

# Project 3

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## Background Information (Universal)

These graphs are mainly to compare and contrast correlations between Electric Vehicles (EVs) and Electric Vehicle Charging Stations. The area of focus of this study is on counties in Washington, USA. This information is sourced by data.gov and department of transportation based on data from 2020. We are looking at the data results to analyze evidence and incur whether or not there is imbalance or unique correlation in the counties of Washington. Further information is provided about each of the graphs given.

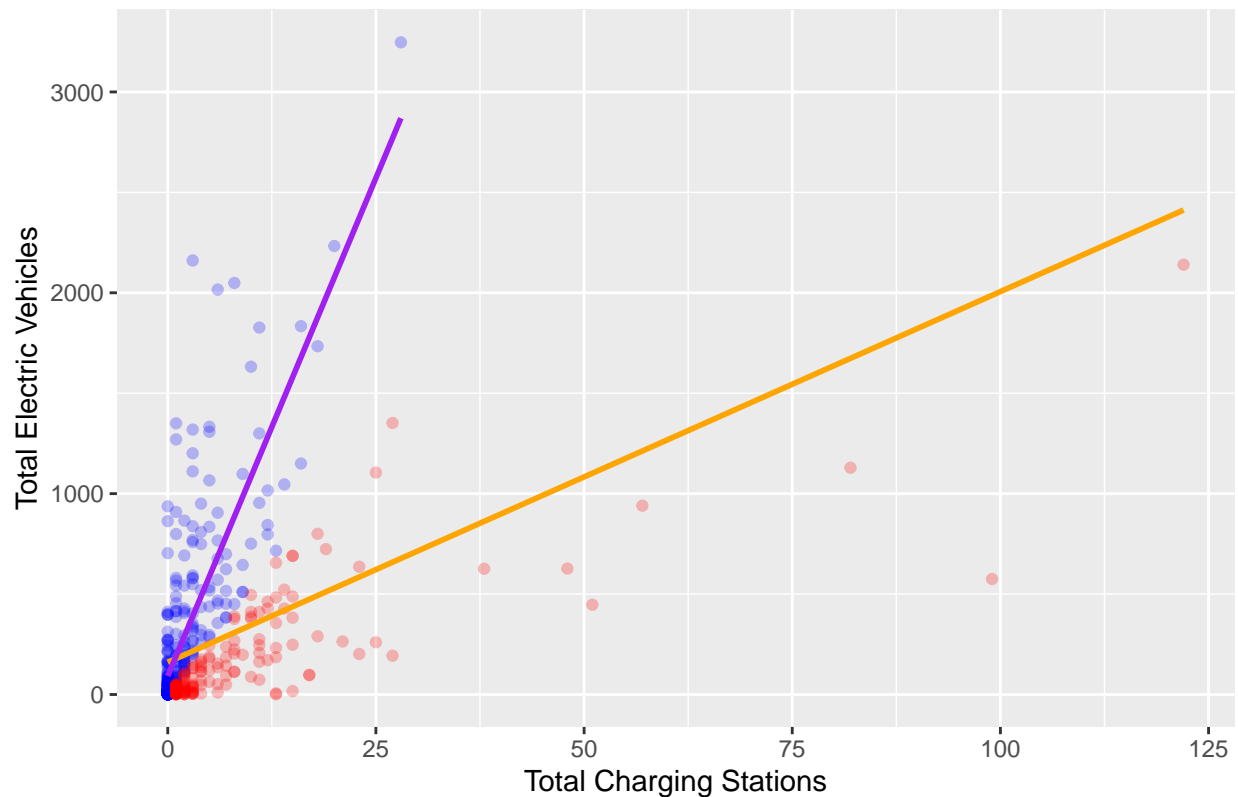
## Outliers in our Dataset

In this scatter plot, we analyzed the dataset in terms of how many electric vehicles were registered to each zip code in the state of Washington, and how many charging stations were in each zip code in the state of Washington as well. The red dots refer to outliers in our dataset, where the county had a charging station to electric vehicle ratio that was outside the interquartile range, while the blue dots refer to zip codes that fell within that interquartile range. The orange line shows the linear regression of all datapoints, while the purple line only shows the linear regression of the points that were not outliers.

Comparing the two regression lines, there is a different in the lines when outliers are included, this leads to the result that shows outlying results tend to shift the balance of the graph. Considering this, we should move forward in focusing on providing balance into the outliers and creating a fair range within the Washington counties, making it so more people are less prone to worry whether they are in a fair range of a charging station if they decide to buy an electric vehicle.

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Total Electric Vehicles in Comparison to Total Charging Stations per Count



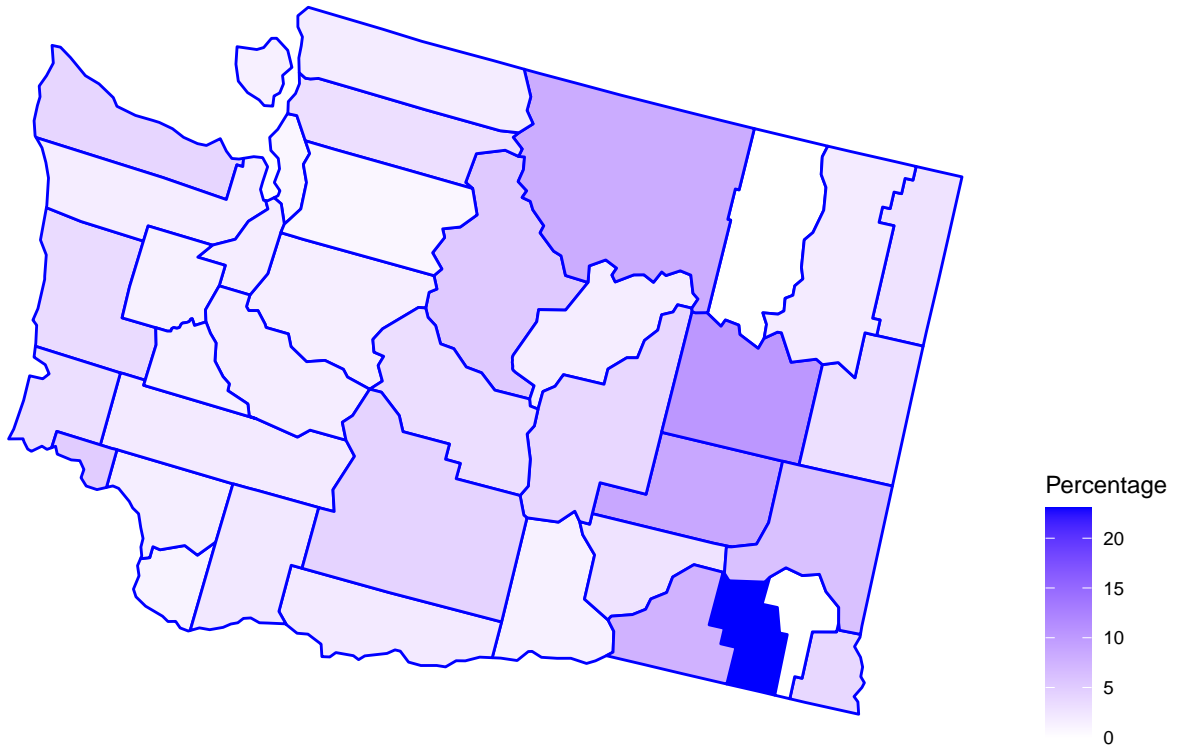
### Zooming out on Washington

In this map we zoomed out on all the zip codes and grouped them into counties in Washington state. We then made a density map analyzing each county and which county had the highest charging station to electric vehicle percentage. The higher the percentage, the darker the color blue for the county. For this map, we had to use another library to plot the map instead of ggplot, and we ended up using usmaps library for this map.

Unequal access to charging stations is evident in some Washington counties, although most counties are shown to be similar, others that have close to a zero percentile are prone to less accessibility. As electric vehicle adoption grows, addressing these disparities is crucial for equitable access and a viable future.

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## Percentage of Charging Stations per Electric Vehicle per County



### Comparing Percentages

In this bar chart, we analyzed each county's charging station to electric vehicle percentage and ordered the counties from highest to lowest percentage. The blue vertical line refers to the average percentage of all the counties. In the chart, you can see that there are a couple counties (Garfield, Ferry) with a percentage of 0%, and a county (Columbia) with a very high percentage.

We can come to a conclusion that some counties in Washington have less access to charging stations and over half of the counties are below average. As the growth of EVs continues, we must recognize these indifference to both provide to consumers of EVs and pave a road to a more sustainable future.

Each County's Charging Station to Electric Vehicle Percentage

