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| Checkpoint I | Checkpoint I: Project Proposal | |
| Group: | G16 |
| Date: | 2023/09/16 |
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# Domain

Electric cars have become a fundamental aspect of modern transportation, reshaping the automotive industry and influencing our environmental sustainability efforts. Furthermore, the adoption and understanding of electric vehicles (EVs) play a crucial role in our daily lives, and their impact extends beyond individual convenience. Electric cars contribute to combating climate change, making them an essential component of a sustainable future.

Analysts may inquire about the factors influencing electric vehicle efficiency or seek correlations, for example, between acceleration and battery capacity. They might also investigate how fast charging infrastructure affects EV adoption or delve into the pricing dynamics across different vehicle segments. This dataset offers a wealth of opportunities to draw conclusions regarding environmental benefits derived from energy efficiency.

Through data visualization and analysis, our goal is to uncover insights into the relationship between electric vehicle adoption, trade-off battery versus prices and outcomes generated for each manufacturer. By studying electric vehicle environments, we aim to contribute to a better understanding of the role electric cars play in shaping a sustainable future for Europe and the world.

# Dataset Description

# The "Electric Vehicle Analysis", is a static dataset available on Kaggle and a comprehensive compilation of three datasets into one, providing a rich collection of data to facilitate the exploration of correlations and relationships among various attributes related to electric cars.

# This dataset serves as a valuable resource for researchers, analysts, and enthusiasts interested in gaining insights into the electric vehicle (EV) market and its impact on environmental sustainability.

In the following links is possible to find Kaggle’s datasets:

<https://www.kaggle.com/datasets/geoffnel/evs-one-electric-vehicle-dataset>

<https://www.kaggle.com/datasets/divyanshugupta95/cars-dataset-with-battery-pack-capacity>

And here the final dataset, the “Electric Vehicle Analysis”:

<https://www.kaggle.com/code/divyanshugupta95/electric-vehicle-analysis>

**Dataset Attributes:**

* **Brand**: brand of the electric car.
* **Model**: specific model of electric car.
* **AccelSpeed**: acceleration speed of the electric car, measured in seconds from 0 to 100 km/h.
* **TopSpeed\_KmH**: maximum speed the electric car can achieve under optimal conditions.
* **Range\_Km**: driving range of the electric car on a single charge (in Km).
* **Battery\_Pack Kwh**: information about the electric car's battery pack capacity (in Kwh).
* **Efficiency\_WhKm**: energy efficiency of the electric car, measured in watt hour per kilometer (WhKm).
* **FastCharge\_KmH**: indication of whether the electric car is equipped with fast charging capability.
* **RapidCharge**: represents the presence of rapid charging capability.

# **PowerTrain**: information about the electric car's powertrain, encompassing details about electric motor(s), drivetrain configuration, and technology.

# **PlugType**: type of plug required for charging the electric car.

# **BodyStyle**: body style or design of the electric car.

# **Segment**: market segment to which the electric car belongs.

# **Seats**: number of seats.

# **PriceEuro**.

# Example Questions

1 – **What is the relationship between a car's acceleration speed and its price in euros? -** Show whether faster acceleration generally corresponds to higher prices or if there are exceptions.

2 – **Which car brands offer electric vehicles with the longest range (in kilometers) and the highest top speed? -** Help users identify the brands that excel in both long-range and high-speed electric cars.

3 – **What proportion of electric cars have a top speed (Km/H) exceeding 150 Km/H, and does this proportion change based on the body style of the vehicles?** - proportion of cars with top speeds exceeding a certain threshold and if this proportion varies by body style

4 - **What is the distribution of electric cars' fast charge capabilities across different power train types? -** Which power train types are more likely to offer fast charging options and at what rates.

5 – **Can we identify any recurring design trends in body styles among electric cars with the highest efficiency (Wh/Km) and do these trends vary by market segment?** - uncover design patterns in body styles for highly efficient electric cars, while also considering how these patterns might differ across market segments

# Data Sample

(from “ElectricCarData.cvs”)

Brand;Model;AccelSec;TopSpeed\_KmH;Range\_Km;Battery\_Pack Kwh;Efficiency\_WhKm;FastCharge\_KmH;RapidCharge;PowerTrain;PlugType;BodyStyle;Segment;Seats;PriceEuro

Tesla;Model 3 Long Range Dual Motor;4.6;233;460;70.0;161;940;Yes;AWD;Type 2 CCS;Sedan;D;5;55480

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|  | Question 1 | Question 2 | Question 3 | Question 4 | Question 5 |
| Attributes | AccelSec + PriceEuro | Brand + Range\_Km + TopSpeed\_KmH | BodyStyle + TopSpeed\_KmH | FastCharge\_KmH + PowerTrain | Efficiency\_WhKm + BodyStyle + Segment |