ELECTRIC VEHICLE POPULATION DATA

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CHAPTER 1: INTRODUCTION

Electric vehicles are more sustainable methods of transportation, replacing fuel-based cars in this modern age. The Washington State Electric Vehicle Population data set reflects the registered BEVs and PHEVs throughout the state with a wealth of information from model year to manufacturer, electric range, and regional information. Thus, this data set is interesting to investigate due to the inferences we can draw from the results about population trends, including what models are most favored, the average electric range, and regional dispersion by city and county.

1.1 Problem Statement

Although the database consists of BEVs and PHEVs located in Washington State - trends, distributions, and characteristics influencing EV adoption are largely unknown. This project intends to investigate the database to discover the distribution of EVs, the most common manufacturers, the ranges that shape averages and more about the geo-location of adoption.

1.2 Project Objectives

1.1.1 General Objective:

To analyze the Washington State EV Population dataset and identify key insights about EV adoption and characteristics.

1.1.2 Specific Objectives:

- Clean and explore the EV dataset.
- Analyze BEV vs PHEV distribution.
- Identify top manufacturers and models.
- Examine electric range and model year patterns.
- Analyze regional EV distribution.
- Present visual insights and recommendations.

1.3 Scope of the Project

- Data cleaning and preprocessing
- Descriptive analysis and visualizations
- EV type, model year, range, and manufacturer analysis
- Geographic distribution insights
- Summary and recommendations
- Cluster analysis grouping similar EVs

1.4 Proposed Modules and Features

- Data Loading Module
- Data Cleaning and Preprocessing
- Exploratory Data Analysis (EDA)
- Distribution Analysis: BEV vs. PHEV
- Manufacturer and Model Insights
- Electric Range Analysis
- Geographic Distribution Analysis - Visualization and Reporting Module

1.5 Tools Used:

- PostgreSQL (pgAdmin) for data management.
- Power BI for visualization and dashboard creation.
- Python(pandas, scikit-learn) for grouping EVs based on range and model year