Problem Statement

Chart Requirements:

1. **Total vehicles by model year (From 2010 Onwards):**
    - Visualization: Line/ Area Chart
    - Description: This chart will illustrate the distribution of electric vehicles over the years, starting from 2010, providing insights into growth patterns and adoption trends.

2. **Total vehicles by State:**
    - Visualization: Map Chart
    - Description: This chart will illustrate the geographical distribution of electric vehicles across different states, allowing for identification of regions with higher adoption rates.

3. **Top 10 total vehicles by make:**
    - Visualization: Bar Chart
    - Description: Highlight the top 10 electric vehicle manufacturers based on total number of vehicles, providing insights into market dominance of specific brands.

4. **Total Vehicles by CAFV Eligibility:**
    - Visualization: Pie Chart or Donut Chart
    - Description: Illustrate the proportion of electric vehicles that are eligible for clean alternative fuel vehicles (CAFV) incentives, aiding in understanding the impact of incentives on vehicle adoption.

5. **Top 10 Vehicles by Model:**
    - Visualization: Tree Map
    - Description: Highlight the top 10 electric vehicle models based on total number of vehicles, offering insights into consumer preferences and popular models in market.

Project Overview

This Power BI dashboard project analyses key aspects of the US electric vehicle market, allowing users to explore **EV adoption and trends by brand, state, and vehicle type**. The tutorial uses a Kaggle dataset containing 150,000 records and 17 fields, such as make, model, electric vehicle type (battery electric, hybrid), state, city, electric range, and utility provider. Key indicators include total vehicles, average electric range, battery electric (BEV) and plug-in hybrid (PHEV) counts, market share, and growth rate by model.

Dashboard Features and Visuals

- **KPI Cards**: Display total vehicles, average electric range, BEV, and PHEV counts for rapid executive.
- **Interactive Map**: Visualizes vehicle distribution by state, highlighting regional adoption and market penetration.
- **Brand & Model Analysis**: Bar and donut charts rank top brands, models, and clean alternative fuel vehicles.
- **Trend Charts**: Line/area charts reveal growth patterns and adoption rates from 2010 to 2024.
- **Slicers & Filters**: Enable focused analysis by state, brand, city, vehicle type, and utility, supporting granular and cross-sectional exploration.

Technical and Analytical Approach

- Employs best practices for Power BI data modelling, efficient query editing, and dynamic design choices including custom themes and backgrounds reflective of clean energy.
- Utilizes DAX for custom KPIs and advanced measures, such as distinct vehicle counts and formatted averages.
- Features dynamic filters for comparative analysis across multiple brands, states, and vehicle types.

Intended Outcomes

This dashboard enables industry professionals, researchers, and policymakers to uncover actionable insights into EV adoption, brand performance, and regional differences. It is optimized for strategic decision-making and advocacy work supporting electric mobility and clean energy goals in the US.

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