**Electric Vehicle Population Data (Washington State Department of Licensing)**

**Big Data, Section C Fall 2024**

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**Abstract**

As the aim of the project, we intend to research into and analysis the electric vehicle population in Washington State and present a study about insights received. The following sections of this proposal explain in detail the problem statement, objectives, data source and information, technologies, and programming language.

1. **Problem Statement and Objectives**

Electric vehicles (EVs) have seen significant growth in recent years. In 2023, nearly one in five cars sold globally was electric, with sales reaching almost 14 million [1]. This represents a 35% increase from 2022 and is more than six times higher than in 2018 [2].

This project aims to analyze the dataset of Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs) registered through the Washington State Department of Licensing (DOL). The analysis will focus on understanding the preference, geographic distribution, and types of these vehicles. Additionally, the project will evaluate environmental impact based on scientific estimation.

Inspired by this scenario, we intend to create an analysis to answer:

1. Identify and analyze the composition of EV population in Washington State, including:
   1. Manufacturer
   2. Model
   3. EV type
   4. Range
   5. Energy Utility
2. The best-selling model of each brand
3. The best-selling model / brand of each EV type
4. The best-selling vehicle in WA
5. The best-selling vehicle in each city (WA)
6. The best-selling vehicle in each country (WA)
7. Most favorite brand in WA
8. Most favorite brand in each city (WA)
9. Most favorite brand in each country (WA)
10. Map the geographic distribution of BEVs and PHEVs across different counties and cities in Washington State
11. Identify regions with high and low adoption rates and investigate contributing factors
12. Estimate the reduction in CO2 emissions and fuel consumption due to the adoption of BEVs and PHEVs
13. **Dataset**

The dataset is chosen from DATA.GOV.

Link to Dataset: [Electric Vehicle Population Data - Catalog](https://catalog.data.gov/dataset/electric-vehicle-population-data)

Dataset File Size: 49,110kb (CSV)

Number of Records: 205440

1. **Technology (subject to change)**
   1. Azure Cosmos DB
   2. SQLite
   3. Microsoft Excel
   4. Python (for data cleaning and re-organization, possibly for visualization)
   5. Tableau
   6. Microsoft Power BI
2. **Programming Language**
   1. Python
   2. JSON
   3. SQL language

**Reference**

[1] IEA (2024), Global EV Outlook 2024, IEA, Paris https://www.iea.org/reports/global-ev-outlook-2024, Licence: CC BY 4.0

[2] Hannah Ritchie (2024) - “Tracking global data on electric vehicles” Published online at OurWorldinData.org. Retrieved from: 'https://ourworldindata.org/electric-car-sales' [Online Resource]