

UK Train Rides Analysis

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Project Idea

Problem

- Train operators face challenges in understanding journey efficiency, delay causes, and revenue fluctuations.
- Decision-makers lack a unified dashboard to track performance, revenue, and refunds.

Solution

- Build an automated analytical dashboard in Power BI.
- Provide real-time visibility on revenue, delays, journey status, refund rates, and forecasting.
- Enable data-driven decisions across departments.

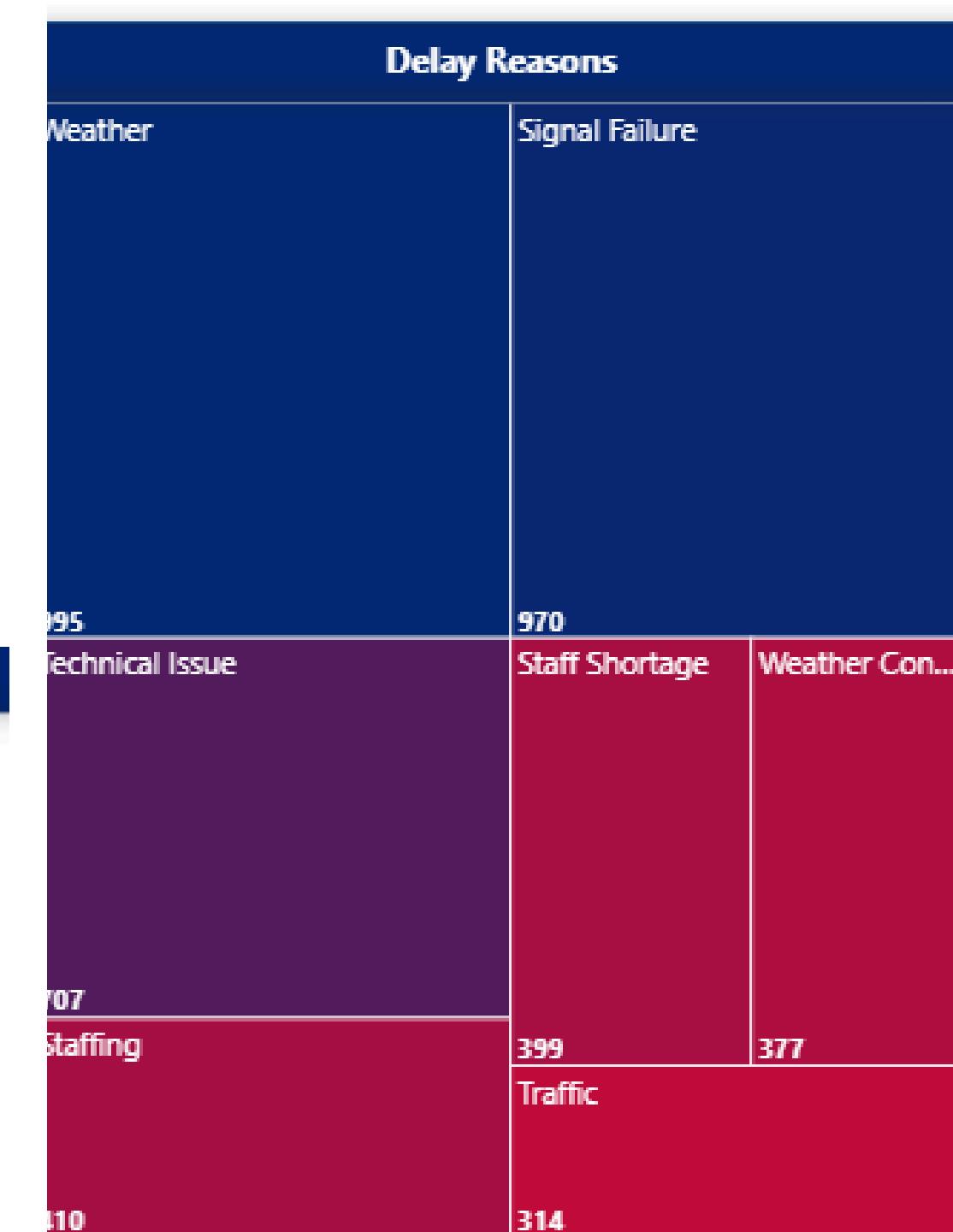
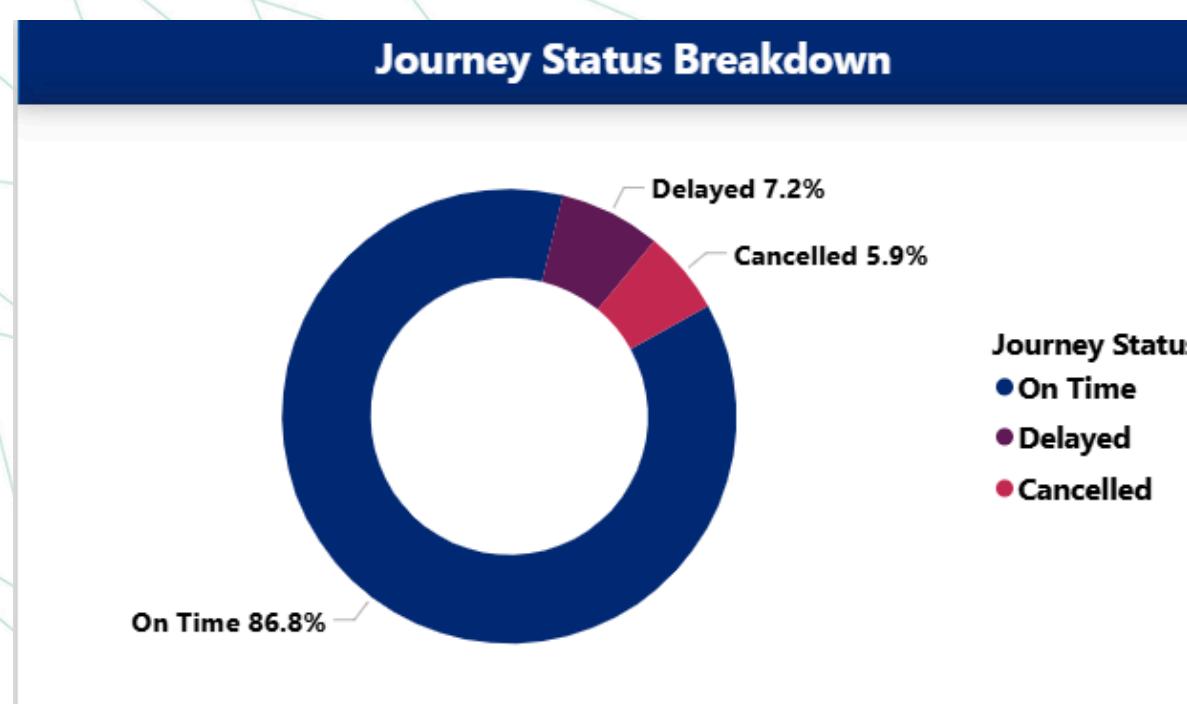
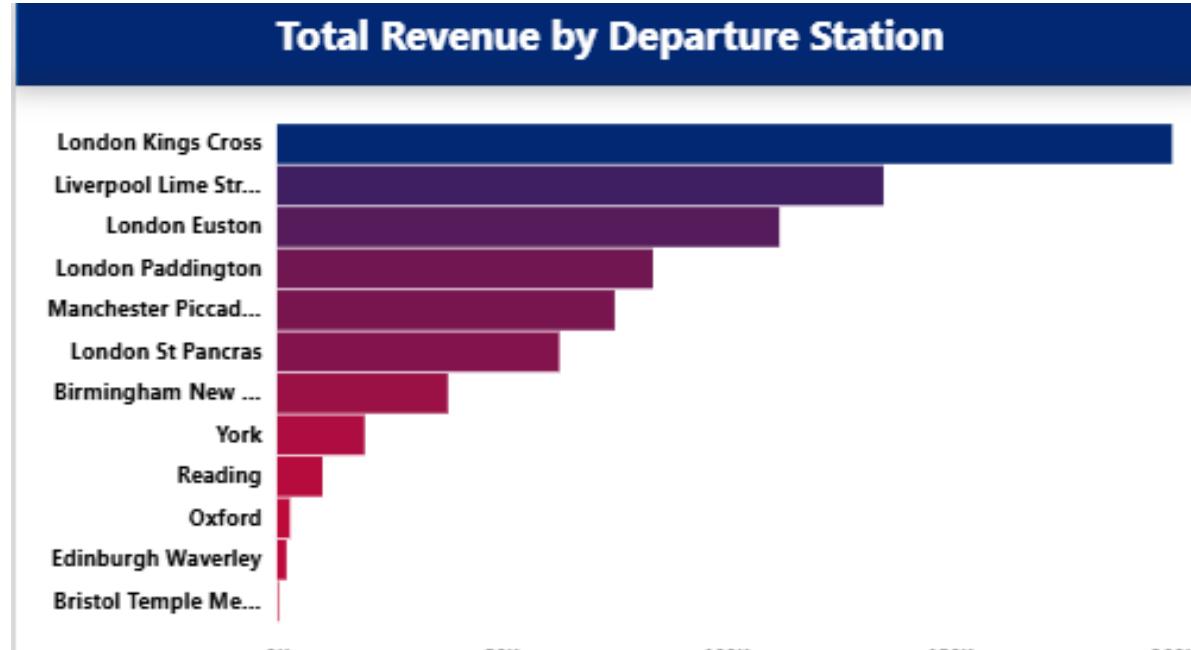
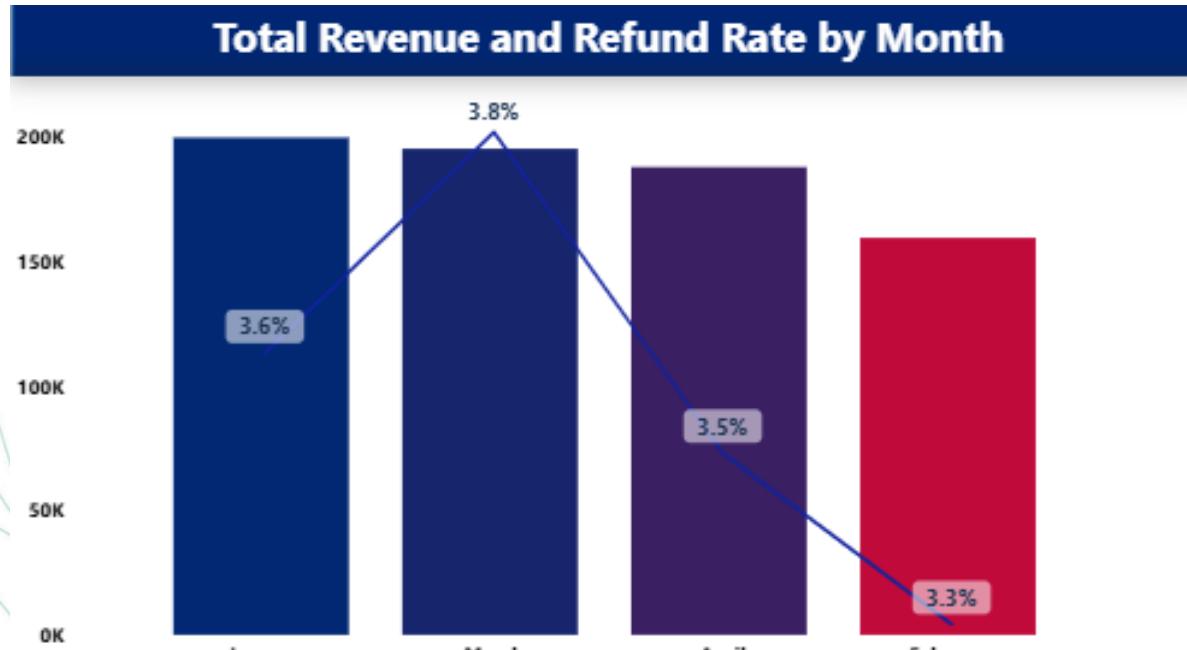
Unique Value Proposition

- Combines operations + finance + customer behavior in a single view.
- Includes sales forecasts using analytical measures.
- Custom DAX measures improve KPI accuracy.

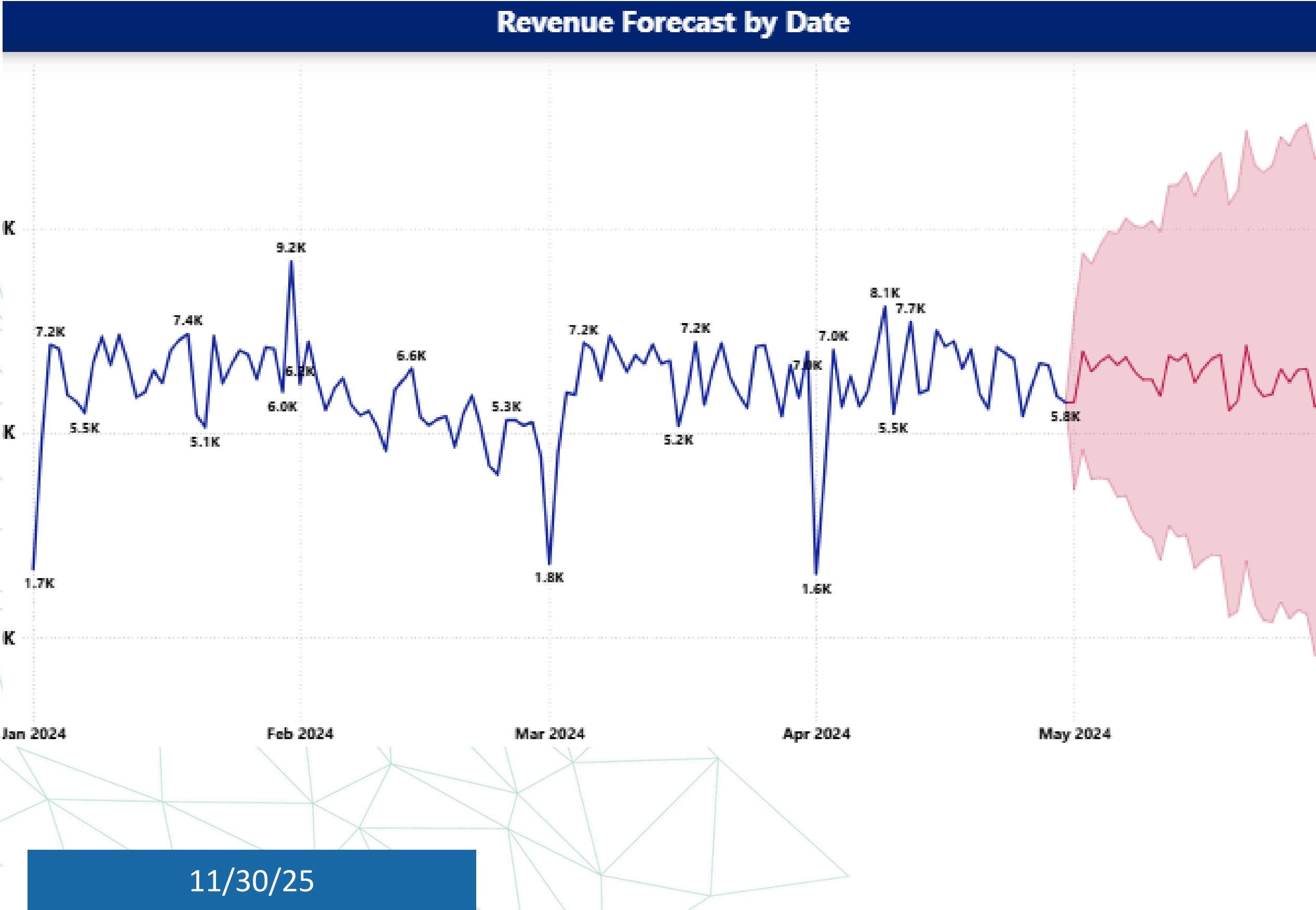
Dashboard Wireframe Overview

- Page 1: Overview (Revenue, Refund Rate, On-Time %, Avg Rev per Journey)
- Page 2: Trends & Insights (sales trend, payment types, online vs station)
- Page 3: Deep Analysis (delay reasons, decomposition tree)
- Page 4: Sales Forecast (next 30 days forecast & KPI cards)

Main Charts



Forecasting



Primary Users

- Sales Managers: Revenue trends, forecasting, ticket class performance.
- Operations Managers: Delay reasons, on-time performance, station efficiency.
- Marketing Team: Purchase behavior (online vs station), route popularity.
- Finance Team: Refund costs, revenue KPIs.

Key Features

- Real-time KPI cards
- Station-level revenue comparison
- Journey status tracking (on-time, delayed, cancelled)
- Geographic map of train routes
- Forecasting for revenue & trends
- Decomposition tree for root-cause analysis

How it Solves Their Problems

- Reduces guesswork
- Helps identify low-performing routes
- Supports staffing and scheduling decisions
- Predicts future sales for budget planning

Data Structure

Features Used

- Transaction ID
- Date of Purchase
- Time of Purchase
- Purchase Type
- Payment Method
- Date of Journey
- Departure Station
- Arrival Destination
- Departure Time
- Arrival Time
- Actual Arrival Time
- Railcard
- Ticket Class
- Ticket Type
- Price
- Journey Status
- Reason for Delay
- Refund Request

Data Structure

Data Cleaning Techniques

- Removed duplicates
- Standardized date formats
- Corrected data types
- Handled missing values
- Created new DAX measures

Data Flow

- Load CSV → Power Query cleaning
- Build star schema model
- Create advanced DAX measures
- Use visuals to produce insights
- Apply forecasting via time-based analytics

- https://app.powerbi.com/links/66ebqiavgl?ctid=79454428-4dbe-401a-b2ab-64a5a7069e2b&pbi_source=linkShare

Testing Phases

- Validation of DAX calculations
- Filtering tests (station, month, purchase type)
- Visual interaction tests
- Cross-page consistency testing

User Feedback

- Clear design
- Easy filtering
- Fast loading and responsive

Deliverables

Provided Deliverables

- Power BI Dashboard (.pbix)
- Cleaned dataset
- Project documentation
- Wireframes
- Data model diagram
- Source code ZIP file

Timeline

- Week 1: Data cleaning
- Week 2: Analysis questions
- Week 3: Dashboard building
- Week 4: Final report + presentation

Project Team + Roles

Team Members

- Malak Ahmed: Project Leader
- Sara Salama: Data Cleaning Specialist
- Sherry Adel: Data Analyst & Question Designer
- Rana Waleed: Documentation & Presentation Specialist

Collaboration Approach

- Weekly team sync
- Task distribution using shared documents
- Agile-based weekly milestones

Thank You!

Questions are welcome.