National Rail: Performance and Financial Insights

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EXECUTIVE SUMMARY

This report provides a detailed analysis of National Rail's performance and financial metrics, focusing on the identification of the most popular routes, determination of peak travel times, revenue analysis from different ticket types and classes, and diagnosis of on-time performance and contributing factors. This report highlights key findings on National Rail's financial performance, operational efficiency, and customer behavior. The data reveals opportunities to optimize revenue generation, improve on-time performance, and enhance the customer experience.

The insights presented in this report are derived from two comprehensive dashboards: Financial Insights and Operational Insights.

INTRODUCTION

This report provides a comprehensive analysis of National Rail's performance from January to April 2024. It examines ticket sales data, including details on routes, ticket types, classes, purchase times, revenue, and operational metrics.

By analyzing this data, the report aims to:

- Identify the most popular routes and revenue generation patterns.
- Evaluate operational efficiency, focusing on on-time performance and reasons for delays.
- Understand customer behavior, particularly regarding peak travel times and purchase patterns.
- Develop recommendations to optimize revenue, improve operations, and enhance the customer experience.
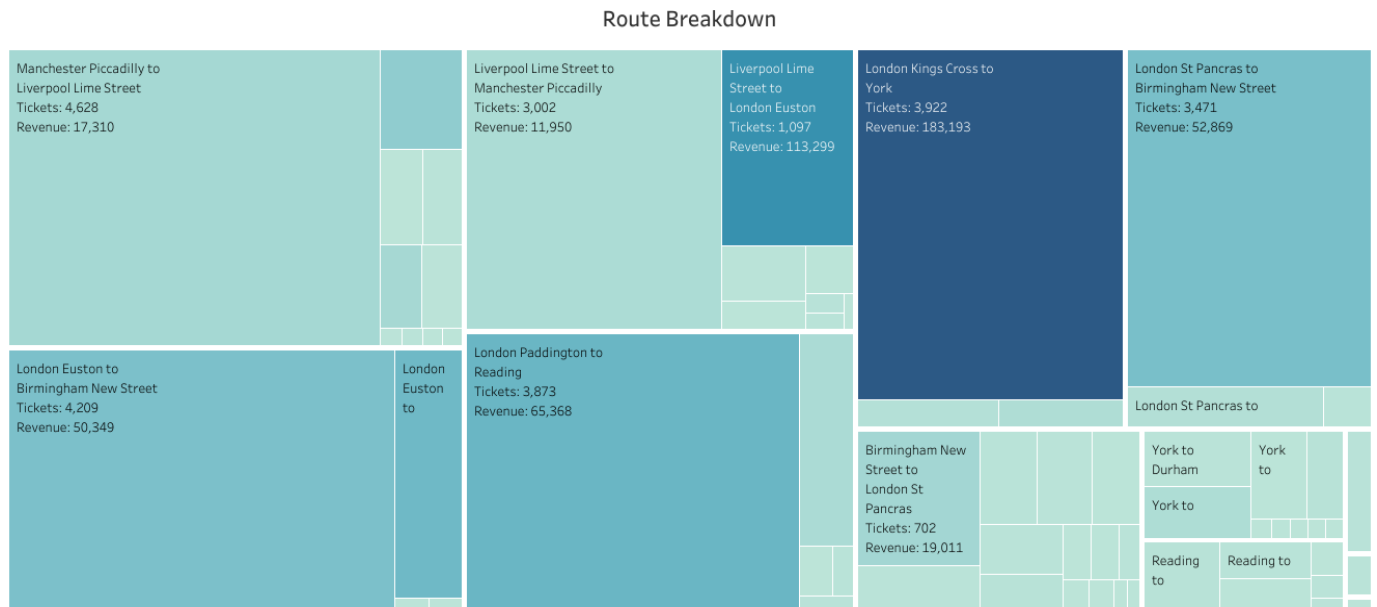
This report empowers National Rail to leverage data-driven insights for better decision-making and a more successful future.
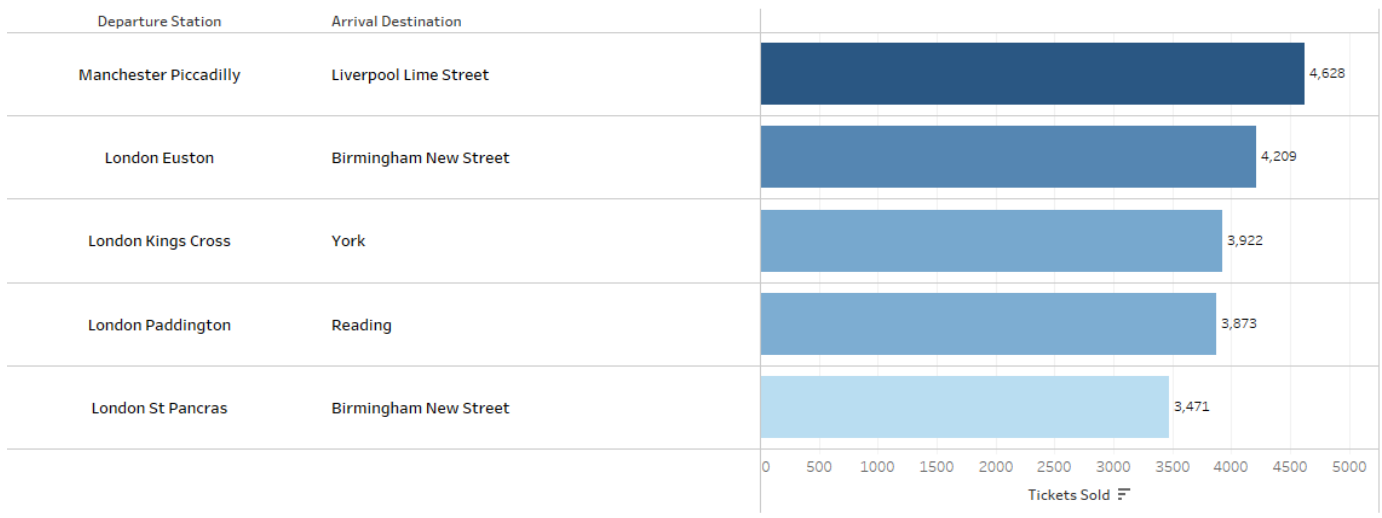
FINANCIAL INSIGHTS

Route Breakdown

The Route Breakdown section highlights the most popular routes based on ticket sales and revenue. This analysis helps identify key routes that contribute significantly to the company's revenue.

The analysis shows that Manchester Piccadilly to Liverpool Lime Street is the most popular route, with 4,628 tickets sold.

Route Breakdown

Manchester Piccadilly to Liverpool Lime Street
Tickets: 4,628
Revenue: 17,310

Liverpool Lime Street to Manchester Piccadilly
Tickets: 3,002
Revenue: 11,950

Liverpool Lime Street to London Euston
Tickets: 1,097
Revenue: 113,299

London Kings Cross to York
Tickets: 3,922
Revenue: 183,193

London St Pancras to Birmingham New Street
Tickets: 3,471
Revenue: 52,869

London Euston to Birmingham New Street
Tickets: 4,209
Revenue: 50,349

London Euston to

London Paddington to Reading
Tickets: 3,873
Revenue: 65,368

Birmingham New Street to London St Pancras
Tickets: 702
Revenue: 19,011

London St Pancras to

York to Durham

York to

York to

Reading to

Reading to

Popular Routes (Departure-Arrival)

Departure Station	Arrival Destination	Tickets Sold
Manchester Piccadilly	Liverpool Lime Street	4,628
London Euston	Birmingham New Street	4,209
London Kings Cross	York	3,922
London Paddington	Reading	3,873
London St Pancras	Birmingham New Street	3,471

London Euston to Birmingham New Street follows closely with 4,209 tickets sold.

However, London Kings Cross to York is the most lucrative route, generating £183,193 in revenue during the analyzed period. London Paddington to Reading and London St Pancras to Birmingham New Street were second and third, albeit far behind the first.

**Top Revenue Generating Routes**
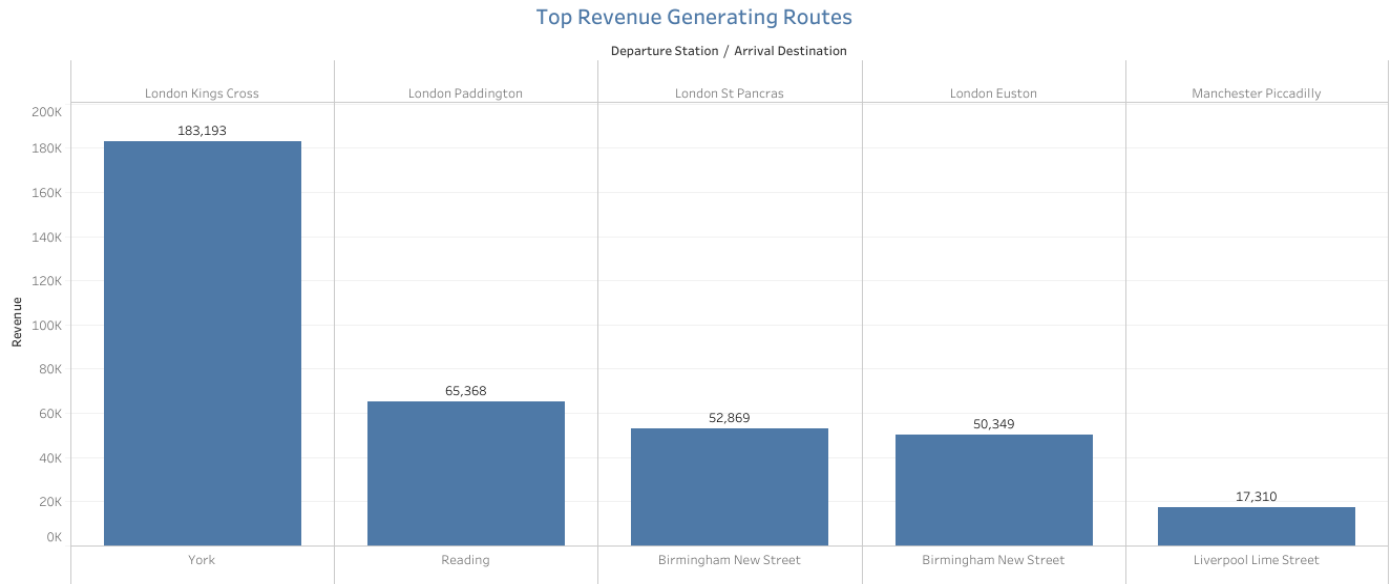
Revenue by Ticket Types and Classes

This section presents a breakdown of revenue generated from different ticket types (Advance, Anytime, Off-Peak) and classes (First Class, Standard).

It appeared that advance tickets were the source of highest portion of revenue for National Rail. Advance tickets accounted for 41% of total revenue.
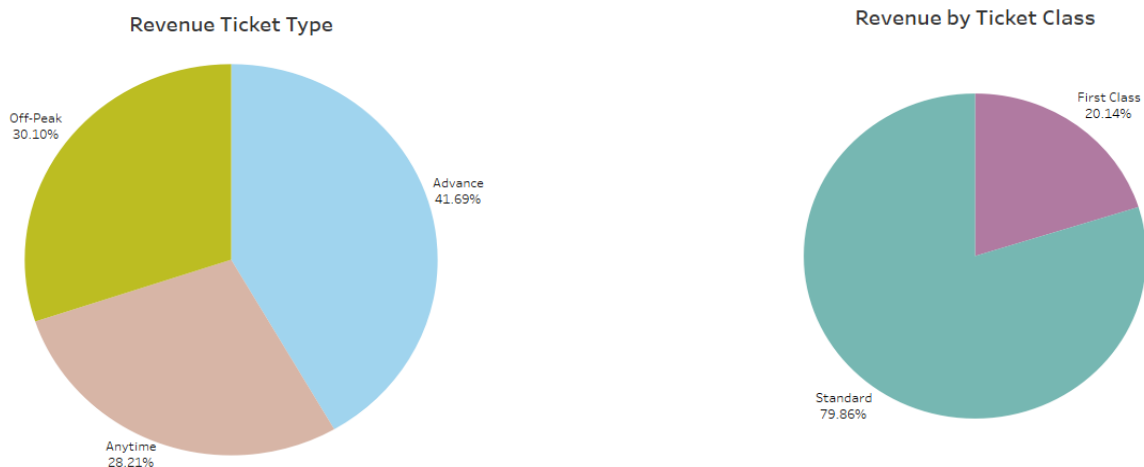

Again, standard tickets bring in more revenue compared to first class tickets.

In fact, standard tickets bought in advance are the most revenue generating tickets of all categories. This type of tickets generates more than £240k in revenue.
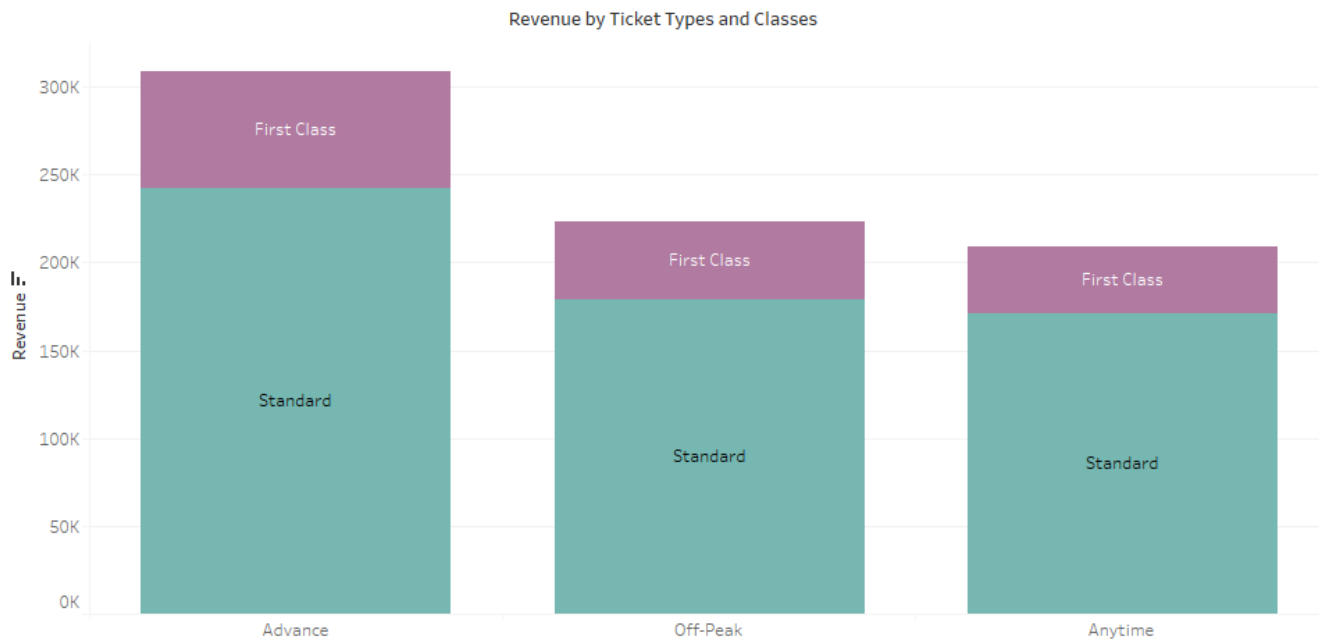

Peak Travel Time

This analysis provides a deeper understanding of customer behavior throughout the day. Advance tickets are in high demand during rush hour, both in the morning and evening. Anytime tickets also see high demand during these periods. Sales for advance tickets drop below anytime tickets later in the day, indicating a preference for instant tickets over advance bookings during the middle of the day. Off-peak ticket sales remain consistent throughout the day.
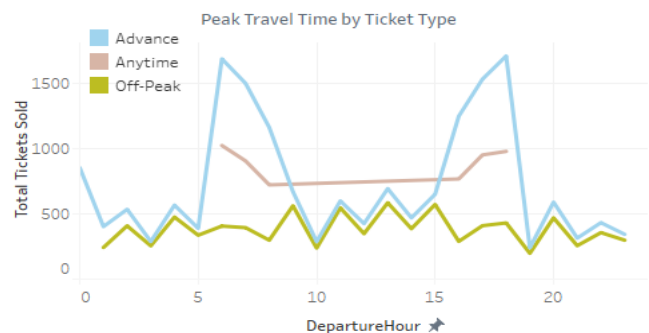

Revenue by Railcard Holder

Non-railcard holders are the most important customers, accounting for the highest revenue despite railcards offering a 1/3 discount on ticket purchases.

Revenue by Railcard Holder
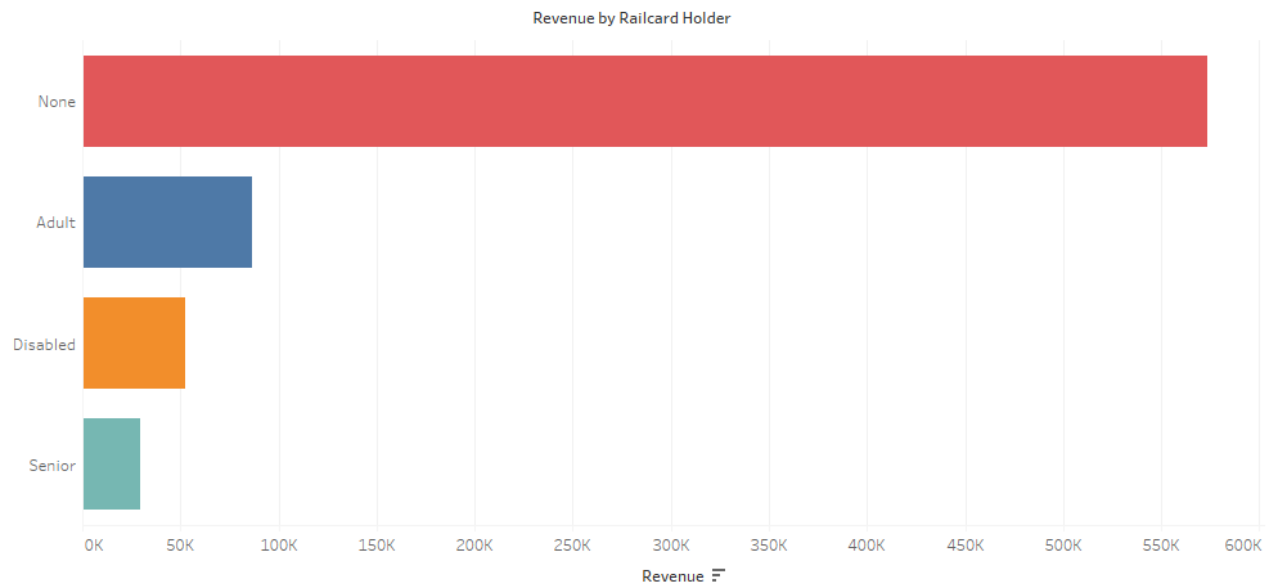
Top Revenue Generating Destinations

The chart illustrates the top revenue-generating destinations, showcasing which stations contribute the most to overall revenue.

We see that York is the most profitable destination. York brought in £185k in revenue during the time period. While Birmingham New Street and Manchester Piccadilly accounted for £106k and £78k respectively.
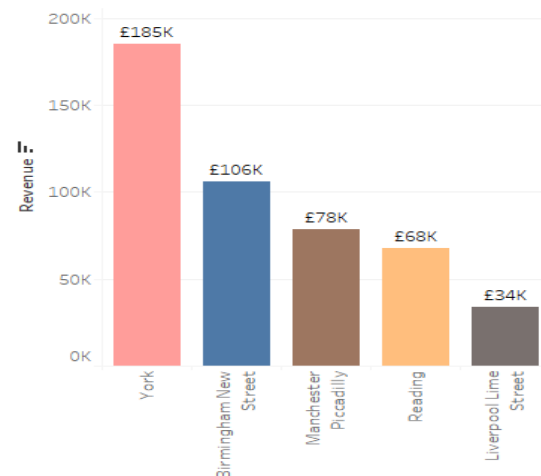
Sales by Purchase Hour

This analysis identifies peak hours for ticket purchases, providing valuable information on customer purchasing behavior throughout the day.
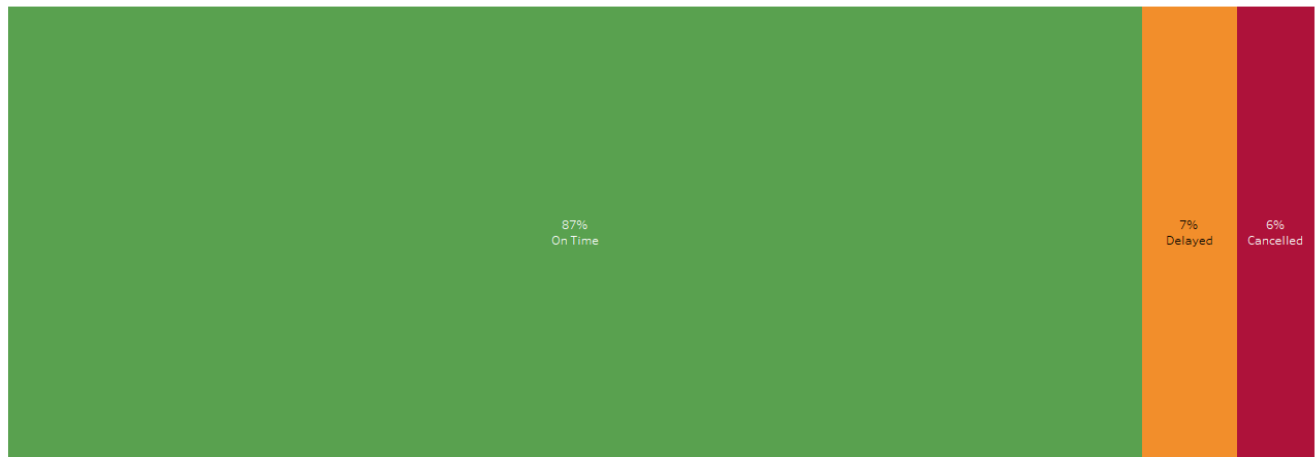
It shows that highest number of tickets are sold in the afternoon. However, highest revenue is generated in the morning.

Ticket Sales by Hour
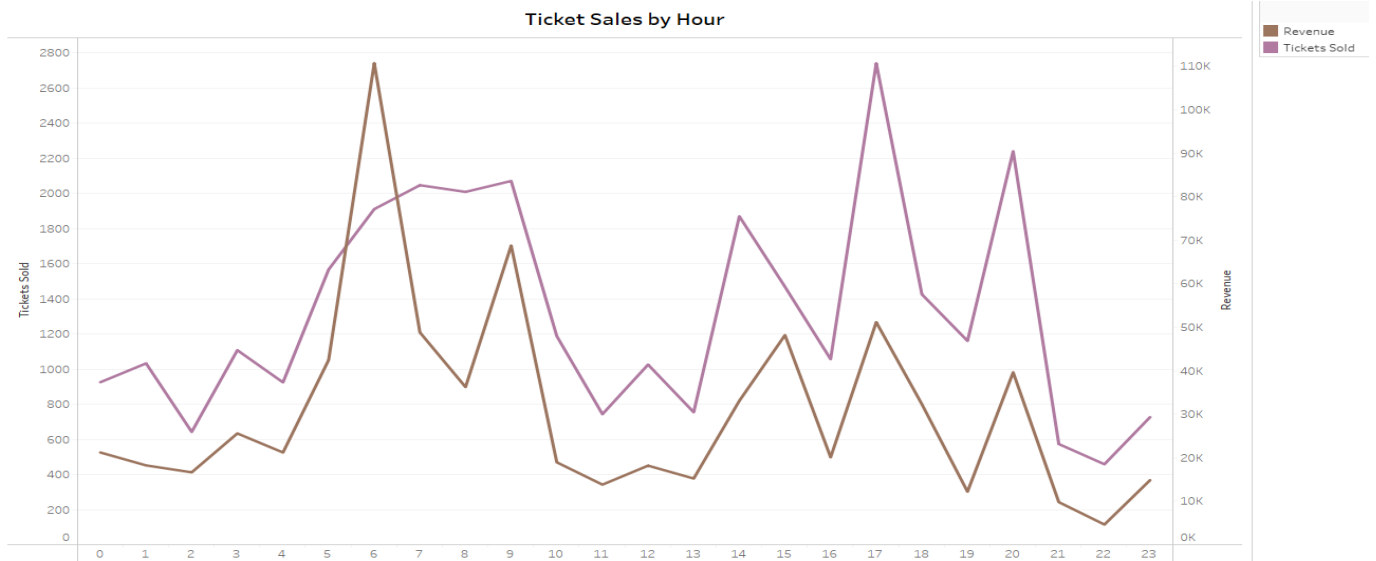
OPERATIONAL INSIGHTS

### Trip Performance Overview

Around 87% of all the trips were on schedule and arrived on time. 7% were delayed and 6% cancelled.


Trip Overview

If we analyze trip performance by hour, we see that the highest number of trips cancelled was around 7 pm. Again, the highest number of trips delayed was around 10 in the morning. We also see lots of trip cancellation in the morning as well. This calls for a deeper investigation to identify key issues disrupting service during the rush hours.

Trip Performance by Hour

258 Cancelled Trips, most in an hour

Legend: Cancelled, Delayed, On Time
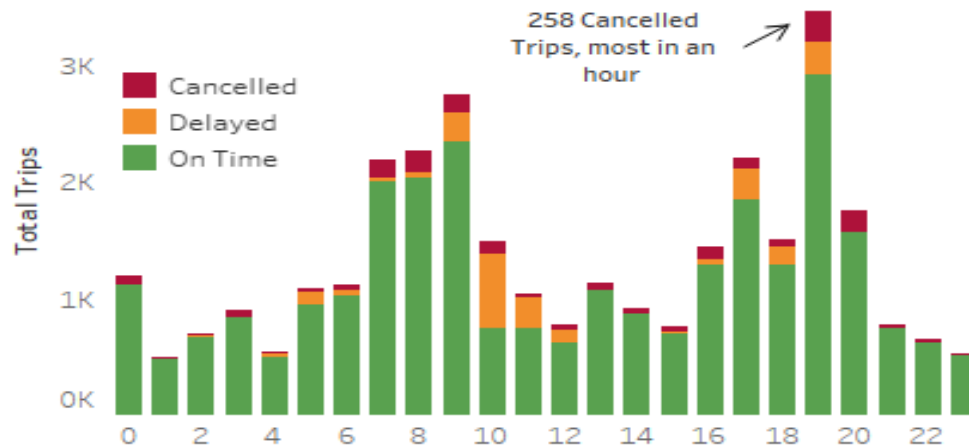
Delay Reason

Weather seems to be the reason for 1/3rd of the delayed/cancelled trips. Signal failures lead to 23% trip delays/cancellations. Staffing and technical issues were also key contributors. Traffic was the least disruptive factors among these.

Delay Reason — Weather Conditions 33%, Signal Failure 23%, Staffing 19%, Technical Issue 17%, Traffic 8%
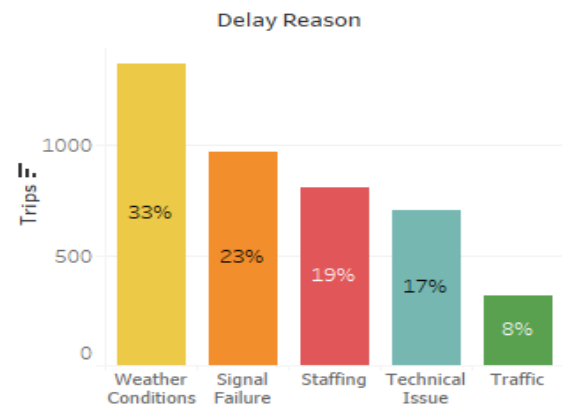
Delayed Trips by Station

Next, we move on to trip delays by destination stations. It is important to note that delay is calculated by subtracting Actual Arrival Time from Arrival Time.

The bar chart shows that trips bound for London Euston are delayed more frequently than others. Liverpool Lime Street and Birmingham New Street are second and third in the list.

Delayed Trips by Station — London Euston, Liverpool Lime Street, Birmingham New Street, Manchester Piccadilly, York
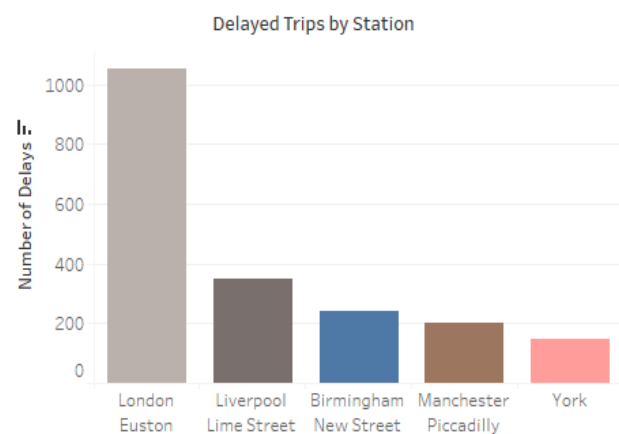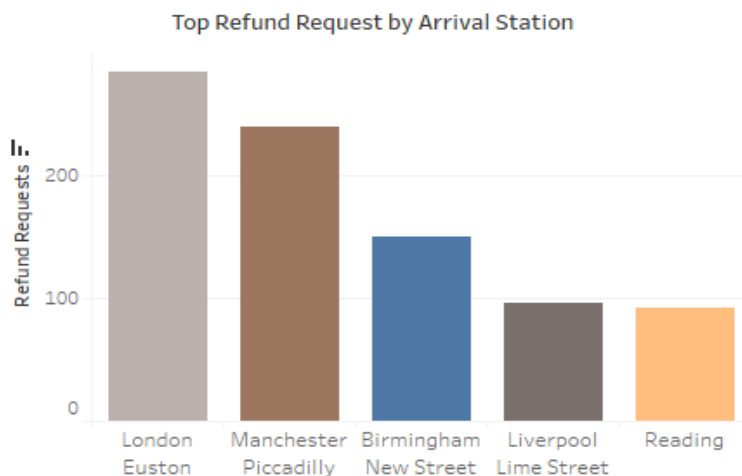
Average Delay by Arrival Station

If we look at average delay by arrival station, we see that trains bound for Leeds face the highest delay on average, 36.22 minutes. London Euston-bound trains face 24.45 seconds delay on average, ranking second.

Average Delay by Arrival Station
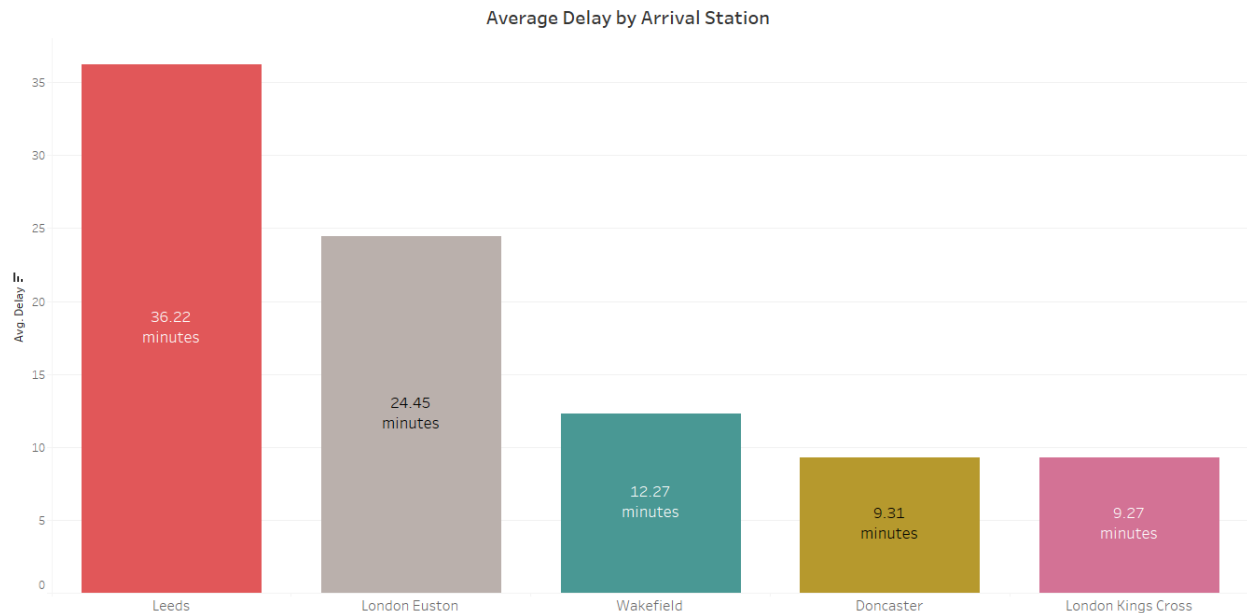
Top Refund Requests

Finally we identify top refund requests by arrival station.

Top Refund Request by Arrival Station

London Euston-bound passengers request the most refunds, which aligns with the high number of delays and the second-highest average delay time. Despite facing the highest average delay, Leeds is not in the top five arrival stations for refund requests.

CONCLUSION

This report provides National Rail with valuable insights into its financial performance, operational efficiency, and customer behavior. By leveraging this data, National Rail can optimize revenue generation, improve on-time performance, and ultimately enhance customer experience. Implementing the recommendations outlined in this report can lead to a more data-driven approach, enabling National Rail to achieve its strategic objectives.

The visuals and the dashboards are available [here](#).