UK Railway Analysis
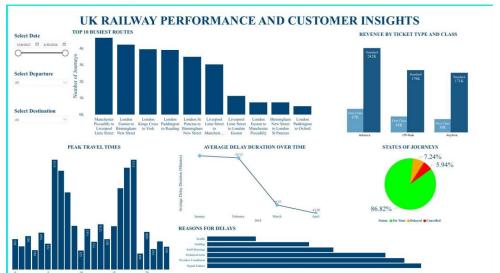
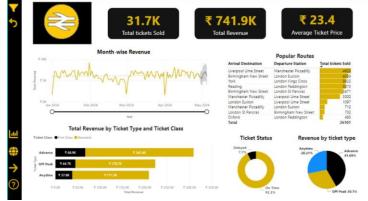## UK Train Analysis
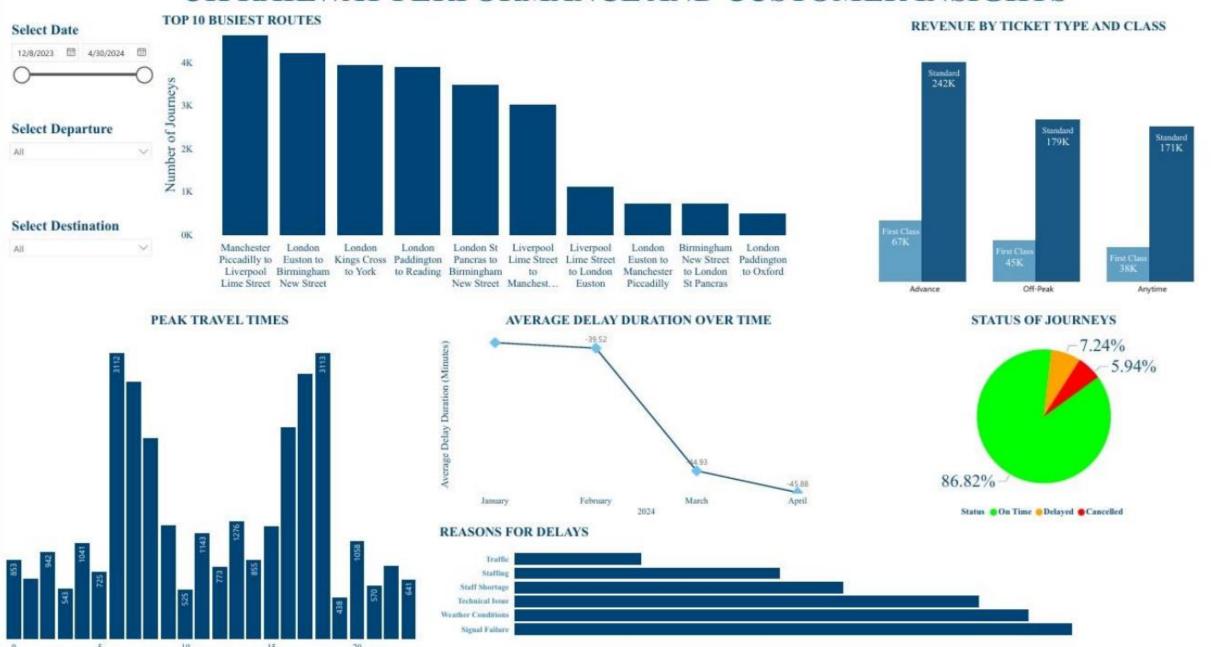
Power BI Data Analysis Project by
_____

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UK RAILWAY PERFORMANCE AND CUSTOMER INSIGHTS

TOP 10 BUSIEST ROUTES

Select Date
12/8/2023 — 4/30/2024

Select Departure
All

Select Destination
All

REVENUE BY TICKET TYPE AND CLASS

Standard 242K
Standard 179K
Standard 171K
First Class 67K
First Class 45K
First Class 38K
Advance — Off-Peak — Anytime

PEAK TRAVEL TIMES

AVERAGE DELAY DURATION OVER TIME

January — February — 2024 — March — April

STATUS OF JOURNEYS

7.24%
5.94%
86.82%
Status: On Time, Delayed, Cancelled

REASONS FOR DELAYS

Traffic
Staffing
Staff Shortage
Technical Issue
Weather Conditions
Signal Failure

31.7K Total tickets Sold
₹ 741.9K Total Revenue
₹ 23.4 Average Ticket Price

Month-wise Revenue

Popular Routes

Total Revenue by Ticket Type and Ticket Class

Ticket Status

Revenue by ticket type

Author : Prince Kumar Sharma

UK RAILWAY PERFORMANCE AND CUSTOMER INSIGHTS

Select Date

12/8/2023   4/30/2024

Select Departure

All

Select Destination

All

TOP 10 BUSIEST ROUTES

Number of Journeys: 4K, 3K, 2K, 1K, 0K

- Manchester Piccadilly to Liverpool Lime Street
- London Euston to Birmingham New Street
- London Kings Cross to York
- London Paddington to Reading
- London St Pancras to Birmingham New Street
- Liverpool Lime Street to Manchest...
- Liverpool Lime Street to London Euston
- London Euston to Manchester Piccadilly
- Birmingham New Street to London St Pancras
- London Paddington to Oxford

REVENUE BY TICKET TYPE AND CLASS

- Advance: First Class 67K, Standard 242K
- Off-Peak: First Class 45K, Standard 179K
- Anytime: First Class 38K, Standard 171K

PEAK TRAVEL TIMES

853, 942, 543, 1041, 725, 3112, 525, 1143, 773, 1276, 855, 3113, 438, 1058, 570, 641

AVERAGE DELAY DURATION OVER TIME

Average Delay Duration (Minutes)

- January: -39.52
- February
- March: -44.93
- April: -45.88

2024

STATUS OF JOURNEYS

7.24%
5.94%
86.82%

Status ● On Time ● Delayed ● Cancelled

REASONS FOR DELAYS

- Traffic
- Staffing
- Staff Shortage
- Technical Issue
- Weather Conditions
- Signal Failure

UK TRAIN ANALYSIS

32K
Total Transcition ID

742K
Total Price

2
Purchase Type

3
Total Payment Met...

23.44
Average price

Total Transcition ID by Payment Method

- Debit Card 2K
- Contactless 11K
- Credit Card 19K

Total Price by Ticket Type

Ticket Type	Price
Advance	309K
Off-Peak	223K
Anytime	209K

Top 5 Departure Station

- Manc... Picca... 5.7K
- London Euston 5.0K
- Liverp... Lime Street 4.6K
- London Paddi... 4.5K
- London Kings Cross 4.2K

Sum of Price by Purchase Type

- Online 383K
- Station 359K

Refund Request Status

- yes refund 1K
- no refund 31K

Top 5 Arrival Destination

Destination	Value
York	4019
Tamworth	227
Wolverh...	115
Wakefield	15
Warringt...	15

Online Ticket
18.52K

Total Ticket Type Analysis By Different Age Groups

Station
13.13K

Tickets Bought By Adult Online & Offline	Tickets Bought By Disabled Online & Offline	Tickets Bought By Seniors Online & Offline	Passengers who Bought But Not Travelling

First Class	Standard Class	First Class	Standard Class	First Class	Standard Class	First Class	Standard Class
490	4356	314	2775	269	2531	1985	18.93K

Online	Online	Online	Online	Online	Online	Online	Online
209	2004	230	1946	214	2007	1128	10.7…

Stations	Stations	Station	Station	Station	Station	Station	Station
281	2352	84	829	55	524	857	8150

National Rail

Ticket Type: All | Purchase Type: All | Ticket Class: All | Departure Station: All | Arrival Destination: All

Total Tickets	Total Revenue	Refund Tickets	Total Routes
31.65K	$741.92K	1118	65

Revenue by Ticket Type

Advance — $309.27K
Off-Peak — $223.34K
Anytime — $209.31K

Revenue by Purchase Type

Purchase: ● Online ● Station
$359.1... (48.41%)
$382.75... (51.59%)

Tickets by Payment Method

Payment: ● Credit Card ● Contactless ● Debit Card
2K (5.32%)
11K (34.23%)
31.65K
19K (60.46%)

* The predominant method of payment for passengers is credit card, with 60% of bookings made using this mode. Furthermore, a significant portion of these credit card bookings are made in advance, indicating a preference for pre-planned arrangements among passengers.

Top 10 Departure Stations

5.7K, 5.0K, 4.6K, 4.5K, 4.2K, 3.9K, 2.1K, 0.9K, 0.6K, 0.1K

Top 10 by Arrival Destinations

7.7K, 5.0K, 4.0K, 4.0K, 3.9K, 1.6K, 0.7K, 0.6K, 0.4K, 0.3K

Top 10 Routes

Departure Station	Arrival Destination	# Passengers
Manchester Piccadilly	Liverpool Lime Street	4628
London Euston	Birmingham New Street	4209
London Kings Cross	York	3922
London Paddington	Reading	3873
London St Pancras	Birmingham New Street	3471
Liverpool Lime Street	Manchester Piccadilly	3032
Liverpool Lime Street	London Euston	1097
London Euston	Manchester Piccadilly	712
Birmingham New Street	London St Pancras	702
London Paddington	Oxford	485

Passengers by Departure Time and Journey Status

Journey Status: ● Cancelled ● Delayed ● On Time
2.9K, 2.8K, 0.8K, 0.4K, 0.7K, 0.5K, 0.3K, 0.8K, 0.4K, 0.3K, 1.0K, 0.6K
0.7K (delayed line)

Passengers by Departure Time

3.1K, 3.1K, 0.9K, 0.7K, 0.5K, 0.9K, 1.1K, 0.4K, 0.6K

Purchase Type (Online) | Payment Method (Credit Card) | Ticket Type (Advance) | Railcard (None) | Ticket Class

Total Revenue $741,921
Online $382,754
Credit Card $243,399
Advance $100,495
None $77,768
Standard $60,057
Contactless $118,940
Anytime $77,050
Disabled $12,511
First Class $17,711
Station $359,167

UK TRAIN ANALYSIS

Total Transcition ID by Journey Status

Cancelled 1880
Delayed 2292

On Time 27481

Total Price by Ticket Class

Standard	593K
First Class	149K

Total refund by Reason for Delay

27481

995 970 707 410 399 377 314

Weather Signal Failure Technical Issue Staffing Staff Shortage Weather Condit.. Traffic

Total journeys by Month

0.0K 7.7K 8.1K 7.3K 8.4K

December April March February January

Total journeys by Railcard

21K

5K

3K 3K

20K
15K
10K
5K
0K

None Adult Disabled Senior

RAILWAY ANALYSIS DASHBOARD

Total ID 2292

Arrival Destinat... 14

Departure Stat... 9

Total Price 127K

Avg Price 55.33

Pick Any Month

| Jan | Feb | Mar | Apr | Dec |

Count Of Transaction ID By Railcard

- 2,000
- 1,500
- 1,000
- 500
- 0

1410 — None
665 — Adult
136 — Disabled
81 — Senior
2292 — Total

● Increase ● Decrease ● Total

Total Price By Departure Station

UK Train Departure Analysis

Total Departure Stations: 9
Total On Time Trains: 234
Total Cancelled Trains: 19

Reason For Delay: All

Departure Station

Station	Value
Manchester	51
London Paddi	42
London Euston	40
London Kings	37
Liverpool Li	32
Birmingham N	26
London St Pa	24
York	12
Reading	1

First Class, Standard, Advance, Off-Peak
January, Cancelled, Delayed, On Time
Adult, Disabled, Contactless, Credit Card, Debit Card

Monthly Revenue: 6.0K (January)

Total Adults Travelling: 36
Total Disabled travelling: 25
Total Senior Travelling: 20
Not Travelling: 184

Ticket Type
- Off-Peak: 113 (42.64%)
- Advance: 152 (57.36%)

Date

Monday, January 01, 2024
Tuesday, January 02, 2024
Wednesday, January 03, 2024
Thursday, January 04, 2024
Friday, January 05, 2024
Saturday, January 06, 2024
Sunday, January 07, 2024
Monday, January 08, 2024
Tuesday, January 09, 2024
Wednesday, January 10, 2024
Thursday, January 11, 2024
Friday, January 12, 2024
Saturday, January 13, 2024
Sunday, January 14, 2024
Monday, January 15, 2024

Departure Time

Departure Station (map)

UK Train Arrival Analysis

Arrival Stations: 32
On Time Trains: 27.48K
Cancelled Trains: 1880
Delayed Trains: 2292

Reason For Delay: All

Adult, Disabled, None, Senior, Advance, Anytime, Off-Peak
Cancelled, Delayed, On Time, First Cla..., Standard
April, December, February, January, March, Contact..., Credit..., Debit C...

Arrival Stations

Birmingham, Liverpool, York, Manchester, Reading, London E., London S., Oxford, London P., Leicester, Sheffield, Durham, Leeds, Peterbor., Swindon, Tamworth

Reason For Delay

Weather, Signal Failure, Technical Iss, Staffing, Staff Shortage, Weather Condi, Traffic

Adults Travelling: 4846
Disabled Travelling: 3089
Senior Travelling: 2800
Not Travelling: 20.92K

Refund Request
Railcard:
- None: 20.92K (66.09%)
- Adult: 4.85K (15...)
- Disabled: 3.09K (9.76%)
- Senior

Arrival Time

Arrival Destination (map)

U.K RAILWAY ANALYSIS

Railcard Analysis by railcategorry

- 2.8K (8.85%)
- 3.09K (9.76%)
- 4.85K (15.3...)
- 20.92K (66.09%)

Railcard Category
- None
- Adult
- Disabled
- Senior

Count of Ticket Type by Ticket Type

- 17.6K (Advance)
- 8.8K (Off-Peak)
- 5.3K (Anytime)

Y-axis: Count of Ticket Type
X-axis: Ticket Type

Count of Purchase Type by Purchase Type

- 13.13K (41.49%)
- 18.52K (58.51%)

Purchase Type
- Online
- Station

Sum of Price by Time of Purchase

Y-axis: Sum of Price (0–700)
X-axis: Time of Purchase (3:00 AM, 6:00 AM, 9:00 AM, 12:00 PM, 3:00 PM, 6:00 PM, 9:00 PM)

Values: 621, 588, 499, 382, 430, 364, 325, 314, 317

Sum of Price by Departure Station

- London Kings Cross: 200K
- Liverpool Lime Street: 135K
- London Euston: 112K
- Manchester Picca...: 84K
- London St Pancras: 75K
- Birmingham New Street: 63K
- York: 38K
- Reading: 20K
- Oxford: 10K
- Edinburgh Waverley: 3K
- Bristol Temple Meads: 2K
- 0K

Y-axis: Sum of Price
X-axis: Departure Station

Sum of Price by Arrival Destination

- York: 185K
- London Euston: 151K
- Birmingham New...: 106K
- Reading: 78K
- Liverpool Lime St...: 68K
- London St Pancras: 34K
- London Paddingt...: 24K
- Oxford: 22K
- Peterborough: 14K
- Leicester: 11K
- Edinburgh Wavel...: 7K
- Birmingham: 6K
- London Kings Cr...: 5K
- Swindon: 4K
- Bristol Temple M...: 4K
- Wolverhampton: 3K
- Leeds: 3K
- Nottingham: 2K
- Durham: 2K
- Tamworth: 2K
- Sheffield: 2K
- Stafford: 2K
- Crewe: 1K
- Doncaster: 1K
- London Waterlo...: 0K
- Coventry: 0K

Y-axis: Sum of Price
X-axis: Arrival Destination

Sum of Price by Journey Status and Railcard

Railcard
- Adult
- Disabled
- None
- Senior

Values: 0.06M, 0.43M, 0.02M, 0.02M, 0.10M, 0.00M, 0.00M, 0.04M (On Time, Delayed, Cancelled)

Y-axis: Sum of Price
X-axis: Journey Status

Advance — First Ticket Type

32 — Count of Arrival Destination

U.S RAILWAY ANALYSIS

First Reason for Delay

Earliest Arrival Time
12:00:00...

Refund Request: No / Yes

Purchase Type: Online / Station

Departure Station	Adult	Disabled	None	Senior	Total
Birmingham New Street	5268	10660	20719	1469	38116
Bristol Temple Meads			98		98
Edinburgh Waverley			2093		2093
Liverpool Lime Street	17442	1397	112231	4204	135274
London Euston	20553	17897	70750	2845	112045
London Kings Cross	14983	10369	170641	3657	199650
London Paddington	6406	3920	68827	4689	83842
London St Pancras	6176	4369	46040	6372	62957
Manchester Piccadilly	12911	142	56590	5671	75314
Oxford	1323		1283	253	2859
Reading			9755	372	10127
York	1268	3524	14670	84	19546
Total	**86330**	**52278**	**573697**	**29616**	**741921**

Count of Journey Status by Arrival Destination

100%
- York: 4.02K
- Reading: 3.92K
- Oxford: 0.62K
- Sheffield: 0.27K
- Peterborough: 0.24K
- Swindon: 0.23K
- Tamworth: 0.23K
- Nuneaton: 0.22K
- Stafford: 0.19K
- Wolverhampton: 0.12K
- Wakefield: 0.02K
- Warrington: 0.02K
- 0.4%

Sum of Price by Railcard

- 30K (3.89%)
- 52K (7.05%)
- 86K (11.64%)
- 574K (77.33%)

Railcard
- None
- Adult
- Disabled
- Senior

Count of Arrival Destination by Actual Arrival Time

Y-axis: Count of Arrival Destination (0–100)
X-axis: Actual Arrival Time (10:50 PM, 11:00 PM, 11:10 PM, 11:20 PM, 11:30 PM, 11:40 PM, 11:50 PM)

Ticket Class: Standard
Payment Method: Credit Card
Purchase Type: Online
Refund Request
Ticket Type

- Credit Card 17291
- Online 10379
- No 10133
- Standard 28595
- Contactless 9798
- Station 6912
- Yes 246
- Count of Railcard 31653
- First Class 3058
- Debit Card 1506

Revenue and Mode Of Payment Analysis

£ £

Total Revenue 📇
742K
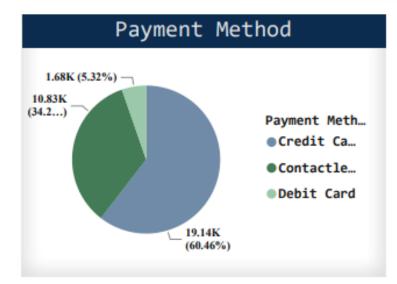
Online Revenue 📇
383K
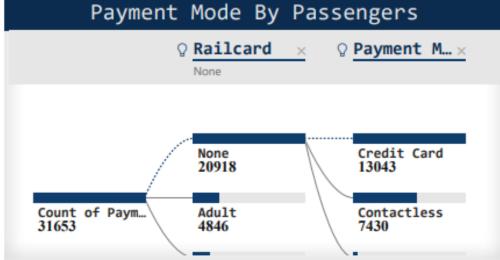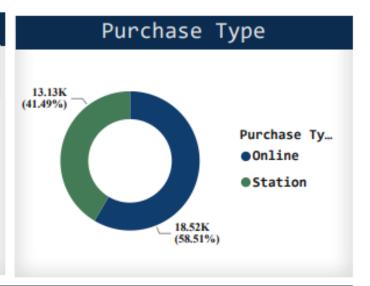
Offline Revenue 📇
359K
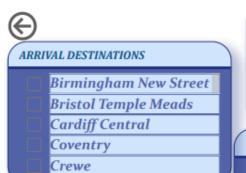
| Contactless | Credit Card | Debit Card |

Payment Method

1.68K (5.32%)

10.83K (34.2…)

19.14K (60.46%)

Payment Meth…
- Credit Ca…
- Contactle…
- Debit Card

Payment Mode By Passengers

💡 **Railcard** ×
None

💡 **Payment M...** ×

None
20918

Credit Card
13043

Count of Paym…
31653

Adult
4846

Contactless
7430

Purchase Type

13.13K (41.49%)

18.52K (58.51%)

Purchase Ty…
- Online
- Station

Time of Purchase

Sum of Price

600

400

200

0

3:00 AM   6:00 AM   9:00 AM   12:00 PM   3:00 PM   6:00 PM   9:00 PM

Time of Purchase

RAILWAY DASHBOARD

ARRIVAL DESTINATIONS

- ☐ Birmingham New Street
- ☐ Bristol Temple Meads
- ☐ Cardiff Central
- ☐ Coventry
- ☐ Crewe

TOTAL PRICE

742K

DEPARTURE STATIONS

- ☐ Birmingham New Street
- ☐ Bristol Temple Meads
- ☐ Edinburgh Waverley
- ☐ Liverpool Lime Street
- ☐ London Euston

January
February

TICKET CLASS BY PAYMENT METHOD

- 1.68K (5.32%)
- 10.83K (34....)
- 19.14K (60.46%)

● Credit ... ● Contactl... ● Debit C...

Sum of Price by Railcard

- 86K (11....)
- 57... (...)

● None ● Adult ● Disabled ▷

PURCHASE TYPE BY TICKET TYPE

- 5.34K (16....)
- 8.75K (27.65%)
- 17.56K (55.48%)

● Advance ● Off-Peak ● Anytime

TOTAL PRICE BY DEPARTURE STATION

Station	Value
London Kings...	200K
Liverpool Lime Street	135K
London Euston	112K
London Paddington	84K
Manchester Piccadilly	75K
London St Pancras	63K
Birmingham New Street	38K
York	20K
Reading	10K
Oxford	3K
Edinburgh Waverley	2K
Bristol Temple Meads	0K

PRICE BY ACTUAL ARRIVAL TIME

- 20K
- 17.9K
- 18.6K
- 19.2K
- 15.5K
- 13.4K
- 13.1K
- 0.6K
- 1.1K

(00:00 – 21:00)

PRICE BY MONTH

Month	Value
January	205K
February	154K
March	195K
April	187K
December	1K

UK RAILWAY DATA ANALYSIS

Cancelled | Delayed | On Time

TOTAL NO. OF JOURNEY

31.653K

JOURNEY STA...

Total Journey Status
31653

On Time
27481

Delayed
2292

Cancelled
1880

TOTAL NO. OF TICKET CLASS BY PURCHASE TYPE

13132 (41.49%)

18521 (58.51%)

PURCHASE TYPE
- Online
- Station

TOTAL PRICE BY TICKET TYPE

TICKET TYPE	
Advance	
Off-Peak	
Anytime	

TOTAL PRICE: 0K, 100K, 200K, 300K

TOTAL PRICE BY RAILCARD

RAILCARD:
- None
- Adult
- Disabled
- Senior

TOTAL PRICE: 0K, 200K, 400K, 600K

TOTAL NO. OF TICKET TYPE BY PAYMENT METHOD

1683 (5.32%)

10834 (34.23%)

19136 (60.46%)

PAYMENT METHOD
- Credit Card
- Contactless
- Debit Card

TOTAL BOOKING BY MONTH

TOTAL BOOKING: 0, 10, 20, 30, 40, 50

MONTH: January, February, March, April

UK RAIL TICKET SALE ANALYZATION 📈

TOTAL SALE PRICE
742K
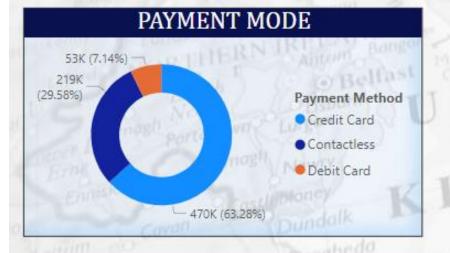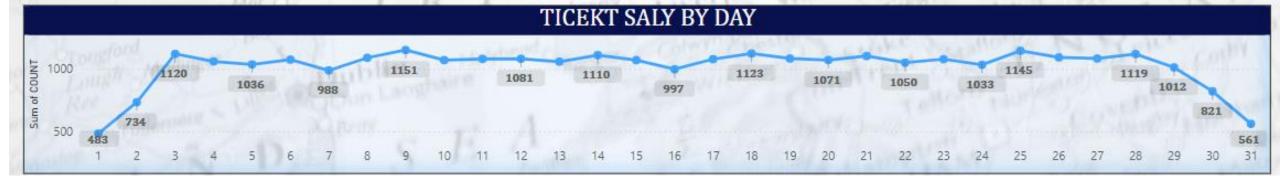
TOTAL TICKET SALE 💳
31.65K

ONLINE TICKET SALE 💳
18.52K

STATION TICKET SALE 💳
13.13K

ARRIVAL STATION

- ☐ Select all
- ☐ Birmingham New Street
- ☐ Bristol Temple Meads
- ☐ Cardiff Central
- ☐ Coventry
- ☐ Crewe
- ☐ Didcot

PAYMENT MODE

53K (7.14%)
219K (29.58%)
470K (63.28%)

Payment Method
- ● Credit Card
- ● Contactless
- ● Debit Card

Ticket Type

5.34K (16.87%)
8.75K (27.65%)
17.56K (55.48%)

Ticket Type
- ● Advance
- ● Off-Peak
- ● Anytime

TOP 10 MOST ARRIVAL STATION

7.7K 5.0K 4.0K 4.0K 3.9K 1.6K 0.7K 0.6K 0.4K 0.3K

Sum of COUNT

Birmingh... Liverpool... York Manchest... Reading London E... London S... Oxford London P... Leicester

Arrival Destination

TICEKT SALY BY DAY

Sum of COUNT

483 | 734 | 1120 | | 1036 | | 988 | | 1151 | | | 1081 | | 1110 | | | 997 | | 1123 | | 1071 | | 1050 | | 1033 | 1145 | | | 1119 | | 1012 | | 821 | 561

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Rail Insight: Exploring UK Train Journey Data

Top Arrival Stations:

- Birmingham New Street: Birmingham New Street stands out as the most popular arrival destination, with 7,742 passengers. This indicates a high influx of passengers into Birmingham, highlighting the city's importance as a business and transportation hub.

- Liverpool Lime Street: As a top arrival destination with 5,022 passengers, Liverpool Lime Street reaffirms its significance as a key transport node, attracting travelers from various regions.

- York: York emerges as a notable arrival destination with 4,019 passengers. Known for its historic landmarks and cultural attractions, York attracts both tourists and commuters, contributing to its popularity as an arrival destination.

Top Departure Stations:
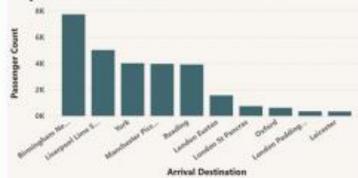
- Manchester Piccadilly: With 5,650 passengers, Manchester Piccadilly emerges as the busiest departure station. This suggests a high demand for railway services in Manchester and surrounding areas, potentially driven by both local commuters and long-distance travelers.

- London Euston: London Euston follows closely with 4,954 passengers, indicating a significant volume of passengers traveling from the capital city. As a major transport hub, London Euston serves as a gateway to various destinations across the country.

- Liverpool Lime Street: Liverpool Lime Street, with 4,561 passengers, is another prominent departure station. This suggests considerable travel demand in the Liverpool area, possibly influenced by both local commuters and leisure travelers.

Distribution of Departure Times:

- Early Morning (Midnight - 6 AM): The number of journeys is relatively low during these hours, with the lowest number of journeys occurring around 3 AM.

- Morning Peak (6 AM - 9 AM): The number of journeys starts to increase significantly from 6 AM, reaching its peak during the morning rush hour between 7 AM and 8 AM. This is consistent with typical commuting patterns, as many people travel to work or school during these hours.

- Late Morning to Early Afternoon (9 AM - 12 PM): The number of journeys remains relatively high during these hours but starts to decline compared to the morning peak.

- Afternoon (12 PM - 6 PM): The number of journeys fluctuates during the afternoon hours, with some peaks around lunchtime (12 PM - 1 PM) and late afternoon (4 PM - 6 PM). However, the number of journeys is generally lower compared to the morning peak.

- Evening (6 PM - Midnight): The number of journeys increases again during the evening hours, with a peak occurring around 6 PM - 7 PM. This could be attributed to people returning home from work or traveling for leisure activities in the evening.

Top Arrival Stations

Top Departure Stations

Distribution of Departure Times

Top 10 Most Popular Routes

Frequency of refund requests

Frequency of different payment