**⚡ ELECTRIC VEHICLE DATA ANALYSIS USING SQL**

This project explores a real-world electric vehicle (EV) dataset to uncover performance trends, efficiency insights, and segment-based comparisons using SQL.  
It demonstrates the analytical mindset and technical skills expected from a professional data analyst.

More than 10+ queries are written using SQL Server, applying concepts like filtering, grouping, CTEs, subqueries, and window functions.

**📦 Dataset Overview**

This dataset contains detailed specifications of various electric vehicles, including:

* **Brand & Model**: The name of the EV and its manufacturer
* **Range & Efficiency**: Maximum distance per charge and energy consumption (Wh/km)
* **Performance**: Acceleration (0–100 km/h) and top speed
* **Battery Details**: Battery capacity (kWh), battery type, and DC fast charging capability
* **Utility Features**: Number of seats, cargo volume (liters), and towing capacity
* **Classification**: Car body type (e.g., SUV), vehicle segment, and drivetrain

**🎯 Project Objectives**

* Clean and explore the EV dataset using SQL Server (SSMS)
* Answer real-world business questions about electric vehicle specifications
* Apply intermediate to advanced SQL techniques:
  + Common Table Expressions (CTEs)
  + Inline and correlated subqueries
  + Window functions like RANK, NTILE, and PERCENT\_RANK
* Simulate real-world data analysis often used in dashboards and reports

**🛠 SQL Concepts Used**

* **Aggregations** – for averages, totals, and model counts
* **Grouping & Filtering** – to analyze trends by segment, drivetrain, or brand
* **CTEs** – for building reusable logic for complex queries
* **Subqueries** – for comparing EVs to averages and segment leaders
* **Window Functions** – for rankings, quartiles, and percentiles

**🔍 Business Questions Answered**

1. Which EVs offer the longest driving range?
2. Which brands offer the most models in the market?
3. What is the average efficiency per segment?
4. Which vehicles are most family-friendly (e.g., 7+ seats, high cargo space)?
5. Which EVs perform best based on a custom performance score?
6. Which models support fast DC charging, and at what power level?
7. Who leads in acceleration and top speed within each body type?
8. Are there any models that are both fast and highly efficient?