Business Requirements Document (BRD)

Project: Analyzing U.S. Electric Vehicle Market Share

1. Business Objective

The objective of this project is to analyze electric vehicle (EV) and alternative fuel vehicle adoption across U.S. states. The analysis will support a government transportation board in planning future EV charging infrastructure investments and forecasting adoption trends based on current vehicle registration data.

2. Stakeholders

1. • Government Transportation Board
2. • Transportation Research Group
3. • Policy Makers
4. • Automotive Manufacturers
5. • Infrastructure Planning Agencies

3. Dataset Description

The dataset contains vehicle registration counts by U.S. state, segmented by fuel type. Fuel categories include Electric Vehicles (EV), Plug■in Hybrid Electric Vehicles (PHEV), Hybrid Electric Vehicles (HEV), Gasoline, Diesel, and other alternative fuels such as biodiesel, ethanol, and hydrogen.

4. Key Business Questions

1. • What percentage of vehicles in each state are EVs, PHEVs, HEVs, and gasoline?
2. • Which states have the highest EV adoption rates and which lag behind?
3. • Which alternative fuels are significant versus niche?
4. • Where should policymakers prioritize EV infrastructure investment?

5. Data Cleaning Requirements

1. • Identify and handle missing or null values.
2. • Investigate zero or anomalous vehicle counts.
3. • Standardize state names and abbreviations.
4. • Validate total vehicle counts per state.

6. Market Share Analysis Requirements

1. • Calculate fuel■type percentages per state.
2. • Rank states by EV adoption rate.
3. • Identify top 5 EV■adopting states.
4. • Compare California EV adoption with Texas, Florida, and New York.

7. Trend Analysis & Insights

1. • Identify meaningful vs niche alternative fuel usage.
2. • Highlight geographic patterns in EV adoption.

- Assess alignment between adoption rates and infrastructure readiness.

8. Visualization & Reporting Requirements

- Bar charts showing EV adoption by state.
- Pie or stacked bar charts of fuel mix.
- U.S. map visualization highlighting EV distribution.
- Executive summary dashboard.

9. Recommendations & Decision Support

The analysis should conclude with data■backed recommendations identifying three priority states for EV infrastructure investment. Recommendations must be justified using adoption rates, fuel mix gaps, and inferred infrastructure needs.

10. Deliverables

- Cleaned and validated dataset.
- Analytical report summarizing findings.
- Interactive dashboard for stakeholders.
- Executive■ready PDF report.