EV SALES PROJECT – FULL REPORT STRUCTURE

Title:

Electric Vehicle Sales Analysis by State in India
Role: Data Analyst / Finance Analyst

Objective:

To analyze the trends in EV sales across different states, years, vehicle types, and categories in India using Python and visualize meaningful insights.

Tools Used:

- Python (Pandas, Seaborn, Matplotlib)
- Google Colab
- CSV Dataset
- Machine Learning (Random Forest Regressor)

Data Description:

The dataset contains:

- `Year`, `Month`, `Date`, `State`,
- `Vehicle_Class`, `Vehicle_Type`, `Vehicle_Category`,
- `EV_Sales_Quantity`

Steps Performed:

Data Cleaning:

- Converted `Date` column to datetime
- Checked column types
- Removed null values

Feature Engineering:

- Extracted `Month`, `Day`
- Encoded categorical variables using `get_dummies`

Visualizations:

- Year-wise EV Sales trend (line plot)
- Month-wise trend
- State-wise EV sales (bar plot)
- Category-wise & Vehicle-Type-wise sales
- Feature Importance using Random Forest

Model Building:

- Trained `RandomForestRegressor`
- Predicted EV sales
- Evaluated model using RMSE

Insights:

- Top-selling states: [example: Maharashtra, Karnataka]
- Most popular vehicle category: [e.g., Passenger or 2-Wheeler]
- Sales trend shows steady increase over years
- Seasonal peaks seen around [Month, if any]

Conclusion:

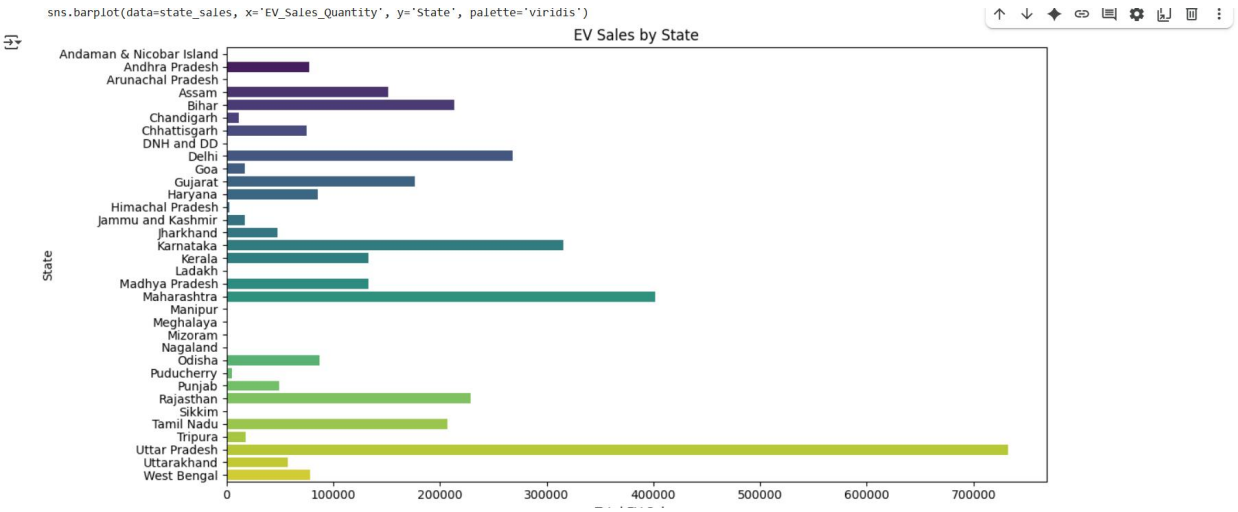
This project gave me a hands-on understanding of real-world data cleaning, visualization, and predictive modeling. It also helped me interpret trends useful for business and policy.

Screenshots from Google Colab:

```
# Plot
plt.figure(figsize=(10, 5))
sns.lineplot(data=month_sales, x='Month', y='EV_Sales_Quantity', marker='o', color='teal')
plt.title("Month-wise EV Sales Trend")
plt.xlabel("Month (1 = Jan, 12 = Dec)")
plt.ylabel("Total EV Sales")
plt.xticks(range(1, 13))
plt.grid(True)
plt.show()
```

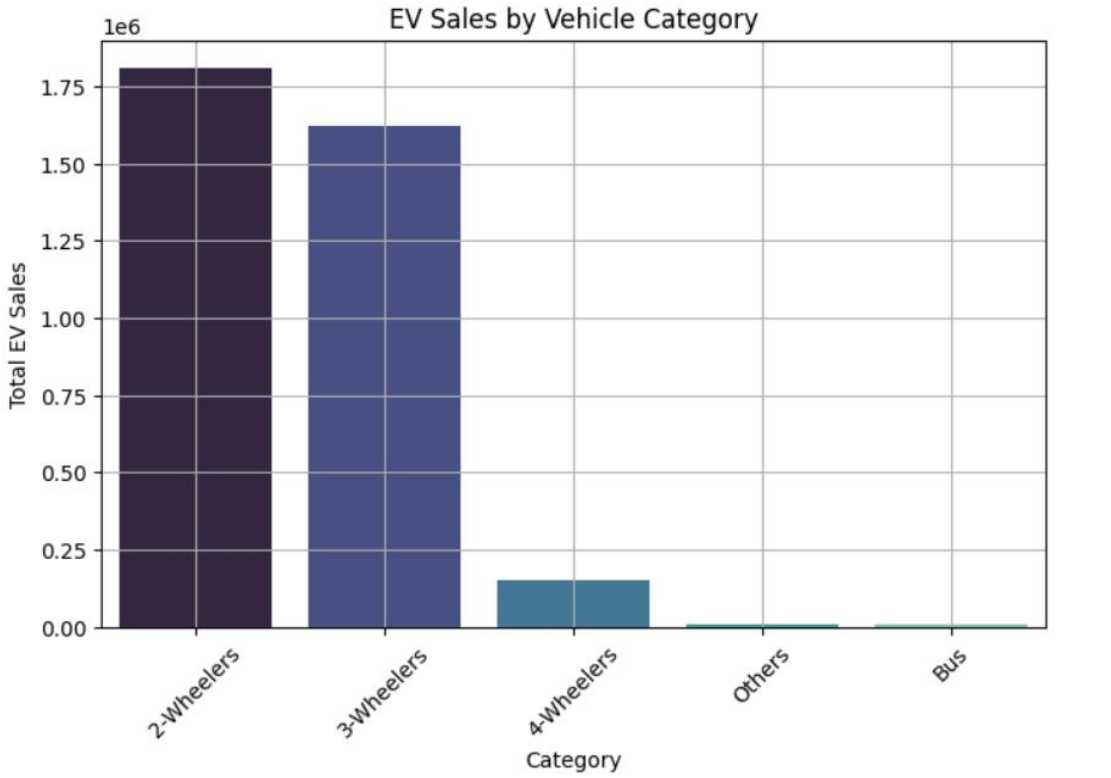

```
# Group data by State
```

```
[45] # Plot
     plt.figure(figsize=(12, 6))
     sns.barplot(data=state_sales, x='EV_Sales_Quantity', y='State', palette='viridis')
     plt.title("EV Sales by State")
     plt.xlabel("Total EV Sales")
     plt.ylabel("State")
     plt.tight_layout()
     plt.show()
```



```
[50] plt.figure(figsize=(8, 5))
     sns.barplot(data=category_sales, x='Vehicle_Category', y='EV_Sales_Quantity', palette='mako')
     plt.title("EV Sales by Vehicle Category")
     plt.xlabel("Category")
     plt.ylabel("Total EV Sales")
     plt.grid(True)
     plt.xticks(rotation=45)
     plt.show()
```

```
sns.barplot(data=category_sales, x='Vehicle_Category', y='EV_Sales_Quantity', palette='mako')
```



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Final Report PDF:

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Project Explanation Video:

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Dataset Source:

Download Dataset