

Analysis of Electric Vehicles (EV's) and Charging Station



Capstone Project Presentation (Spring 1)

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Problem Statement/Opportunity

- Identifying opportunities for enhancing the EV ecosystem, particularly in improving the distribution and accessibility of charging stations.
- The project focuses on identifying regions where EV infrastructure can be improved, to assess and predict the convenience of owning electric vehicles.



Data-Driven Approach to Optimizing EV Infrastructure

Approach Overview

- This approach utilizes data science techniques to comprehensively map the distribution of Electric Vehicles (EVs) and the locations of charging



Source: <https://infrastructureusa.org/interactive-map-ev-charging-stations-from-coast-to-coast/>Source

Data Analytics and Insights:

- We will use predictive analytics to forecast future trends in EV adoption and the corresponding need for infrastructure expansion.

The goal is to provide data-backed recommendations for infrastructure development to support the growing EV market efficiently.

Solution Impact

- **Enhanced Accessibility:** Optimizing charging station locations through data analysis can increase EV convenience and accessibility, diminishing range concerns and widening their attractiveness to a larger audience.
- **Boosted EV Adoption:** Filling infrastructure gaps to meet demand can spur more consumers to choose EVs, aiding in reducing emissions and enhancing environmental health.



Solution Impact

MAIN FEATURES

- Exploring EV registrations and charging station data in Washington State for detailed insights.
- Information stored in two CSV files
- The raw dataset contains almost 205k rows and 30 columns combined

Data Quality Concerns:

- Addressed missing values and duplicates to ensure data accuracy and consistency.

Early Findings from EDA:

- Initial EDA indicates a varied spread of EVs and chargers, guiding deeper study and focus areas.



NEXT STEPS



Data Processing

- Perform time-series analysis to uncover patterns, seasonality, or trends.

Feature Engineering

- Predictive Modeling: Using time-based features to predict future patterns, such as forecasting the demand for charging stations in the coming months or years based on current trends.
- Derive distances from EVs to the nearest charging stations.

Baseline Model

- Handling missing values.
- Evaluate the model's performance
- Understand model's predictive capability and limitations



Thank You