Project Proposal
CMPE 255-01 Spring 2024

ANALYZING THE SOCIOECONOMIC PROFILE OF CALIFORNIA ELECTRIC VEHICLE OWNERS BY ZIP CODE

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Selected Project **Option 2 – Data Analytic Track**

Datasets:

- Vehicle Fuel Type Count by Zip Code, multiple years
  - Source: https://data.ca.gov/dataset/vehicle-fuel-type-count-by-zip-code
- SOI Tax Stats - Individual Income Tax Statistics - ZIP Code Data (SOI)
  - Source: https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-statistics-zip-code-data-soi
- Personal Income Tax Statistics By Zip Code, multiple years
  - Source: https://data.ca.gov/dataset/personal-income-tax-statistics-by-zip-code
- CA Geographic Boundaries
  - Source: https://data.ca.gov/dataset/ca-geographic-boundaries

Despite the increasing popularity of electric vehicles (EVs) as a sustainable mode of transportation, there still needs to be more understanding of the socioeconomic factors that influence their adoption, especially at the community level in California. This project aims to bridge this gap by examining and analyzing income and tax data in conjunction with electric vehicle ownership information, focusing on identifying patterns and gaining insights into how socioeconomic status affects one's chances of adopting EVs in specific ZIP codes.

The project will employ advanced tools such as Pandas, Matplotlib, Seaborn, and Folium to analyze thoroughly using the planned datasets. The project aims to identify income levels, tax brackets, and electric vehicle ownership patterns based on ZIP code. The project aims to create maps showing the geographic distribution of electric vehicle ownership and its correlation with socioeconomic factors.

The project also plans to implement clustering to segment ZIP codes into groups with similar characteristics and regression analysis to understand and predict factors influencing EV adoption. The datasets are available from data.ca.gov, and irs.gov will be used to analyze the project. The project aims to develop A web-based data application to make the findings accessible and interactive. This web app will allow users to interact with the dataset, visualize the distribution of EV ownership and socioeconomic data by ZIP code, and interact to gain insights into the dynamics of EV adoption.

The project aims to understand the socioeconomic dynamics of electric vehicle adoption in California. It will provide insights to inform policymaking and promote sustainable transportation solutions across different income group communities in ZIP codes.