New York – Analyzing the Relationship Between Census Data and Electric Vehicle Registrations

1. Main Question

Is there a relationship between Census data and the number of electric vehicles registered across the counties of New York?

This project investigates how socioeconomic factors such as income, education, and urbanization influence the adoption of electric vehicles (EVs) across counties in New York. Higher-income, better-educated regions, and urban areas with developed infrastructure may exhibit higher EV adoption rates. Understanding these patterns helps reveal how demographic and regional factors contribute to the transition to sustainable transportation.

2. Data Sources

1. NY Registration Records (EV Data)
- Metadata URL: NY Vehicle Registration Metadata
- Data URL: EV Registration Data CSV
- Data Type: CSV
2. NY Census Data
- Metadata URL: Census Data Metadata

DataURL:[CensusDataAPI](https://api.census.gov/data/2022/acs/acs5/subject?get=group(S0101)&ucgid=pseudo(0400000US36$0500000)

- Data Type: JSON

3. Work Packages

1. Calculate EV Percentage for Each County

Extract and calculate the percentage of EVs in relation to total vehicle registrations for each county.

2. Match Both Data sources on County

Clean and standardize county names to enable accurate merging of Census and registration datasets.

3. Normalize Census Data

Standardize Census variables (e.g., income, education, urbanization) to ensure comparability across counties.

4. Calculate Correlation

Analyze correlations between EV adoption rates and key demographic indicators to identify significant relationships.

5. Create a Data Report

Develop a comprehensive report detailing the analysis, results, and insights, following the structure and style provided in the uploaded reference document.

Pipeline Overview

The ETL (Extract, Transform, Load) pipeline uses Python and the Pandas library to automate data extraction, cleaning, transformation, and loading. It performs error handling and produces a final CSV file containing metrics for each county.

4.Results & Limitations

- Results:

The analysis will provide key metrics such as EV percentage, urbanization levels, median

income, and education levels for each county.

- Limitations:
- Mismatched data update frequencies: EV data is current to 2024, while Census data is from 2022.
- Manual adjustments may be needed for future analyses due to potential data format changes.

This project will offer valuable insights into the role of socioeconomic and demographic factors in EV adoption, contributing to discussions on equitable and efficient policy-making for sustainable transportation in New York.