AtliQ_Motors_India_EV_Analysis

Objective:

The objective of this project is to conduct a **comprehensive analysis of the Indian Electric Vehicle (EV) and Hybrid market** to support **AtliQ Motors' strategic expansion** into India. Despite holding a strong 25% market share in North America, AtliQ Motors currently has less than 2% in India. This study aims to uncover **market opportunities, growth potential, and regional performance patterns** to guide the company's entry and scaling strategy in India's EV ecosystem.

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🎯Objective

AtliQ Motors, a leading automotive company from the United States focusing on EVs, has achieved a remarkable 25% market share in the North American electric and hybrid vehicle market within the past five years. With a current presence of less than 2% in India, their goal is to introduce their best-selling models to the Indian market. This project focuses on in-depth analysis to develop strategies for increasing market share in India's dynamic EV sector.

📌My Contributions

In my capacity as a data analyst, I was provided with sample datasets, a preliminary dashboard design, and core as well as supplementary queries from stakeholders. My main responsibilities were:

- Designing key performance indicators aligned with both primary and secondary business queries.
- Constructing a dashboard to closely reflect the design provided by stakeholders, ensuring clear and engaging data visualizations.
- Seeking out and presenting additional insights beyond initial requirements, including the integration of third-party data sourced through independent research to add value to the final recommendations.

🔍 Dataset Overview

Before proceeding with the analysis, I thoroughly examined the provided datasets. The datasets were structured as follows:

Dimension Table:

- Holds time-related and fiscal year data.

Fact Table:

- Records EV sales by manufacturer and state.

dim_date:

- date: Entries range from April 1, 2021, to March 1, 2024.
- fiscal_year: AtliQ Motors’ fiscal calendar commences in April, covering FY 2022–2024.
- quarter: Fiscal quarters, derived from fiscal years.

Sales by State:

- Date: Month-wise data recording in DD-MMM-YY format.
- State: Indian state name where sales are tracked.
- vehicle_category: Distinguishes between 2-wheelers and 4-wheelers.
- electric_vehicles_sold: Number of EVs sold in each state for a given category and period.
- total_vehicles_sold: Combined sales of both electric and conventional vehicles for the respective state, category, and date.

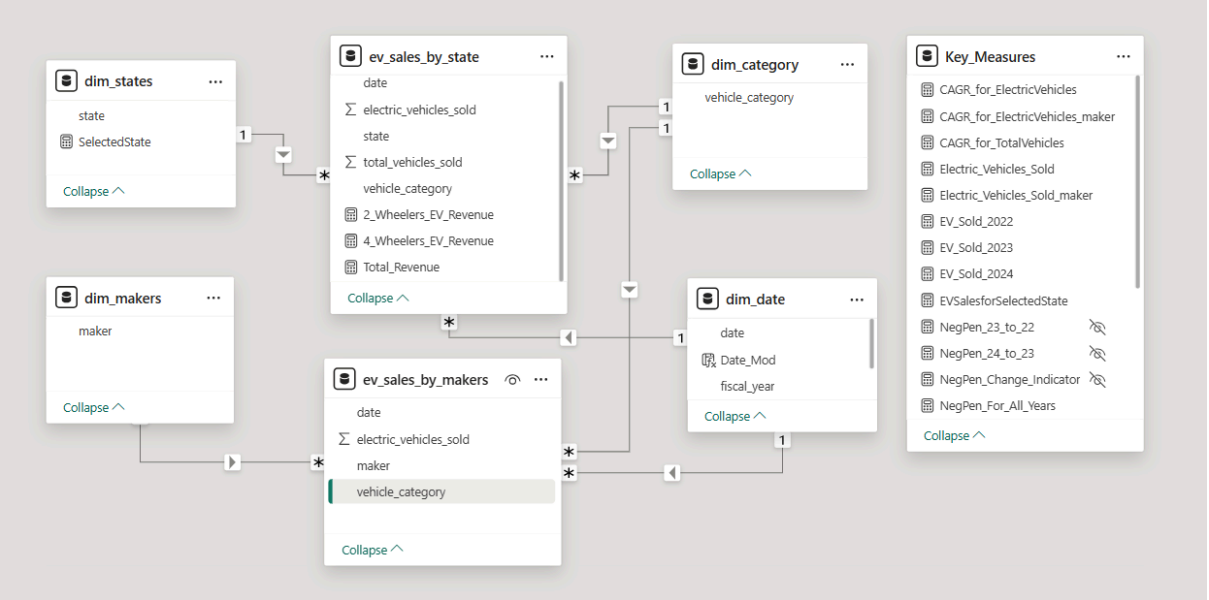
Sales by Manufacturer:

- Date: Month the sales occurred.
- Vehicle Category: Specifies 2-wheeler or 4-wheeler.
- Maker: Name of the EV manufacturing company.
- Electric Vehicles Sold: Volume sold by each maker per category and month.

🔨 Tools and Technologies Applied

- **Microsoft Excel:** Utilized for initial data cleaning and exploratory analysis, as the dataset was provided in CSV.
- **Microsoft Power BI:** Deployed for in-depth data transformation, dashboard development, and interactive visual analytics.
- **DAX (Data Analysis Expressions):** Employed for creating advanced calculated measures and aggregations.
- **BigQuery Sandbox:** Used for establishing databases and running queries to address stakeholders' core research questions, enabling deeper data understanding.

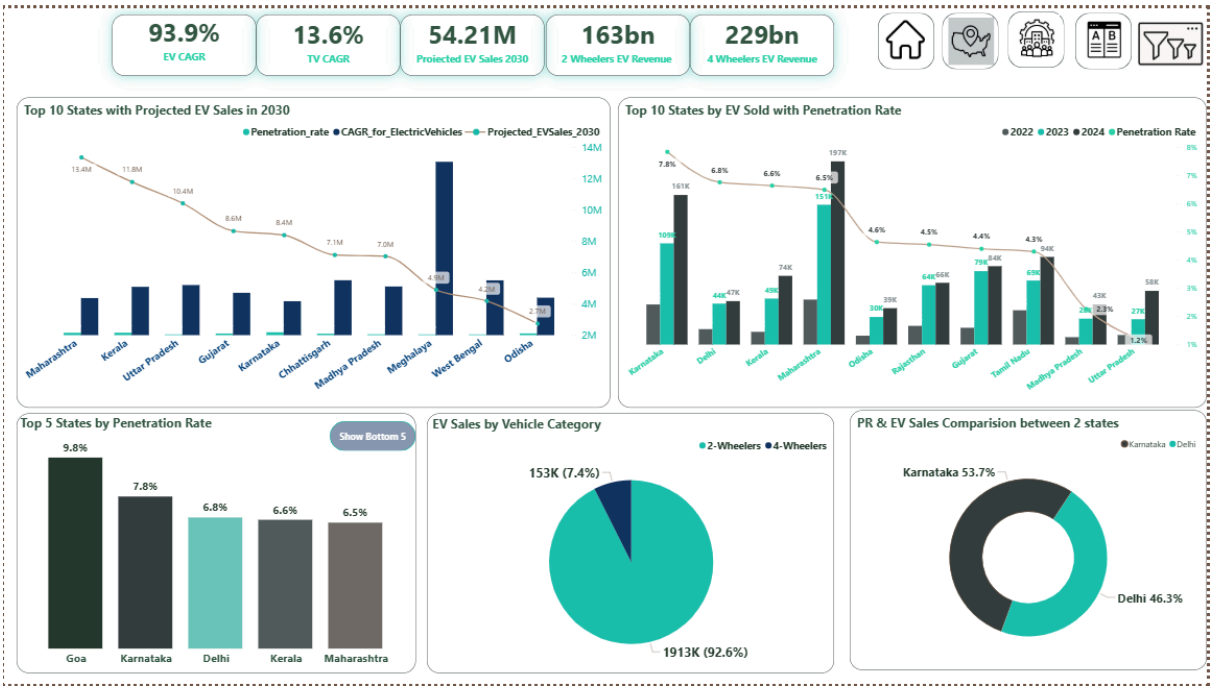
🧩 Data Model Structure



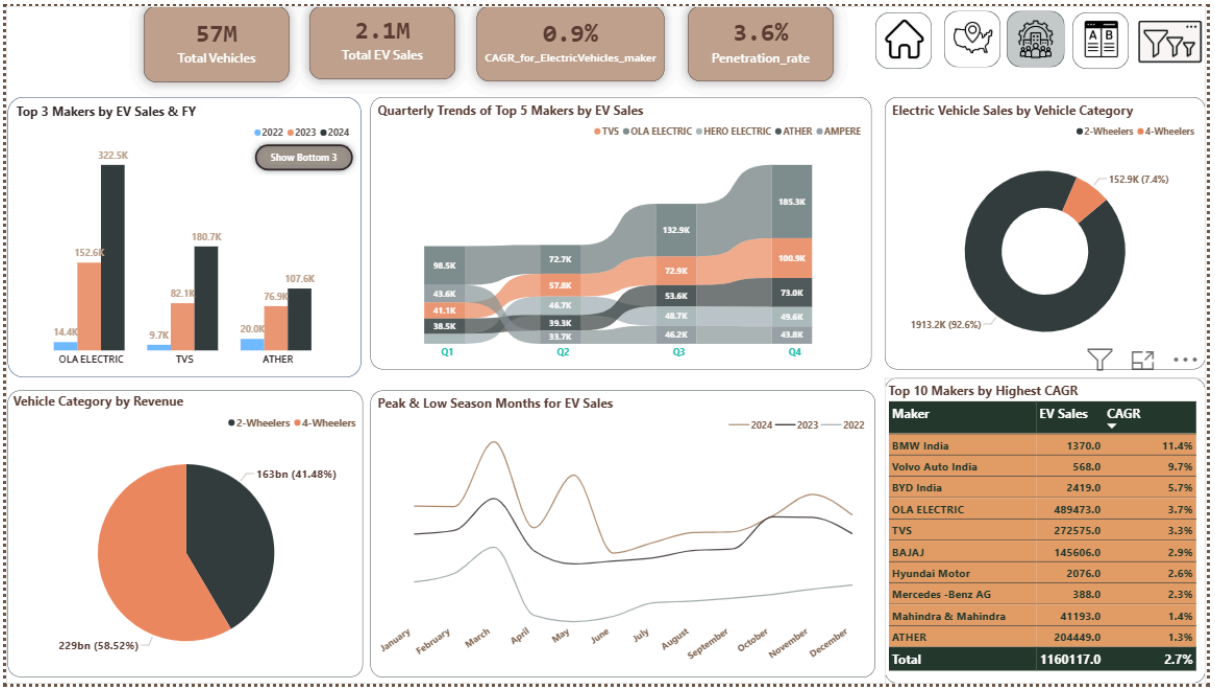
📊 Dashboard Summary

📈Home Page:

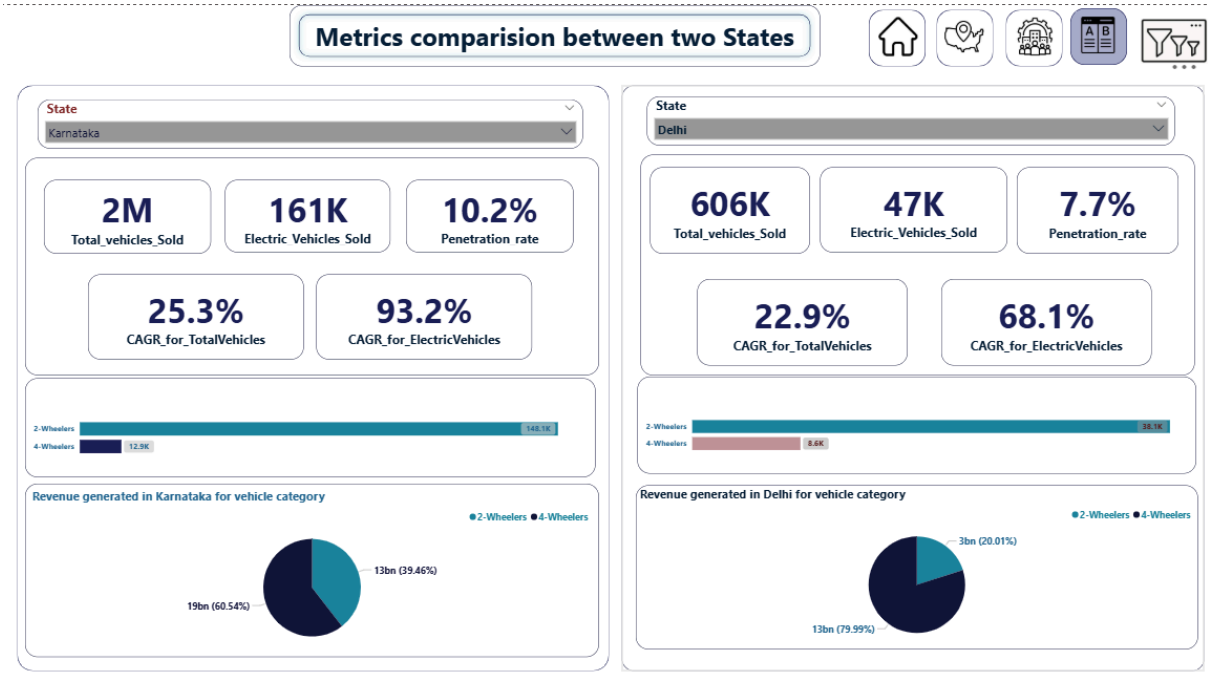
📈States Analysis View:



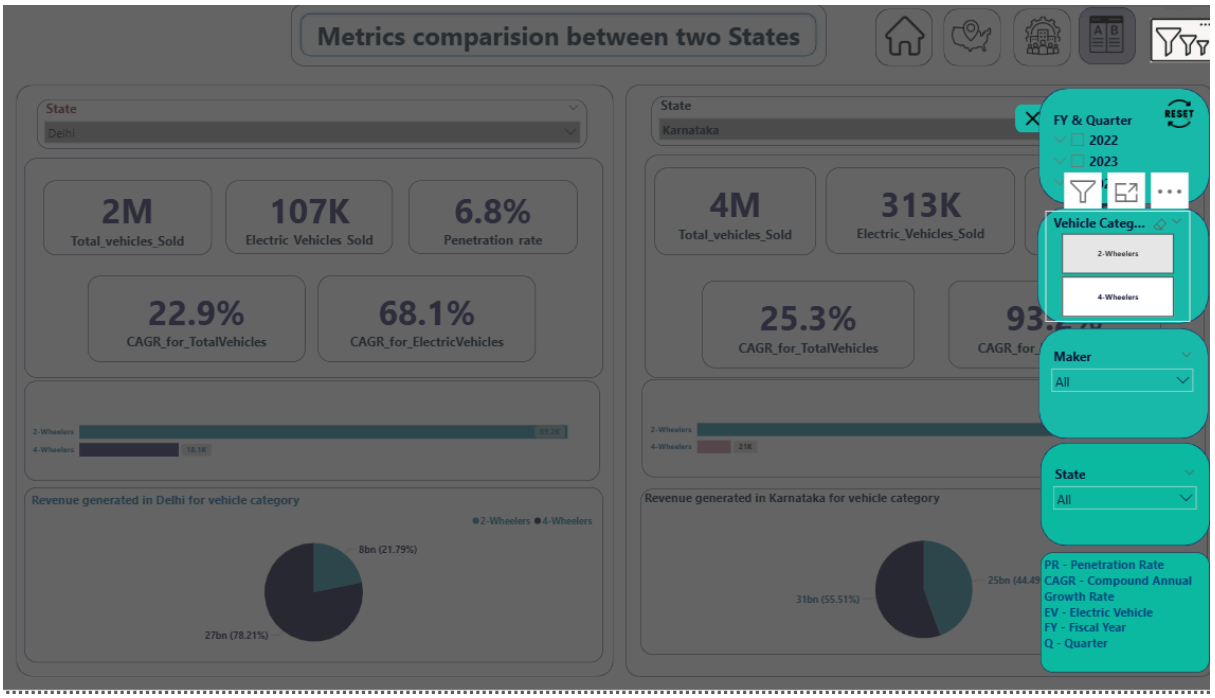
📉Makers Analysis View:



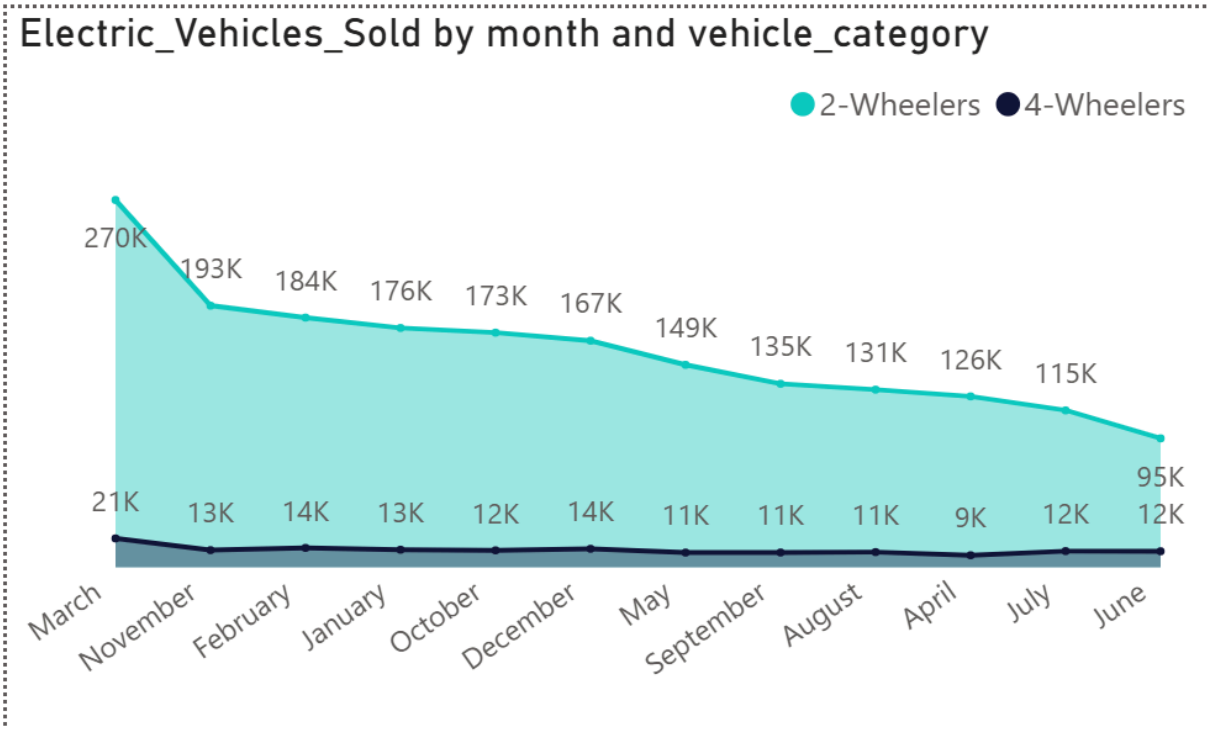
📉Statewise Comparision View:



📉Filter Panel:



📉EV Sold for each category by Month in a Tooltip for better analyzation:



🧮 Calculated Metrics Applied

To deliver actionable insights, several calculated measures and metrics were crafted, such as:

- **Total Electric Vehicles Sold:** Aggregates all EV sales for the chosen period or dimension.
- **Market Share by Manufacturer or State:** Shows relative performance geographically or by maker.
- **Growth Rate:** Tracks monthly or yearly growth in sales.
- **Penetration Rate:** Ratio of EVs to total vehicle sales (electric plus non-electric), revealing growing adoption across categories and geographies.
- **Top-Performing States/Categories:** Identifies regions and segments with standout sales performance.

Custom measures were coded using DAX to enable dynamic slicing and deeper data analysis.

💡 Takeaways & Insights

Key learnings from this project include:

- **Data Preparation:** Importance of thorough initial cleaning, especially with real-world datasets that often have inconsistencies or missing fields.

- **Business Relevance:** The need to design dashboards and metrics that directly align with stakeholder objectives.
- **Advanced Analytics:** Leveraging DAX and visual analytics in Power BI to surface hidden trends, seasonality, and untapped opportunities.
- **Storytelling through Data:** How interactive dashboards and carefully structured narratives can help stakeholders make more informed, confident decisions.
- **Continuous Learning:** Integrating supplementary data through independent research adds significant value to routine analysis.