Electric Vehicle Analysis

Using Power BI

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Introduction to Electric Vehicles & Power BI

1

Sustainable Transportation

Electric Vehicles (EVs) operate solely on electricity, offering a clean alternative to traditional fossil fuels. This reduces both air pollution and dependency on finite resources.

2

Rapid Market Expansion

The global adoption of EVs is accelerating at an unprecedented rate, driven by environmental concerns, technological advancements, and supportive policies.

3

Data-Driven Insights

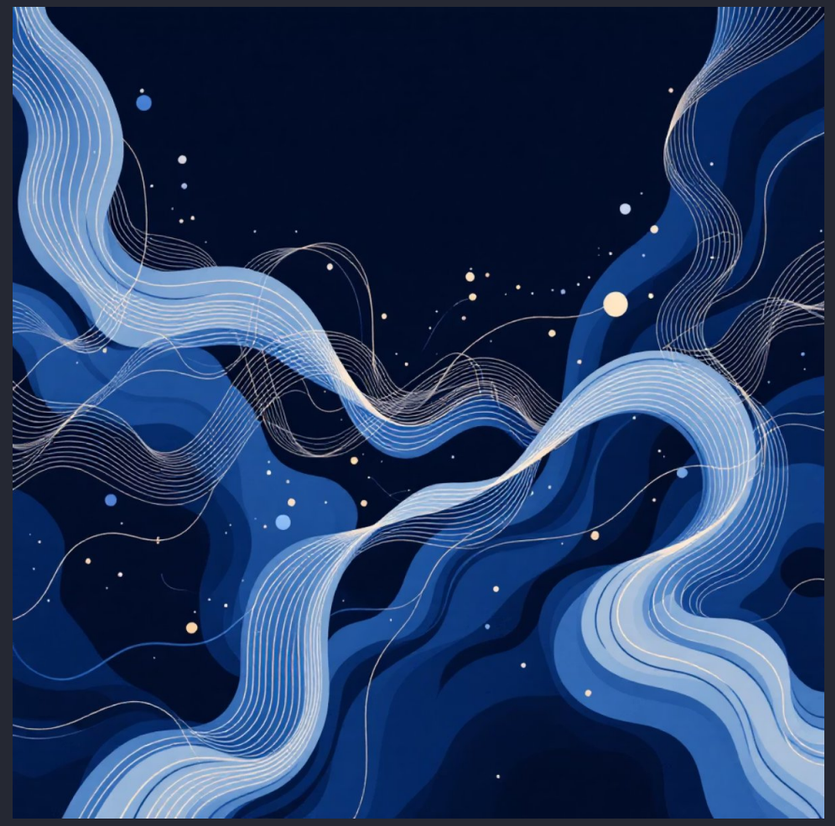
This project leverages the analytical power of Power BI to dissect complex EV market data, transforming raw figures into actionable intelligence.

Addressing the EV Data Challenge

The rapid growth and evolving landscape of the Electric Vehicle market generate vast amounts of data. However, this data often exists in complex, raw formats, making it incredibly challenging for analysts and decision-makers to extract meaningful insights.

Without proper visualization and analysis, critical trends like market growth rates, regional adoption patterns, and manufacturer performance remain obscured. This lack of clarity hinders strategic planning and informed decision-making.

Our goal is to overcome this complexity, providing a clear, interactive, and visually compelling analysis of the EV ecosystem.



Project Objectives: Unlocking EV Trends

Total EV Population

Quantify the overall Electric Vehicle presence.

BEV vs. PHEV Analysis

Compare Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV) market share.

Regional & Manufacturer Insights

Identify leading states and top manufacturers driving EV adoption.

Growth by Model Year

Examine the evolution and growth patterns of EVs over time.

Dataset Overview: Electric Vehicle Population

1

Dataset Source

Publicly available "Electric Vehicle Population Data," providing a comprehensive snapshot of EV registrations.

2

Key Fields Utilized

- Vehicle Type (BEV, PHEV)
- Model Year
- State of Registration
- Make & Model
- Electric Range (in Kilometers)

Tools & Technologies Utilized

Power BI

The primary tool for interactive dashboard creation, data visualization, and report generation.

Microsoft Excel

Used for initial data cleaning, manipulation, and structuring to ensure data quality and consistency.

DAX (Data Analysis Expressions)

Leveraged for creating custom calculated measures and columns within Power BI to derive deeper insights.

Key Performance Indicators (KPIs)

150.48K

Total Vehicles

The overall number of electric vehicles analyzed in the dataset.

78%

BEV Vehicles

Percentage of Battery Electric Vehicles, indicating market preference.

22%

PHEV Vehicles

Percentage of Plug-in Hybrid Electric Vehicles, showing their share of the EV market.

67.88 Km

Average Electric Range

The mean electric range across all analyzed EVs, a key performance metric.

Dashboard Visualizations: A Glimpse into Insights

EV Growth by Model Year

A dynamic line chart illustrates the increasing adoption rate of EVs over different model years, highlighting significant growth periods.

State-wise Vehicle Distribution

An interactive map visualizes EV concentration across various states, revealing regional hotbeds of adoption.

Top Manufacturers Overview

A bar chart ranks leading EV manufacturers by their market share, showcasing competitive landscape.

BEV vs. PHEV Split

Donut charts provide a clear percentage breakdown between Battery Electric Vehicles and Plug-in Hybrid Electric Vehicles.

Key Insights & Findings

- **Post-2018 Acceleration:** Electric Vehicle adoption demonstrated a significant surge, indicating a pivotal shift in consumer preference and market readiness after 2018.
- **BEV Dominance:** Battery Electric Vehicles (BEVs) consistently show higher popularity compared to Plug-in Hybrid Electric Vehicles (PHEVs), suggesting a strong preference for fully electric options.
- **Tesla's Market Leadership:** Tesla maintains its position as the foremost EV manufacturer, driving innovation and market trends.
- **Geographic Disparities:** Certain states exhibit remarkably higher EV adoption rates, influenced by local incentives, charging infrastructure, and consumer awareness.

Conclusion: Data-Driven EV Strategy

1

Transforming Raw Data into Insights

Power BI proved invaluable in converting complex, raw EV data into clear, actionable insights, making trends accessible to all stakeholders.

2

Simplified Trend Analysis

Interactive dashboards enable effortless understanding of intricate EV market dynamics, facilitating informed strategic decisions.

3

Enhanced Analytical Acumen

This project significantly enhanced data analysis and visualization skills, providing a robust framework for future data-driven initiatives.