Project Proposal: UK Commute Cost Efficiency Analysis

Project Title:

Optimizing UK Commute Efficiency and Cost Through Data Insights.

Background and Problem Statement

As urban areas in the UK continue to grow, commute-related challenges like high costs, long durations, and carbon impact are becoming more prominent. This project analyzes commute data across major UK cities to identify cost-effective, time-efficient, and environmentally friendly travel modes.

Objectives

1. **Data Cleaning and Structuring (SQL)**
    - Remove missing values (e.g. in "Worst Value Reason")
    - Standardize commute types and routes
    - Categorize distance and cost ranges
2. **SQL-Based Trend Analysis**
    - Find average cost per mode of transport
    - Identify cities with the highest carbon impact or longest average delays
    - Determine top 5 routes by best value rank
    - Compare daily vs monthly commute costs by city
3. **Visualization (Power Bi)**
    - Bar charts of monthly cost by city and commute mode
    - Scatter plots showing relationship between commute time and cost
    - Dashboards to compare cities by cost, delay, and rank
4. **Hypothesis Testing (Excel)**

    - **Hypothesis 1:** Train commutes are significantly more expensive than driving across UK cities.
      → Statistical test: t-test or ANOVA comparing Daily Cost (£) by Mode of Commute