🚲 *Analyzing Smart City Bike Sharing Data using Power BI – Power BI Project*

📌 Project Overview:

This project analyzes **Smart City Bike Sharing station data** to evaluate station performance, bike availability, and utilization patterns across multiple cities. Using **Power BI**, raw operational data was transformed into meaningful insights that support better urban mobility planning, bike redistribution, and infrastructure optimization.

🎯 Problem Statement:

Public bike-sharing systems generate large volumes of real-time data from hundreds of stations. The challenge is to convert this data into actionable insights to understand:

- Station availability and performance
- Usage efficiency
- Time-based and city-level operational patterns

The goal is to apply **data cleaning, modeling, DAX, and visualization techniques** in Power BI to support data-driven decision-making.

🗂️ Data Source-: Dataset link

🔧 Tools & Technologies:

- **Power BI**
- **Power Query** for data cleaning & transformation
- **DAX** for calculated columns and measures
- **Data Modeling** (Fact & Dimension tables)
- **DAX Measures:** Station Availability Status Utilization % per Station, Status-wise Station Summary

📊 Key Analysis Questions:

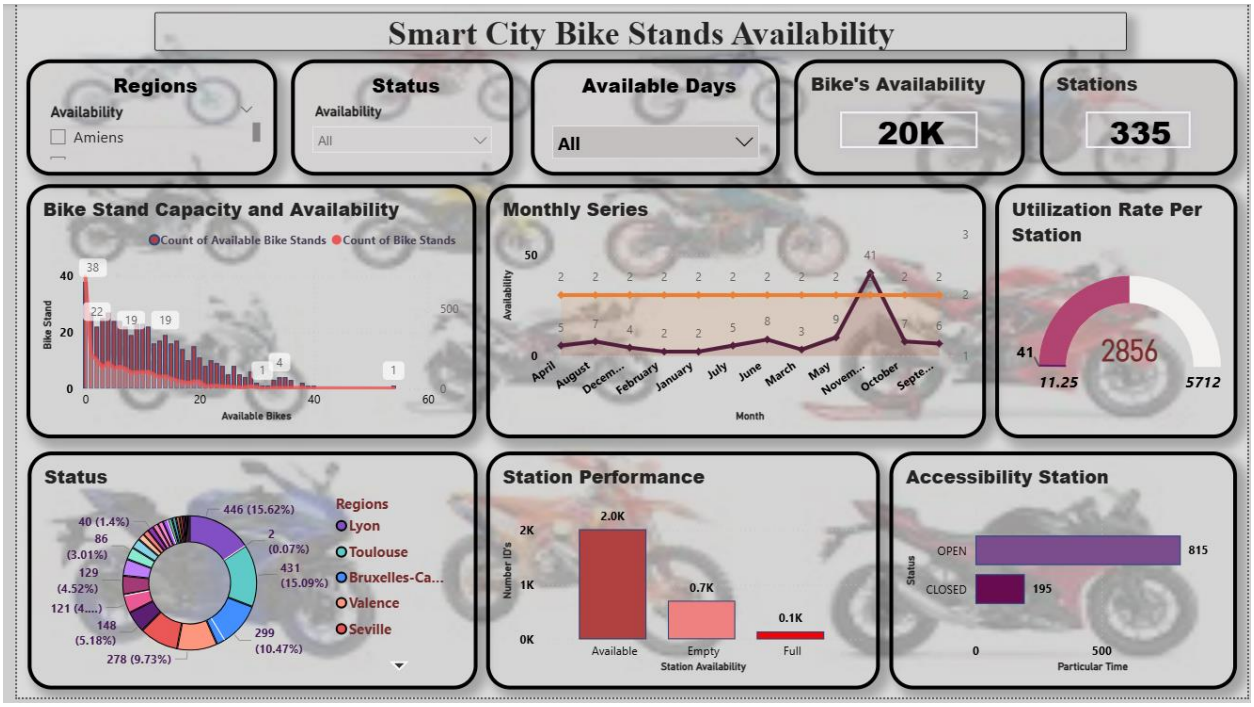
- How does station availability (Available / Empty / Full) vary across cities?
- How is bike availability distributed across stations?
- Which months show peak bike availability?
- What is the average utilization rate per station?

- How do increases and decreases in availability vary by station?

☑ Conclusion:

The bike-sharing system has sufficient overall capacity, but inefficiencies arise due to uneven distribution and fluctuating demand. Strategic bike rebalancing, demand forecasting, and station-level optimization can significantly improve system efficiency and user satisfaction. This project demonstrates how **Power BI can convert raw mobility data into actionable urban insights**.

Dashboard Overview:



☑ Dashboard Highlights:

- **Overall Bike Availability**: ~20K bikes available, with uneven distribution
- **Station Performance**: Some stations are overutilized while others remain underused
- **Time-Based Trends**: Strong peak-hour demand and off-peak underutilization
- **Top Date Identified**: Highest bike availability observed on *11/12/2025*