

Collaborative Project Phase 2 Proposal Team 8

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In this project, we aim to collect data that will help us determine the most efficient areas to expand electric vehicle (EV) infrastructure to. To achieve this goal, we plan to analyse the current state of EV infrastructure in different regions, identifying areas where it is lacking and where there is room for growth. Additionally, we will consider what areas are most likely to be able to support a successful, sustainable community, taking into account factors such as local demand, existing charging infrastructure, and the availability of renewable energy sources. By carefully analysing this data, we hope to provide valuable insights that will help guide the expansion of EV infrastructure and contribute to a more sustainable future. We aim to create a database that allows for quick and easy comparing, contrasting, and overlaying data to pinpoint areas of interest.

Data the group will gather for incorporation into the database

The data points listed are all related to location and will be used to determine the most efficient locations for expansion of electrical vehicle (EV) infrastructure. The following is a summary of each data point:

- EV stations: This data point refers to the availability and density of EV charging stations in a particular location. It is a key factor in determining the feasibility of EV expansion in that location as it will enable EV owners to recharge their vehicles.

- Gas prices: Gas prices have an inverse relationship with EV adoption rates. As gas prices rise, more people are likely to switch to EVs. Therefore, gas prices in a particular location can provide insight into the potential demand for EVs.
- Means of transportation: The means of transportation used in a particular location can also provide insight into the potential demand for EVs. For example, if a location has a high number of commuters who use public transportation, it may be an ideal location for the expansion of EV infrastructure.
- Median household income: Median household income is an important factor in determining the affordability of EVs for residents in a particular location. A higher median household income may indicate a greater potential demand for EVs, as residents may be more likely to afford them.

What questions we will explore with the data:

Overall, the combination of these data points in a database can help identify the most efficient locations for the expansion of EV infrastructure. Locations with high potential demand for EVs, affordability, and accessibility to charging stations may be ideal for expansion. Combining these data points will provide insights about the feasibility of EV expansion by way of installing more EV charging stations in the right places. By analysing data about EV charging station availability, gas prices, means of transportation, and median household income, stakeholders can identify locations

where a charging station is highly recommended. In a region with a high concentration of apartment housing, the availability of parking and charging infrastructure must be considered. The combined data of housing units and means of transportation can reveal the likelihood of apartment residents owning EVs and their charging infrastructure requirements. The median household income data determines the affordability of investing in a new electric car. If a significant number of apartment residents have high median incomes and prefer using public transportation, more installations of EV charging stations near major transit hubs should occur to create potential EV owners. In areas with minimal EV charging infrastructure, stakeholders need to evaluate several factors, including gas prices, means of transportation, and median household income, to identify potential demand for EVs. Combining this data can reveal whether residents are more likely to be interested in owning EVs as an alternative to gas-powered vehicles and whether they can afford them. If a location has high gas prices, many commuters using public transportation, and a high median household income, it may be optimal to install EV charging stations in high-traffic areas like shopping centres.

The data that we will be collecting will be used to decide what areas need more charging stations for electric vehicles. These stations will be extremely valuable to these specific areas because they either lack them, are near apartment complexes, or are in areas with a high amount of electric vehicles. This data will be used for positive changes because if areas that need more electric vehicle charging stations, this will entice people to buy more electric vehicles as one of the major issues is lack of charging. The more electric vehicles on the road is better for the environment as there will be less

harmful gases going into the air. Another reason why having electric vehicle charging stations in specific areas that need them will lead to less oil usage which can be used in other ways that have less of an impact on the environment. Electric vehicles also promote renewable energy. Electric vehicle charging stations can be powered by renewable energy sources such as solar and wind. Which, as mentioned before, can really reduce the usage of fossil fuels and oil. These are a few ways that introducing electric vehicle infrastructure into specific areas as our data will point out can lead to opportunities to propose positive change.

We will be exploring how electric vehicles eliminate exhaust which reduces greenhouse gas emissions. Electric vehicles produce significantly fewer planet warming emissions in comparison to gasoline fueled cars. Decreasing greenhouse gas emissions can slow global climate change in addition to decreasing air pollution. Greenhouse gas emissions have various environmental and health effects. As a result of the increased emissions, carbon dioxide, the most dangerous greenhouse gas, levels are at an all time high. These gasses absorb solar energy and keep heat close to Earth's surface, resulting in global warming and climate change. Environmental changes caused by rising temperatures impact wildlife populations and habitats, rising sea levels, and extreme weather events.

Various ethical dilemmas are faced as a result of climate change. For instance, balancing rights and responsibilities of the developing world. It is universally agreed

upon that greenhouse gas levels should be kept below a level which can produce dangerous climate change effects.

Representative user interaction 1:

- Actor accesses the system
- Actor provides locational data, number of units for housing, parameters for means of transportation, a range of median household incomes, and gas prices
- Actor requests to see different views of the data by adding and removing attributes from the search.
- Actor is able to display views and interpret potential new EV charging sites.

Representative user interaction 2:

- Actor receives a view of data with requested parameters.
- Actor decides to change parameters and modify results.
- Actor changes parameters and submits a new query.
- Actor views new data

Works Cited

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