Electric Vehicle Data Analysis

Executive Summary:

This project presents a comprehensive analysis of the Electric Vehicle (EV) landscape using Tableau, focusing on adoption trends, market distribution, and key performance metrics. The primary goal was to understand the growth and distribution of electric vehicles (Battery Electric Vehicles – BEVs and Plug-in Hybrid Electric Vehicles – PHEVs) across different dimensions, while also identifying leading manufacturers, models, and technological performance indicators.

Key Objectives

1. **Market Size & Growth** – Evaluate the total number of EVs in the dataset and analyze their growth trend from 2011 onwards.
2. **Technological Advancement** – Assess the **average electric range (4.47 miles)** to measure efficiency and progress.
3. **Vehicle Composition** – Distinguish between **BEVs (84.6%)** and **PHEVs (15.4%)**, understanding their market share.
4. **Geographic Adoption** – Explore EV distribution across U.S. states to identify high-adoption regions.
5. **Consumer & Manufacturer Insights** – Highlight top makes and models driving adoption.
6. **CAFV Eligibility Impact** – Assess Clean Alternative Fuel Vehicle (CAFV) eligibility distribution and its potential influence on EV adoption.

Insights & Findings

1. **Total Vehicles & Growth**
    - The dataset includes **27,798 EVs**, with adoption accelerating sharply after 2018.
    - Peak registrations occurred in **2023 (37.1K vehicles)**, highlighting strong growth momentum.

2. **Vehicle Composition**
    - **BEVs dominate** the market with **23,511 vehicles (84.6%)**, reflecting a shift toward fully electric models.
    - **PHEVs account for 4,287 vehicles (15.4%)**, indicating a smaller but still relevant hybrid market.
3. **Top Manufacturers**
    - **Tesla leads the market** with **13,985 vehicles (59.3%)**, followed by Kia, Ford, and Volvo.
    - Other notable players include Nissan, BMW, Chevrolet, Jeep, Volkswagen, and Toyota.
4. **Top Models**
    - **Tesla Model Y** (27%) and **Model 3** (17.8%) dominate consumer preference.
    - Other popular models include Nissan Leaf, Chevrolet Bolt EV, and Volkswagen ID.4.
5. **Geographic Distribution**
    - The highest adoption is observed in **Washington State (27,734 vehicles)**, with smaller but notable adoption in Oregon, California, Texas, Florida, and East Coast states.
6. **CAFV Eligibility**
    - A large share of vehicles (**84.6%**) falls under "CAFV Unknown," with **6.9% not eligible**, suggesting a need for more clarity on incentive-based adoption trends.

Strategic Implications

- **Market Dominance** – Tesla's leadership highlights brand trust and technology edge, but growing competition from Kia, Ford, and Volkswagen indicates market diversification.
- **Policy & Incentives** – CAFV eligibility analysis suggests that clear incentive programs could further accelerate adoption.

- **Geographic Trends** – States with high adoption could serve as models for infrastructure expansion, while low-adoption states present growth opportunities.
- **Consumer Preference** – Strong uptake of specific models (Model Y, Model 3) shows the importance of affordability, range, and brand loyalty in driving adoption.

Conclusion

The Electric Vehicle Data Analysis provides actionable insights into the EV market's **current landscape, growth trajectory, and consumer preferences**. With **BEVs emerging as the clear leader** and Tesla dominating the market, policymakers, manufacturers, and stakeholders can leverage these findings to **strengthen adoption strategies, improve infrastructure planning, and enhance consumer incentives**.

This analysis not only highlights where the EV industry stands today but also signals **where it is headed in the coming years**—toward broader adoption, greater competition, and continued technological improvement.