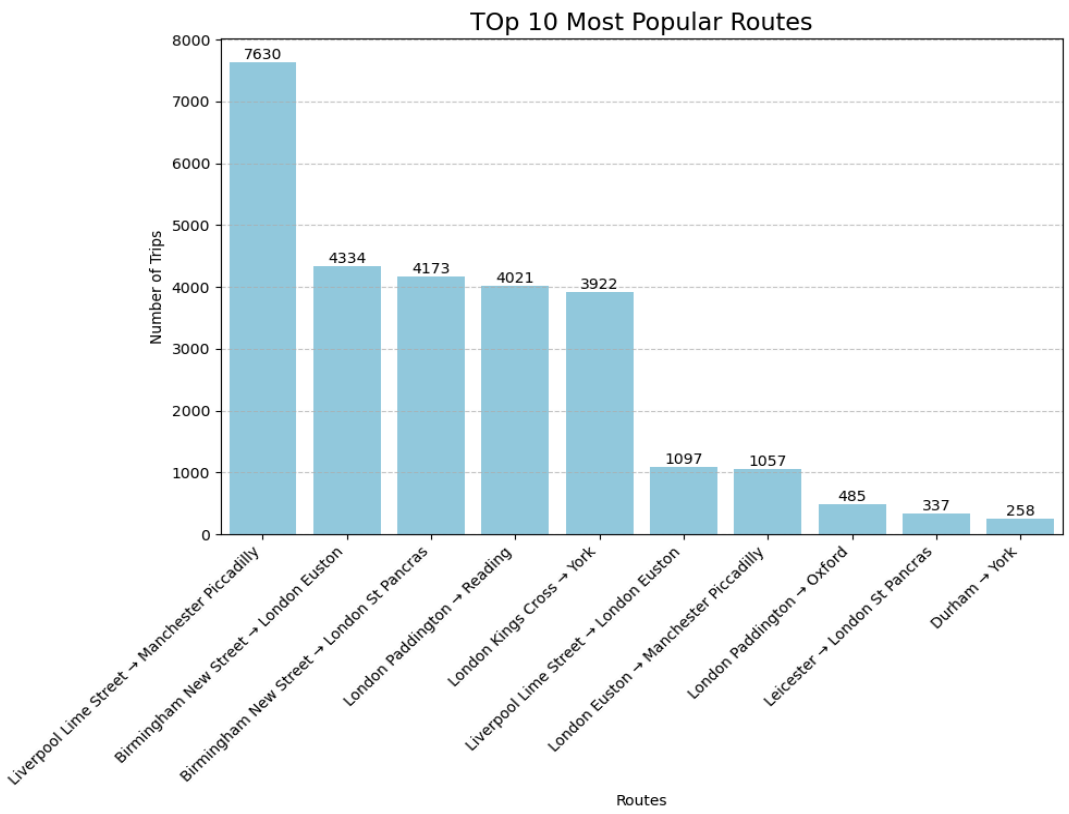
Total Records: 31653
No of columns: 18

Missing values were identified and addressed in fields such as *Reason for Delay* and *Railcard* to ensure data consistency.

Popular Routes:

By analyzing passenger traffic across routes, the Top 10 most popular routes were identified, contributing significantly to the overall traffic.

Liverpool Lime Street → Manchester Piccadilly its most traveled route 7630 times travelled in this route



Insight: Focusing marketing efforts and optimizing schedules for these high-demand routes can enhance profitability.

Departure Trends:

Passengers' departure times were grouped by hour to identify peak travel periods

Peak hour times:

- The most popular departure times are 6 AM and 6 PM (18:00)
- These peak hours likely correspond to morning commutes and evening returns, indicating heavy passenger traffic during these periods.

Moderate Traffic Periods:

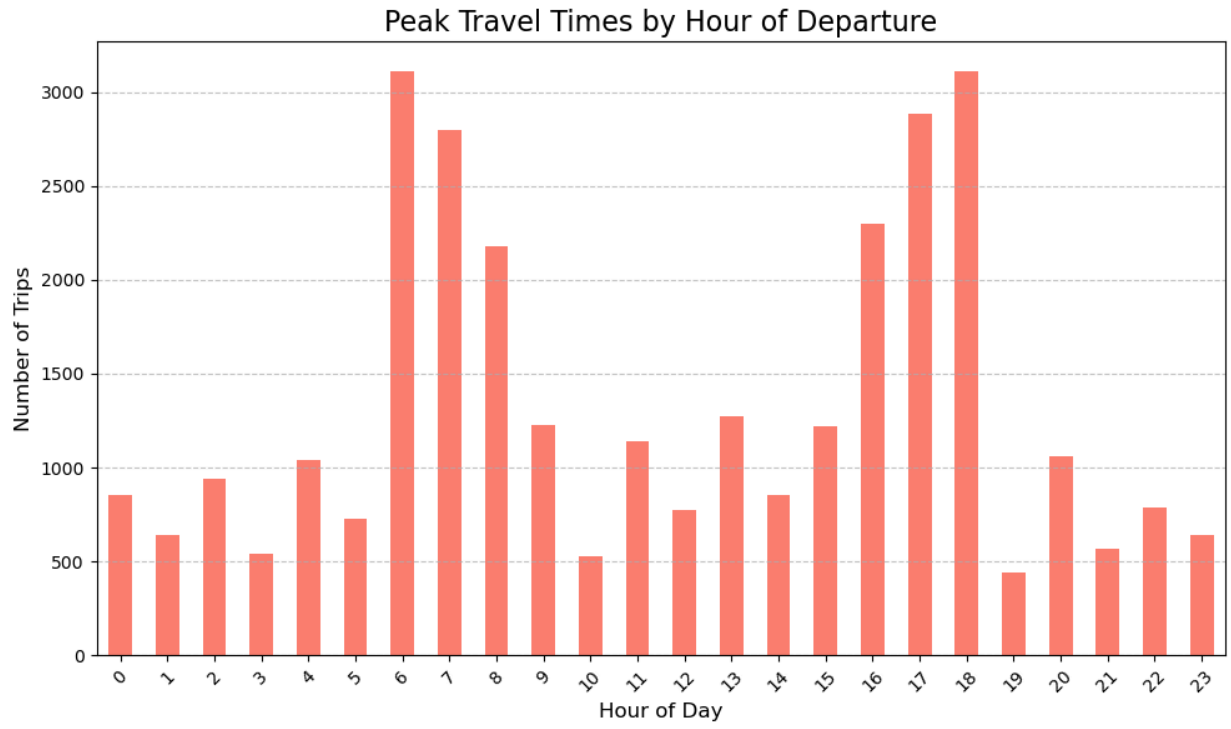
- There is a noticeable increase in travel around 7 AM to 8 AM in the morning and 5 PM (17:00) in the evening, which serve as secondary peaks.

Low Traffic Hours:

- Minimal departures occur between 11 PM and 4 AM, consistent with reduced travel demand during late-night hours.

Steady Midday Traffic:

From 10 AM to 4 PM, traffic is relatively steady, though not as high as during the peaks. This period may cater to leisure or non-commute travel.



Insight: Increase train frequency during 6 AM to 8 AM and 5 PM to 7 PM to accommodate peak demand.
Schedule maintenance and service checks during late-night hours (11 PM to 4 AM) when traffic is lowest.
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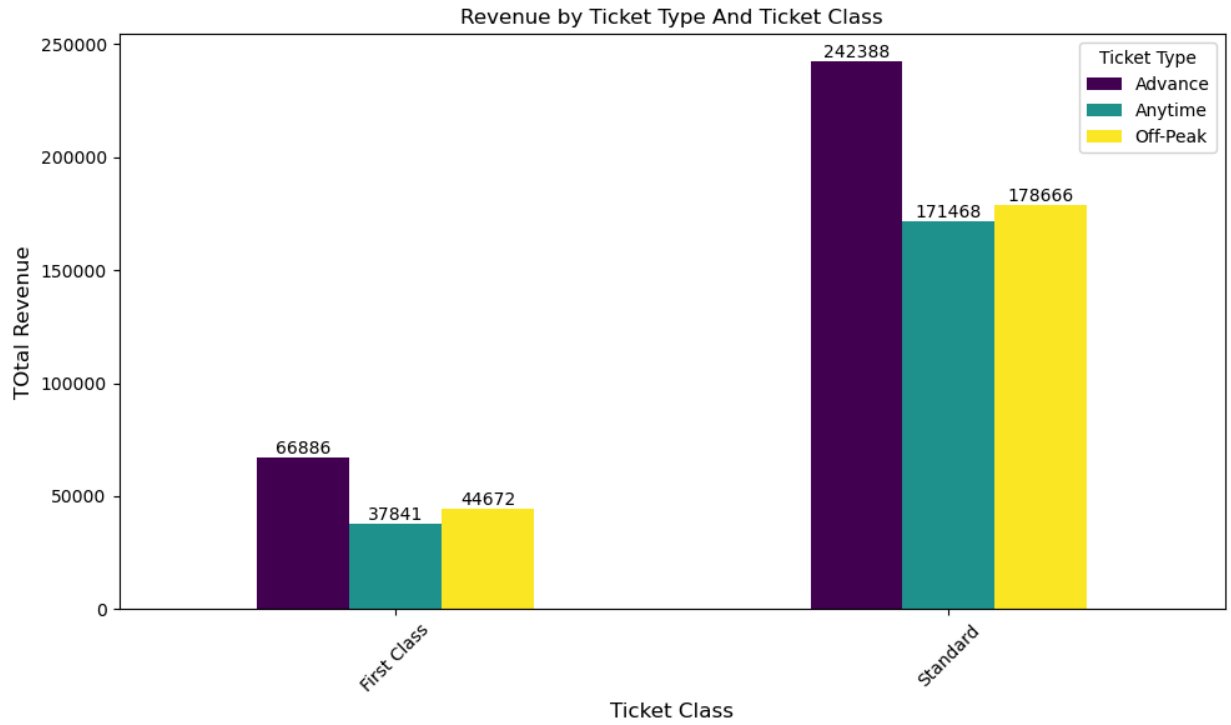
Revenue Insights:
Revenue was analyzed across different ticket classes and types:

- Highest Revenue Contributors: [Standard Class in advanced ticket type generated 242388 total revenue]
- Low-Contributing Segments: Specific ticket types are Anytime and class of first class that contributed less to revenue.

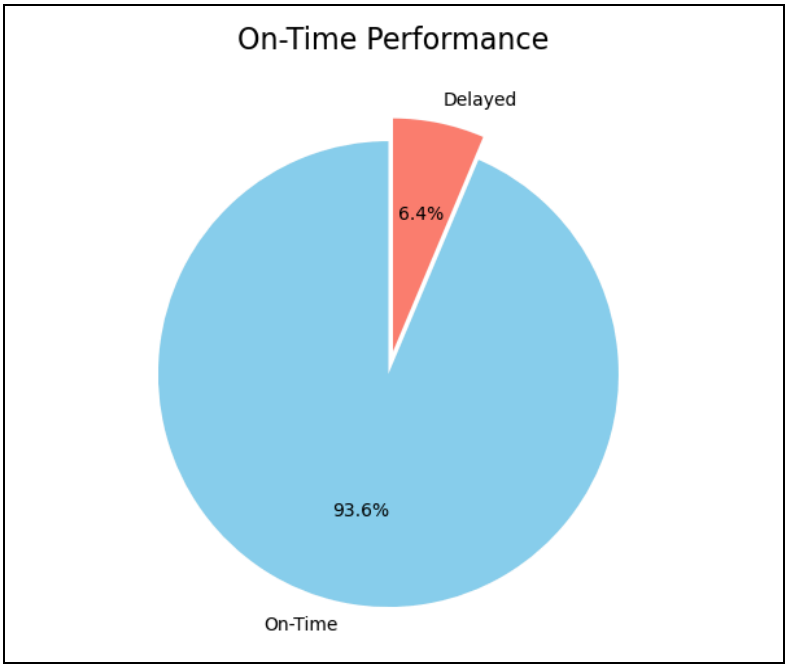


Insight: Investigate underperforming ticket categories to refine pricing or improve service offerings.

On-Time Performance:

The analysis of punctuality revealed that:

- On-Time Trips: 93.6% of total trips.
- Delayed Trips: 6.4% of total trips
- The main reason for the delay is the weather and technical issues. 742 times delayed ride because of weather issue and 364 time delay ride because of technical issues.



Insight: Invest in proactive maintenance and real-time monitoring systems to minimize delays caused by controllable factors.

Factors contributing Of Delay:

THe analysis Revealed that

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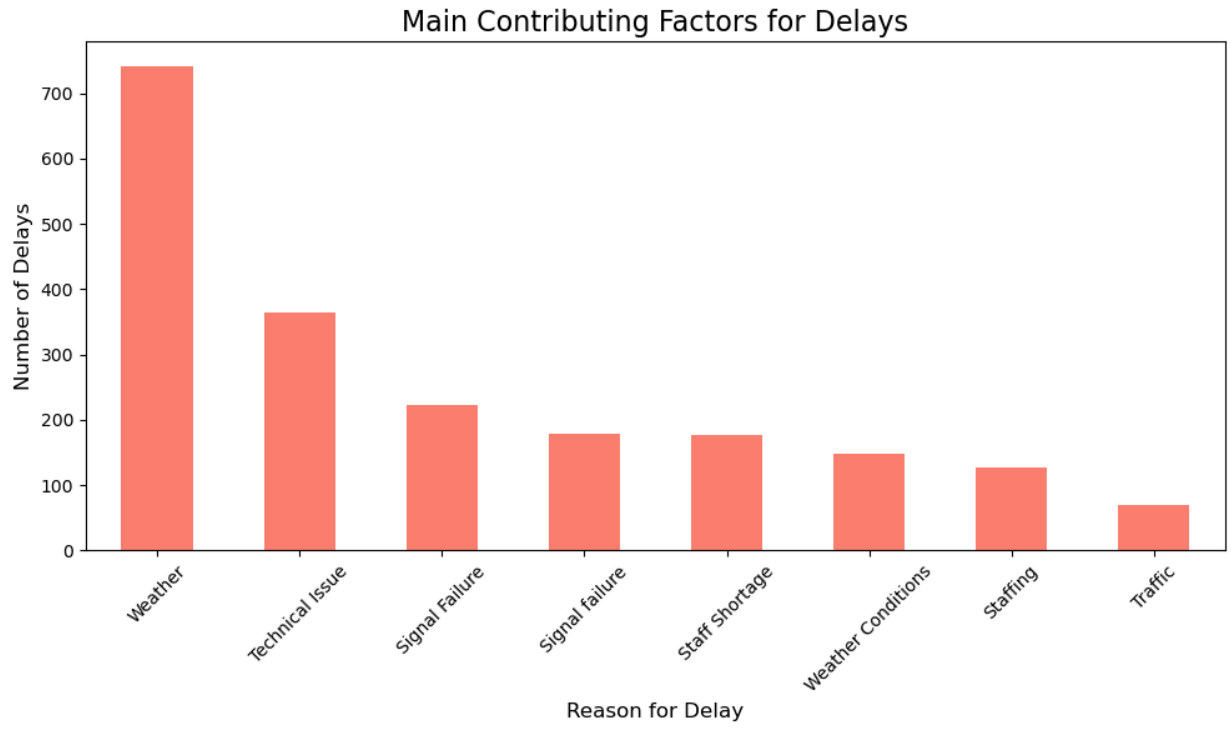

Insight: Publish monthly performance reports highlighting improvements in on-time performance to build customer confidence.

Opportunities and Recommendations:

Based on the analysis, the following opportunities were identified:

- **Route Optimization:** Adjust schedules and increase capacity on high-demand routes.
- **Targeted Promotions:** Encourage off-peak travel through dynamic pricing strategies.
- **Punctuality Improvements:** Focus on minimizing delays by addressing the top reasons for delays.
- **Revenue Growth:** Introduce premium services or packages for high-spending passenger segments.

Conclusion:

This analysis provides actionable insights into improving the efficiency, profitability, and customer satisfaction of the train services. By implementing the recommendations, the organization can optimize operations and enhance the overall travel experience.