

# UK Train Rides

## Acknowledgments

- Thanks to Ministry of Communications and IT (DEPI)
- Thanks to CLS Organization
- Special thanks to Eng. Ahmed Hany
- Program helped us gain skills in Data Analysis & Visualization.



**[GitHub - Noha-Essam/UK-Train-Rides: Dashboard Of UK-Train-Rides](#)**



**[UK-Train Dashboard](#)**



## Railway Data Analysis Project



## Project Introduction

- Railway Data Analysis Project

### Objective:

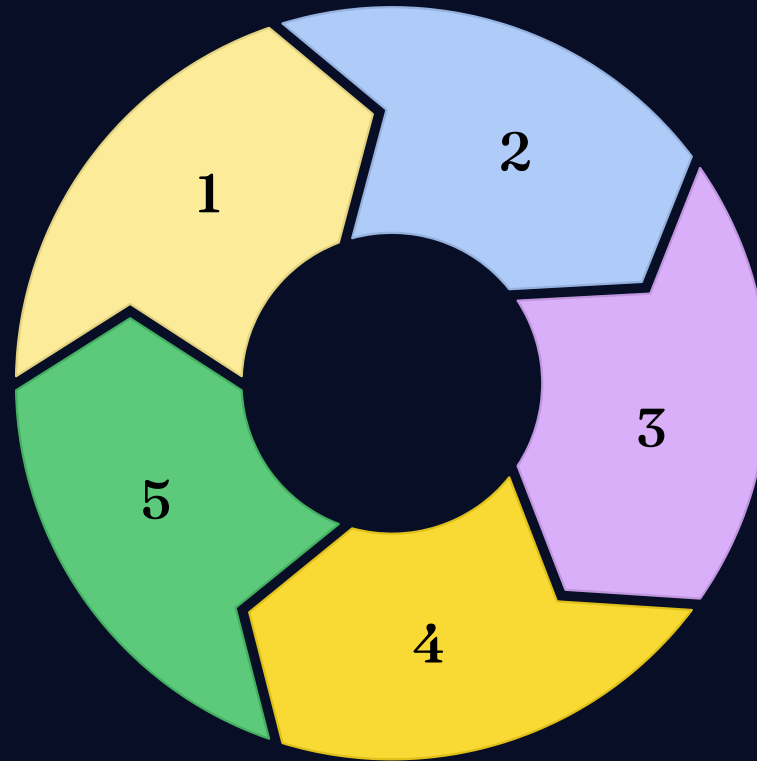
- Generate actionable insights and interactive dashboards.
- Identify key factors affecting train punctuality and reliability.
- Analyze passenger satisfaction trends based on available data.
- Provide recommendations for optimizing train operations and improving user experience

# Project Life Cycle

## GET DATA & Brainstorming

Data Source identification and  
Connection

## Publishing and Sharing



## DATA Discovering & Planning

ETL Process

## DATA Modeling

## Visualization

Dashboard Design

## Brainstorming Stage

### Key Questions:

- Insights from ticket sales?
- Impact of delays and cancellations?
- Revenue trends?
- Best performing stations?





Properties			
Advanced Editor			
Manage			
Query			
Choose Columns		Remove Columns	
Keep Rows		Remove Rows	
Sort		Split Column	
Group By			
Time	Actual Arrival Time	Journey Status	Reason for Del
1:30:00 PM	1:30:00	Sort Ascending	
11:35:00 AM	11:40:00	Sort Descending	
6:45:00 PM	6:45:00	Clear Sort	
10:30:00 PM	10:30:00	Clear Filter	
7:00:00 PM	7:00:00	Remove Empty	
8:05:00 AM	8:05:00	Text Filters	
11:40:00 PM	11:40:00	Search	
12:30:00 AM	12:30:00	(Select All)	
1:50:00 AM	2:07:00	(blank)	
2:30:00 AM	2:30:00	Signal Failure	
2:35:00 AM	2:35:00	Signal failure	
3:15:00 AM	3:15:00	Staff Shortage	
4:45:00 AM	4:45:00	Staffing	
5:30:00 AM	5:30:00	Technical Issue	
7:50:00 AM	7:50:00	Traffic	
8:45:00 AM	8:45:00	Weather	
8:45:00 AM	8:45:00	Weather Conditions	
8:50:00 AM	8:50:00	List may be incomplete.	
9:20:00 AM	9:20:00	OK	
10:50:00 AM	10:50:00		
12:35:00 PM	1:06:00		
11:00:00 AM	11:00:00		
11:20:00 AM	11:20:00 AM	On Time	
2:05:00 PM	2:05:00 PM	On Time	
2:35:00 PM	2:35:00 PM	On Time	
4:00:00 PM	4:00:00 PM	On Time	
3:30:00 PM	3:54:00 PM	Delayed	Signal Failure

## Data Discovery and Planning

### Data Issues:

- Duplicates
- Wrong data types
- Empty rows

### Plan:

- Clean & transform data
- Divide tables
- Build model
- Design visuals

# Data Cleaning and Transformation

## Actions Taken:

- Removed duplicates
- Corrected data types
- Handled empty rows
- Created custom columns

ailway

```
10 ... # "Replaced Value2" = Table.ReplaceValue("#Filtered Rows2", "W
    Delay")),
11 ... # "Replaced Value3" = Table.ReplaceValue("#Replaced Value2", "
    Replacer.ReplaceText,{"Reason for Delay"}),
12 ... # "Filtered Rows3" = Table.SelectRows("#Replaced Value3", each
13 ... # "Replaced Value4" = Table.ReplaceValue("#Filtered Rows3", "
14 ... // Step: Add Trip Key column
15 ... AddTripKey = Table.AddColumn("#Replaced Value4", "Trip Key",
16 ... [Departure Station] & "|" &
17 ... [Arrival Destination] & "|" &
18 ... Text.From([Date of Journey]) & "|" &
19 ... Text.From([Departure Time]), type text),
20
21 ... // Step: Extract unique combinations
22 ... UniqueTrips = Table.Distinct(Table.SelectColumns(AddTripKey,
23
24 ... // Step: Add Index as Trip ID
25 ... AddTripID = Table.AddIndexColumn(UniqueTrips, "Trip ID", 1,
26
27 ... // Step: Merge Trip ID back to original table
28 ... Merged = Table.NestedJoin(AddTripKey, "Trip Key", AddTripID,
29 ... ExpandTripID = Table.ExpandTableColumn(Merged, "TripIDTable",
30
31 ... // Step: Remove Trip Key column (optional)
32 ... FinalResult = Table.RemoveColumns(ExpandTripID, {"Trip Key"}
33 in
34 ... FinalResult
```

No syntax errors have been detected.

00-b70e

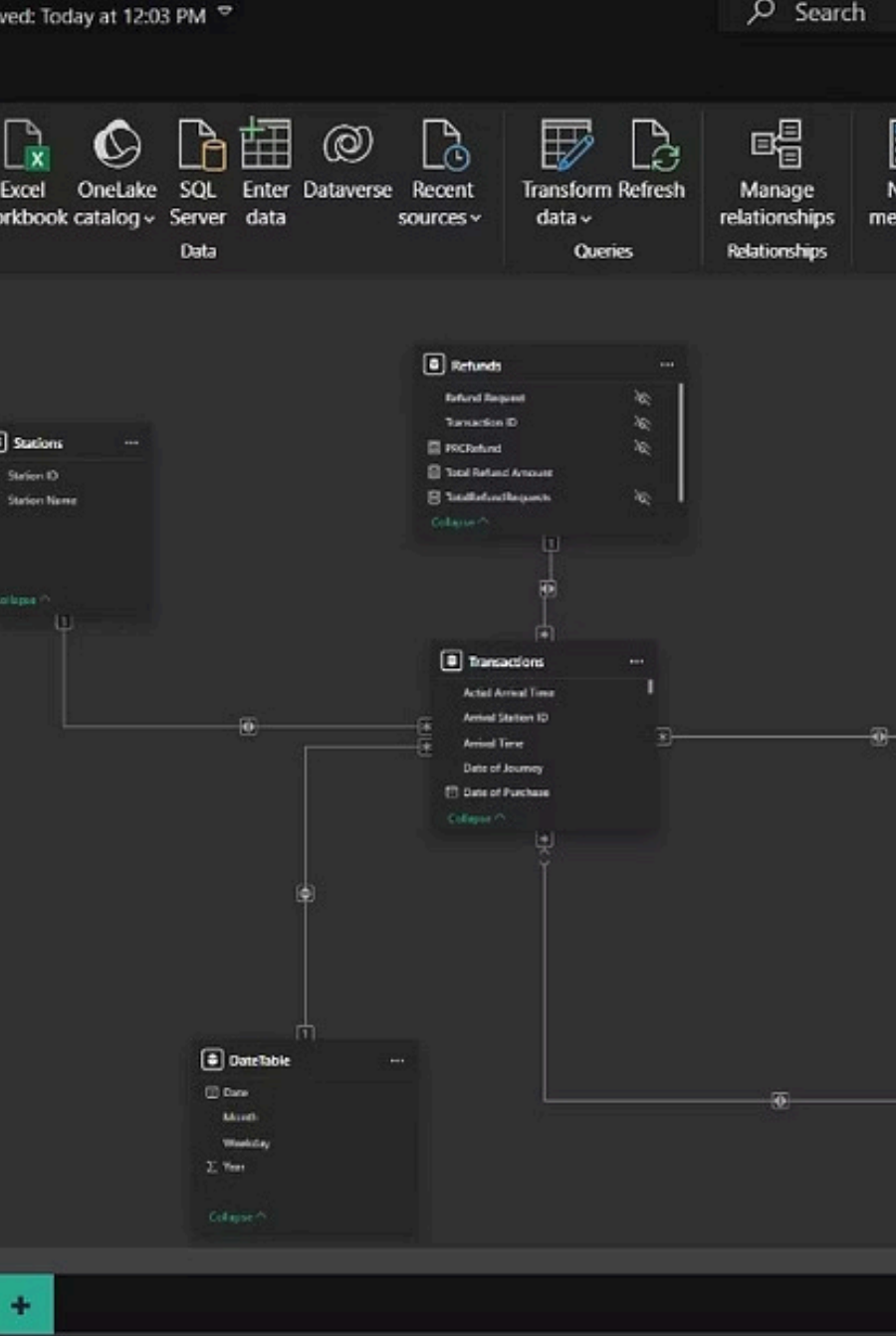
12/31/2023

Made with GAMMA

ef-9eae

12/31/2023

1:33:39 PM Online



## Data Dividing and Modeling

Structured into:

- Transactions
- Stations
- Customers
- Ticket Details
- Refunds
- Date Table

**\* Created clear relationships for performance**

# DAX Measures Creation

## Developed DAX Measures:

- Cancelled Journeys
- Total Refund Amount
- Revenue KPIs
- Journey Performance Metrics

elp **Table tools** Last saved: Today at 12:03 PM

Manage relationships Relationships New measure Calculations Quick measure column Calculations New table New table Mark as date table Calendars

Transactions -

```
SELECT COLUMNS(
    railway,
    "Transaction ID", railway[Transaction ID],
    "Date of Purchase", railway[Date of Purchase],
    "Time of Purchase", railway[Time of Purchase],
    "Purchase Type", railway[Purchase Type],
    "Payment Method", railway[Payment Method],
    "Railcard", railway[Railcard],
    "Ticket Class", railway[Ticket Class],
    "Ticket Type", railway[Ticket Type],
    "Price", railway[Price],
    "Departure Station ID", railway[Departure Station],
    "Arrival Station ID", railway[Arrival Destination],
    "Date of Journey", railway[Date of Journey],
    "Departure Time", railway[Departure Time],
    "Arrival Time", railway[Arrival Time],
    "Journey Status ID", railway[Journey Status],
    "Refund Request", railway[Refund Request], "Delay Reason", railway[Reason for Delay],
    [Trip ID]
)
```

	Date of Purchase	Time of Purchase	Purchase Type	Payment Method
1-a6ac	1/1/2024 12:00:00 AM	8:22 PM	Online	Credit Card
17-821d	1/2/2024 12:00:00 AM	8:18 PM	Online	Credit Card
35-942f	1/2/2024 12:00:00 AM	8:20 PM	Online	Credit Card
10-8d75	1/2/2024 12:00:00 AM	8:21 PM	Online	Credit Card
1d-bdff	1/3/2024 12:00:00 AM	8:19 PM	Online	Credit Card
1b-8cf3	1/3/2024 12:00:00 AM	8:20 PM	Online	Credit Card
1f-9efc	1/3/2024 12:00:00 AM	8:24 PM	Online	Credit Card
1f-845d	1/4/2024 12:00:00 AM	8:19 PM	Online	Credit Card
1d-a6c5	1/4/2024 12:00:00 AM	8:21 PM	Online	Credit Card

Made with GAMMA





## Dashboard - Overview Page

### Key KPIs:

- Total Revenue
- Avg Ticket Price
- Tickets Sold
- Revenue by Class, Payment Method, Top Stations

# Dashboard - Sales Page

## Sales Deep Dive:

- Revenue by Ticket Type
- Top Stations
- Filters for Ticket Class, Railcard , Station





## Dashboard - Journey Performance Page

### Journey Status Insights:

- On Time / Delayed / Cancelled
- Delay reasons analysis

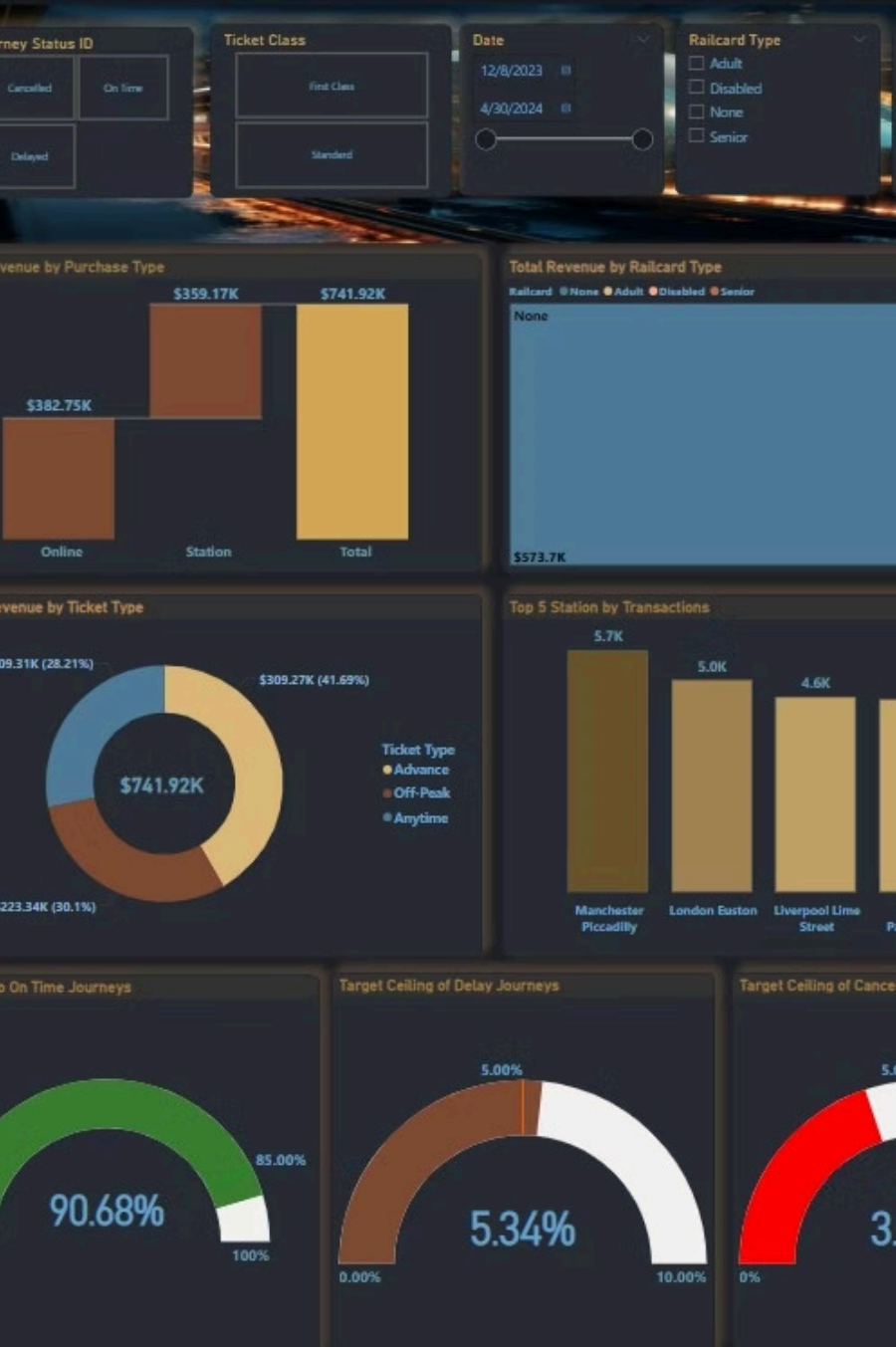
## Dashboard - Refund Page

## Refund Analysis:

- Requests by journey status
- Refund % of total tickets
- Refund amounts







## Dashboard - Customers Page

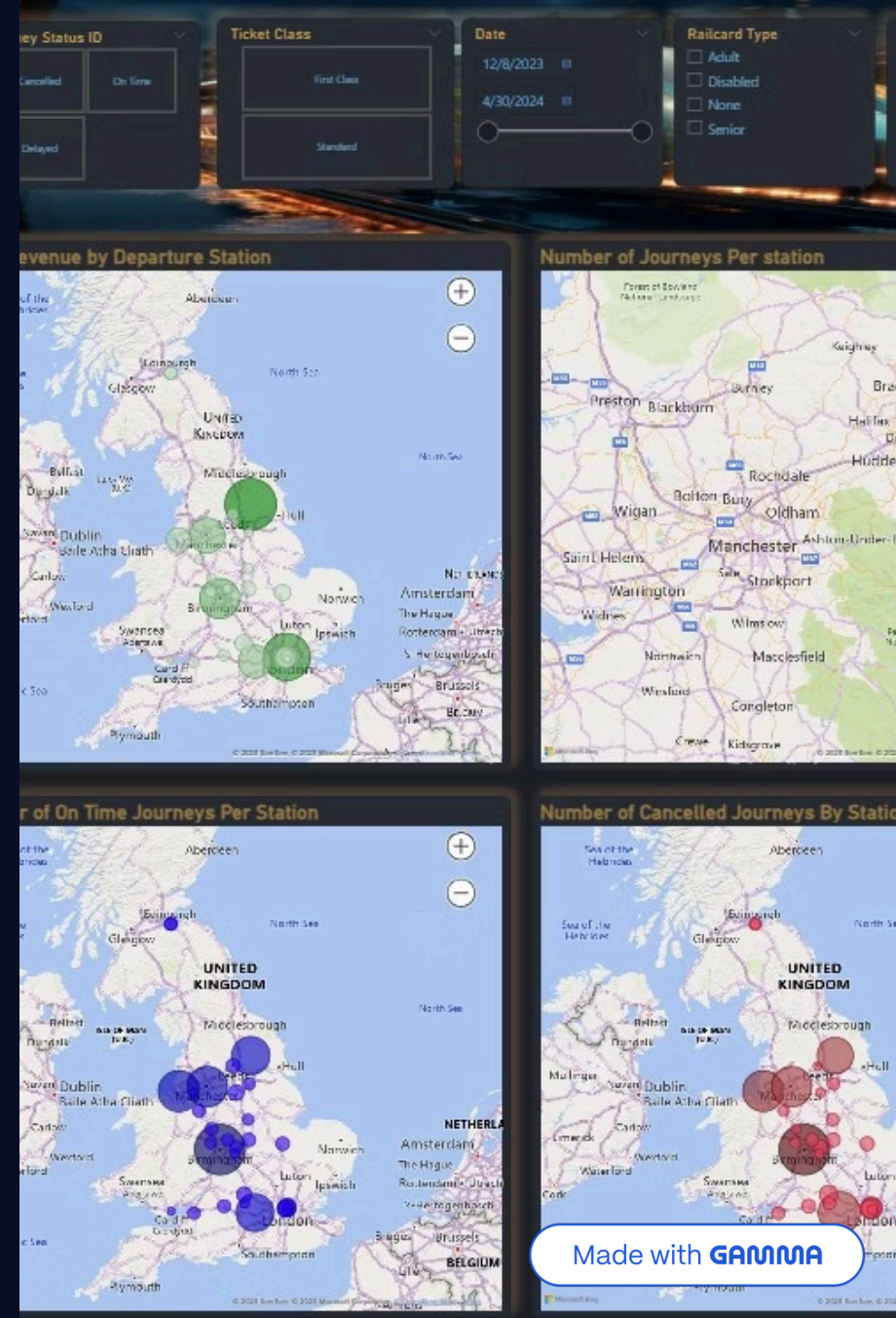
### Customer Segmentation:

- Ticket Type
- Purchase Method
- Railcard Type
- Revenue contribution

# Dashboard - Geographic Page

## Interactive Maps:

- Journeys by Station
- Revenue by Departure
- On-time / Cancelled visual distribution



## Actionable Recommendations

- Improve Delay Handling

### Why?

- Some routes experience exceptionally high average delays (>500 minutes), which negatively impacts customer satisfaction and trust.

### Action:

- Focus on these critical routes to improve efficiency. Prioritize addressing signal failures and staffing shortages by coordinating closely with operations teams.
- Boost Digital Sales

### Why?

- Online purchases slightly outperform station-based purchases, suggesting a user preference for digital convenience.

### Action:

- Launch targeted promotional offers and incentives for digital channels to further increase online adoption and reduce operational costs at physical stations.
- Enhance Railcard Adoption

### Why?

- 77% of revenue comes from users without railcards indicating untapped potential in discounts and loyalty.

### Action:

- Design marketing campaigns to encourage railcard adoption among seniors, disabled passengers, and frequent travelers to improve margins and customer retention.
- Reduce Cancellation Rate

### Why?

- Cancellation rates are high in specific locations such as London Paddington and Manchester Piccadilly, potentially due to infrastructure or scheduling issues.

### Action:

- Conduct a detailed investigation into these high-cancellation zones and collaborate with station managers to enhance reliability and infrastructure quality.
- Optimize Refund Experience

### Why?

- Only a portion of customers request refunds after cancellations, which may indicate an unclear or inefficient process.

### Action:

- Increase transparency around refund policies and streamline the claims process through automation and clearer communication channels.



## Meet Our Team



**Noha Essam**



**Sara Sharaf**



**Shahenda Khaled**



**Mohamed Mostafa**



**Amir Ahmed**





# *Thank You*

*\*We appreciate your time and attention.*

