Market Size Analysis is the process of estimating the potential sales for a product or service within a particular market segment. In the context of electric vehicles (EVs), it involves assessing the total volume of EV registrations to understand the growth of the market, forecast future trends, and help stakeholders make informed decisions regarding production, infrastructure development, and policy-making.

The primary objective of this analysis is to leverage historical EV registration data to understand the current market penetration of EVs, predict future market growth, and identify key trends and factors driving market expansion. The specific goals include:

* Assess the historical growth trend of EV registrations.
* Forecast future EV registrations based on historical trends.
* Analyze the distribution of EV registrations across different models, makes, and geographical regions.
* Estimate the market size and growth potential of the EV market for upcoming years.
* Provide insights to support stakeholders in decision-making processes related to production, infrastructure planning, and policy formulation.

General Steps

* Uploading Data using Pandas.
* Reading data to see its data type
* Cleaning Data [Checking for Null values]

# Assess the historical growth trend of EV registrations.

* Checking distinct values for EV adobtion over year
* Use of value\_counts and unique function
* Plotting Bargraph using seaborn and matplotlib

#Geographical Distribution: Understand where EVs are most commonly registered (e.g., by county or city)

* This data is only for USA so Lets see distinct count of counties
* filtering the dataset for these top counties
* Analyzing ev distribution in cities of these top counties with the use of groupby function.
* Plotting Bargraph

#EV Types: Breakdown of the dataset by electric vehicle type

* Total values Counts of each type
* Seeing Growth of Vehicle type year wise by plotting graph

#Make and Model Popularity: Identify the most popular makes and models among the registered EVs.

* I addressed top 10 Makes
* Then I addressed top models of top 3 makes

#Electric Range Analysis: Analyze the electric range of vehicles to see how EV technology is progressing.

* Used Histogram to do the analysis and created bin of 30 as their were so many unique values of range
* Plotted a line graph year wise to see the growth of range
* Then plotted bar graph to see range trends in top models of the top makes

# To estimate the market size

* Count number of ev registerd per year
* As per my observation the growth per year is exponential so I used exopentail Growth funtion

y = a\*x^(b)

b: Growth rate (determines how fast the value grows over time).

x: Time or independent variable