

# Electric Car Sales Analytics

## Objective:

This project analyzes global electric car sales trends using a dataset containing historical sales, oil displacement, electricity demand, and stock share data. The goal is to explore how electric vehicle (EV) adoption has changed over time and across regions.

## Dataset Details:

Source: Kaggle Electric Car Sales Dataset

Dataset Link : <https://www.kaggle.com/datasets/jainaru/electric-car-sales-2010-2024>

## Columns:

- region: Countries or regions
- category: Historical data
- parameter: What is measured (e.g., EV sales, oil displacement)
- mode: Vehicle type (cars only)
- powertrain: BEV, PHEV, FCEV
- year: Year of record
- unit: Unit of measurement (vehicles, %, GWh, etc.)
- value: Numeric value

## Tools & Libraries Used:

- Python
- pandas
- numpy
- matplotlib
- seaborn

## Steps Performed:

### 1 Import Libraries

Loaded necessary Python packages.

### 2 Load Data

Imported the dataset using pandas.

### 3 Preview Data

Checked the first few rows (head), data info, and stats.

### 4 Check for Missing Values

Verified data quality using `isnull()`.

### 5 Describe Data

Generated basic statistics using `describe()`.

## Analysis Performed:

- ✓ Global EV Sales Trends
  - Filtered for EV sales parameter.
  - Grouped by year to show total sales over time.
  - Created a line plot to visualize growth.
- ✓ Regional EV Sales
  - Grouped by region and year.
  - Visualized with line plots for each region.
- ✓ Electricity Demand by EVs
  - Filtered for Electricity demand parameter.
  - Grouped by year, plotted total electricity demand.
- ✓ Oil Displacement
  - Filtered for Oil displacement Mbd.
  - Grouped by year, plotted oil savings due to EVs.
- ✓ EV Stock Share
  - Filtered for EV stock share.
  - Grouped by region and year.
  - Plotted % stock share trends by region.

## Outputs:

Data plots shown using Matplotlib and Seaborn.

## Possible Next Steps:

- Build an interactive dashboard with Streamlit.
- Add forecasting for future EV adoption.
- Integrate with Power BI for deeper business insights.

## Conclusion:

This project demonstrates how to process, analyze, and visualize real-world data with Python for understanding electric vehicle adoption trends worldwide.

## Prepared by:

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