Electric Vehicle Data Analysis: Problem Statement & Importance

Problem Statement

KPI’s Requirement

1. **Total Vehicles**
    - Understand the overall landscape of electric vehicles, encompassing both Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs), to assess the market's size and growth.
2. **Average Electric Range**
    - Determine the average electric range of the EVs in the dataset to gauge technological advancements and efficiency trends in electric mobility.
3. **Total BEV Vehicles & % of Total BEV Vehicles**
    - Identify and analyze the total number of BEVs in the dataset.
    - Calculate the percentage of BEVs relative to the total number of EVs, offering insights into the dominance of fully electric models.

4. **Total PHEV Vehicles & % of Total PHEV Vehicles**
    - Identify and analyze the total number of PHEVs in the dataset.
    - Calculate the percentage of PHEVs relative to the total number of EVs, providing insights into the market share of plug-in hybrid models.

Charts Requirement

1. **Total Vehicles by Model Year (From 2010 Onwards)**
    - **Visualization:** Line/Area Chart
    - **Description:** This chart illustrates the distribution of electric vehicles over the years, starting from 2010, highlighting growth trends and adoption patterns.
2. **Total Vehicles by State**
    - **Visualization:** Map Chart
    - **Description:** Displays the geographical distribution of electric vehicles across different states, enabling the identification of regions with higher EV adoption rates.
3. **Top 10 Total Vehicles by Make**
    - **Visualization:** Bar Chart
    - **Description:** Highlights the top 10 electric vehicle manufacturers based on total vehicles, offering insights into brand market dominance.

4. **Total Vehicles by CAFV Eligibility**
    - **Visualization:** Pie Chart/Donut Chart
    - **Description:** Illustrates the proportion of EVs eligible for Clean Alternative Fuel Vehicle (CAFV) incentives, aiding in understanding policy impact on adoption.
5. **Top 10 Total Vehicles by Model**
    - **Visualization:** Tree Map
    - **Description:** Highlights the top 10 EV models based on total vehicles, providing insights into consumer preferences and popular models in the market.

Importance of This Project for Data Analysts

- **Data-Driven Decision Making:** Provides crucial insights into EV trends, aiding businesses, policymakers, and stakeholders in strategic planning.
- **Market Insights & Trend Forecasting:** Helps identify emerging trends in electric mobility, supporting sustainable market growth.
- **Visualization & Analytical Skills:** Enhances proficiency in handling large datasets, generating visual reports, and extracting actionable insights.
- **Policy & Incentive Analysis:** Evaluates the impact of government policies on EV adoption, crucial for environmental and regulatory analysis.
- **Business Intelligence:** Supports automakers, dealerships, and investors in making informed business decisions by understanding model and brand performance.