UBER RIDE DATA ANALYSIS – DOCUMENTATION

- **Project Objective**

To analyze Uber ride data using Python and Power BI for identifying trends in ride usage, trip purposes, distance, duration, and time-based patterns. The final goal is to produce a well-structured interactive dashboard and derive actionable business insights.

PROJECT COMPONENTS

■ uber.ipynb – Python notebook for:

- Data loading
- Cleaning and preprocessin
- Feature extraction
- Exporting cleaned data

❖ UberDataset.csv – Original raw data source.
❖ UberDataset_Cleaned.csv – Cleaned dataset used in Power BI.
❖ Dashboard.png – Screenshot of the Power BI dashboard summarizing the analysis.
❖ Uber_Trips.pbix *(optional)* – Power BI project file (dashboard).

TOOLS & TECHNOLOGIES USED

- **Python Libraries**: pandas, numpy, seaborn, matplotlib
- **Power BI**: Data visualization and interactivity
- **DAX**: Calculated columns and custom measures for dynamic visuals
- **Jupyter Notebook**: For exploratory data analysis and data engineering

DATA CLEANING & FEATURE ENGINEERING STEPS

✓ **Load Data**:

Used pandas to read UberDataset.csv.

✓ **Missing Value Treatment**:

Filled PURPOSE nulls using .fillna(method='ffill').

✓ **Date/Time Conversion**:

Parsed START_DATE and END_DATE to datetime format.

✓ **Extracted Time Features**

year, month, day, hour, minute

day_name (e.g., Monday, Tuesday)

day_time_slot based on hour (Morning, Afternoon, etc.)

✓ **Duration Calculation**:

Calculated trip duration in minutes using time difference.

✓ **Dataset Cleaning**:

Removed unnecessary columns and saved to new file.

DASHBOARD DESIGN (POWER BI)

✧ **Filters:**

i. Month, Year, Category, Purpose, Day Time Slot

✧ **Visuals:**

Card KPIs:

a. Total Trips
b. Average Duration (min)
c. Average Speed (mph)
d. Total Miles Travelled

✧ **Line/Bar Charts**:

a) Trips per Month (Chronologically sorted: Jan–Dec)
b) Total Miles per Month

A. **Pie Chart**:

Category: Business vs. Personal (96% Business)

B. **Bar Chart – Purpose per Category**:

Meeting, Meal/Entertainment, Errands, etc.

C. **Bar Chart – Trips by Day Time**:

Most trips during Afternoon

D. **Trips by Day of Week**:

Trends across weekdays

KEY FINDINGS

- **96%** of rides were categorized as **Business**.
- **November** had the highest number of rides.
- **Afternoon** was the peak time of day for trips.
- **Meeting** and **Meal/Entertainment** were the most common purposes.
- Personal rides were very few compared to business-related trips.

RECOMMENDATIONS

- **Optimize Driver Allocation** during peak hours (Afternoon).
- **Promote Personal Usage** via marketing (since it's only 4%).
- **Seasonal Campaigns** in high-travel months like November.
- **Analyze Long-Duration Trips** for better pricing or routing.
- **Focus on Business Use Cases** and client partnerships.
- **Build Loyalty Programs** based on ride purpose and category.