

# Electric Vehicle Market Analysis

This repository provides an analysis of the electric vehicle (EV) market, focusing on various key performance indicators (KPIs) and visualizations to assess the market's landscape, technological advancements, and consumer preferences. The data includes insights on Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs).

## Key Performance Indicators (KPIs)

The following KPIs were analyzed to gain insights into the EV market:

### 1. Total Vehicles:

- Objective: Understand the overall landscape of EVs, including both BEVs and PHEVs, to assess market size and growth.

### 2. Average Electric Range:

- Objective: Determine the average electric range of EVs in the dataset to gauge technological advancements and efficiency.

### 3. Total BEV Vehicles and Percentage of Total EVs:

- Objective: Identify and analyze the total number of BEVs in the dataset.
- Calculate the percentage of BEVs relative to the total number of EVs, providing insights into the market share of fully electric models.

### 4. Total PHEV Vehicles and Percentage of Total EVs:

- Objective: 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.

## Visualizations

The following charts were created to visualize key aspects of the EV market:

### 1. Total Vehicles by Model Year (From 2010 Onwards):

- **Chart Type:** Line/Area Chart
- **Description:** Illustrates the distribution of EVs over the years, starting from 2010, providing insights into growth patterns and adoption trends.

### 2. Total Vehicles by State:

- **Chart Type:** Map Chart
- **Description:** Shows the geographical distribution of EVs across different states, allowing for the identification of regions with higher adoption rates.

### 3. Top 10 Total Vehicles by Make:

- **Chart Type:** Bar Chart
- **Description:** Highlights the top 10 EV manufacturers based on total number of vehicles, providing insights into the market dominance of specific brands.

### 4. Total Vehicles by CAFV Eligibility:

- **Chart Type:** Pie Chart or Donut Chart
- **Description:** Illustrates the proportion of EVs eligible for Clean Alternative Fuel Vehicle (CAFV) incentives, aiding in understanding the impact of incentives on EV adoption.

### 5. Top 10 Total Vehicles by Model:

- **Chart Type:** Tree Map
- **Description:** Highlights the top 10 EV models based on total number of vehicles, offering insights into consumer preferences and popular models in the market.

## Dataset

The dataset includes information on various electric vehicles, including both BEVs and PHEVs, and covers multiple dimensions such as model year, geographical distribution, and manufacturer details.

## Usage

To replicate this analysis:

1. Load the dataset and import it into your preferred data analysis tool.
2. Use the KPIs and visualizations described above as a framework for analyzing the data.
3. Generate insights on the growth and distribution of EVs, identify leading manufacturers, and examine the effects of incentives on EV adoption.

## License

This project is licensed under the MIT License.