Electric Vehicles in Washington State

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https://catalog.data.gov/dataset/electric-vehicle-population-data

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Intro

Our data set: Electric Vehicle Population Data from Data.Gov

[Electric Vehicle Population Data - Catalog](#)

Questions we are looking to answer:

- What vehicle brand is most popular for consumers? (top 15)
- What brands are the trends for consumers over the years? a
- What brand has the highest fuel range?
  - Is fuel range a selling point for consumers?
- Average range and age of EV?
  - How has the electric range changed for the top ten brands over the years?
- Does the electric vehicle type matter to consumers?
  - Which vehicle type has better electric range?
- How does location in Washington influence the amount of EVs?

Data Cleaning

- Searched for a reliable data set and found one on Data.gov
- Loaded necessary libraries and packages for analysis
  - ggplot2, tidyverse, dplyr, forcats, readr, and leaflet.
- Filtered data to only display vehicles in Washington state.
- Removed unnecessary columns
  - X2020.Census.Tract', 'DOL.Vehicle.ID', 'Legislative.District', 'VIN..1.10.', and 'Electric.Utility'

```
ev_data <- ev_data %>%
  select(-X2020.Census.Tract,
-DOL.Vehicle.ID,-Legislative.District,-VIN..1.10.,-Electric.Utility)
ev_data <- ev_data %>%
  filter(State == "WA")
head(ev_data)
```

Variable Types


```
data.frame :    181438 obs. of   17 variables:
 $ VIN..1.10.                                      : chr
 $ County                                          : chr
 $ City                                            : chr
 $ State                                           : chr
 $ Postal.Code                                     : int
 $ Model.Year                                      : int
 $ Make                                            : chr
 $ Model                                           : chr
 $ Electric.Vehicle.Type                           : chr
Electric Vehicle (BEV)" "Plug-in Hybrid Electric Vehicle (
 $ Clean.Alternative.Fuel.Vehicle..CAFV..Eligibility: chr
Alternative Fuel Vehicle Eligible" "Not eligible due to lo
 $ Electric.Range                                  : int
 $ Base.MSRP                                       : int
 $ Legislative.District                            : int
 $ DOL.Vehicle.ID                                  : int
237392459 ...
 $ Vehicle.Location                                : chr
47.083975)" "POINT (-122.85403 46.856085)" ...
 $ Electric.Utility                                : chr
ENERGY INC" "PUGET SOUND ENERGY INC" ...
 $ X2020.Census.Tract                              : num
```
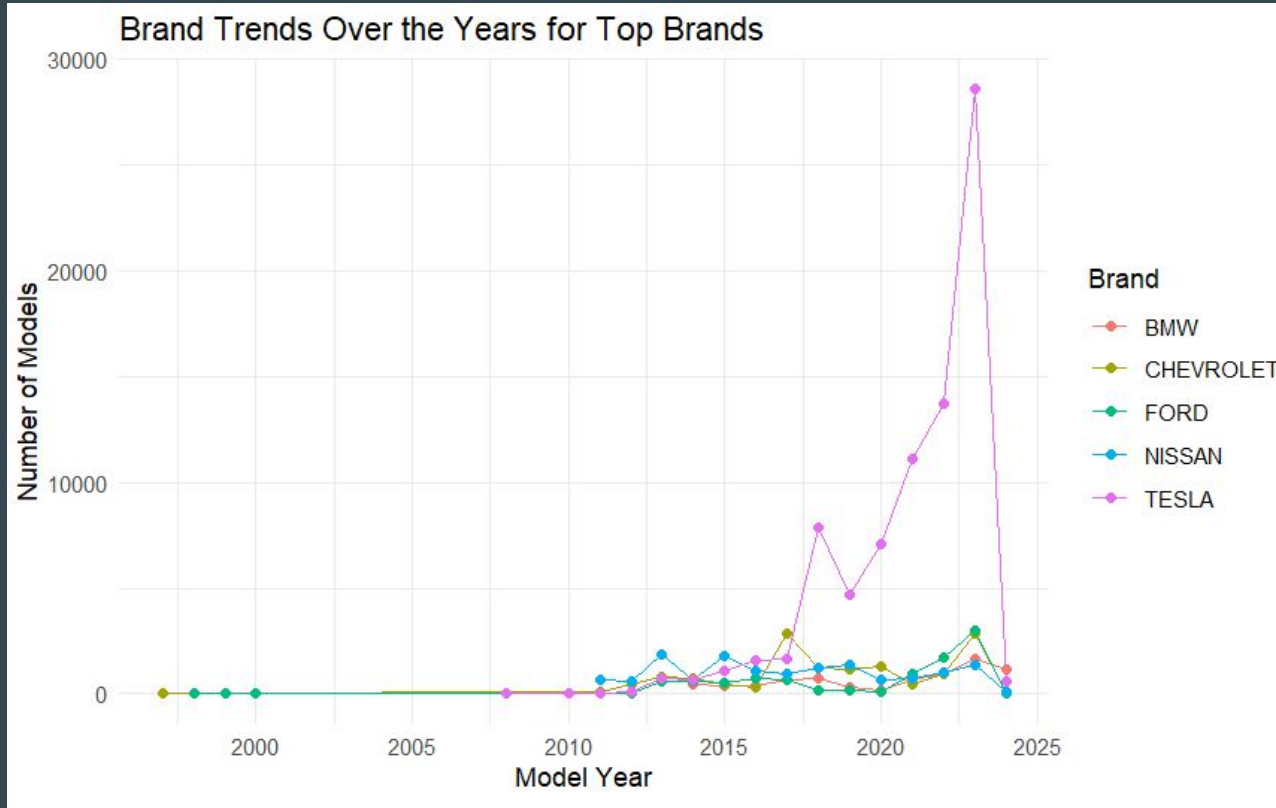
```
 $ County                                          : chr
"Thurston" ...
 $ City                                            : chr
"Tenino" ...
 $ State                                           : chr
 $ Postal.Code                                     : int
98902 98501 98345 98043 98119 98501 ...
 $ Model.Year                                      : int
2023 2017 2020 2022 2017 ...
 $ Make                                            : chr
...
 $ Model                                           : chr
"WRANGLER" ...
 $ Electric.Vehicle.Type                           : chr
Vehicle (PHEV)" "Plug-in Hybrid Electric Vehicle (PHEV)"
(BEV)" "Plug-in Hybrid Electric Vehicle (PHEV)" ...
 $ Clean.Alternative.Fuel.Vehicle..CAFV..Eligibility: chr
battery range" "Not eligible due to low battery range" "C
Eligible" "Not eligible due to low battery range" ...
 $ Electric.Range                                  : int
23 53 ...
 $ Base.MSRP                                       : int
 $ Vehicle.Location                                : chr
47.54468)" "POINT (-122.943445 47.059252)" "POINT (-122.7
(-122.85403 46.856085)"
```
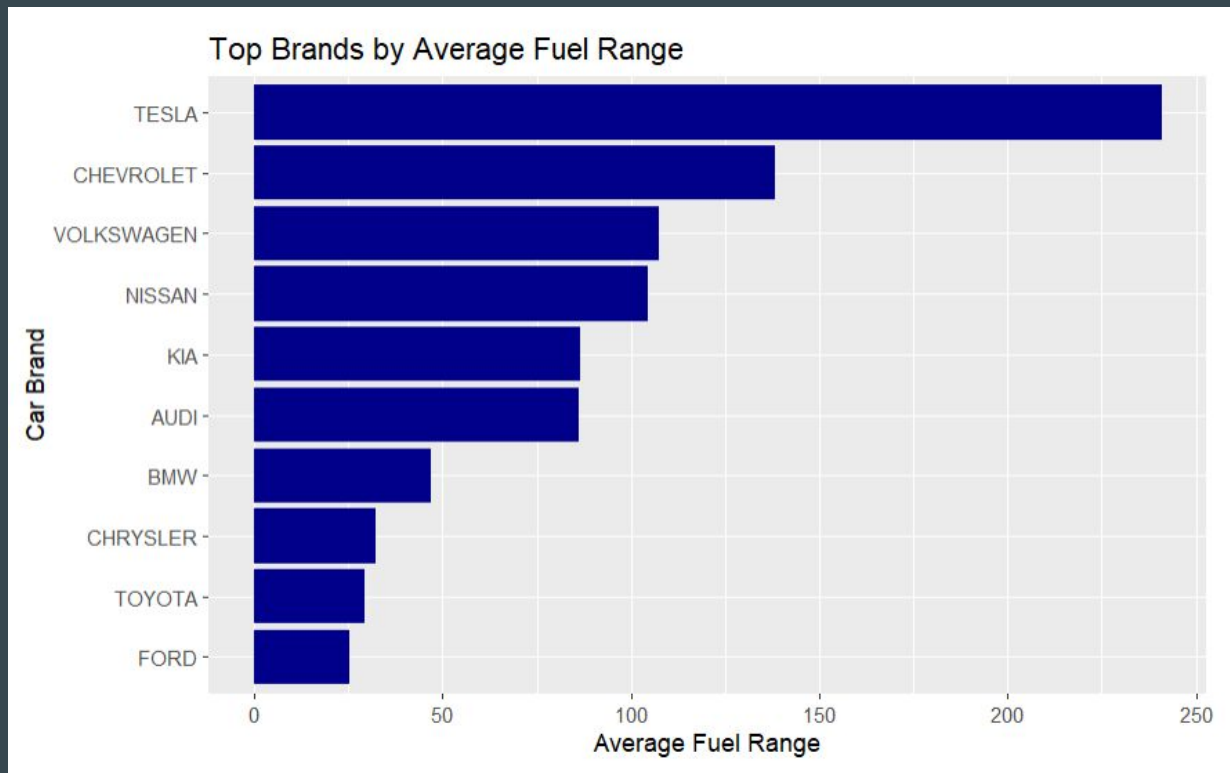
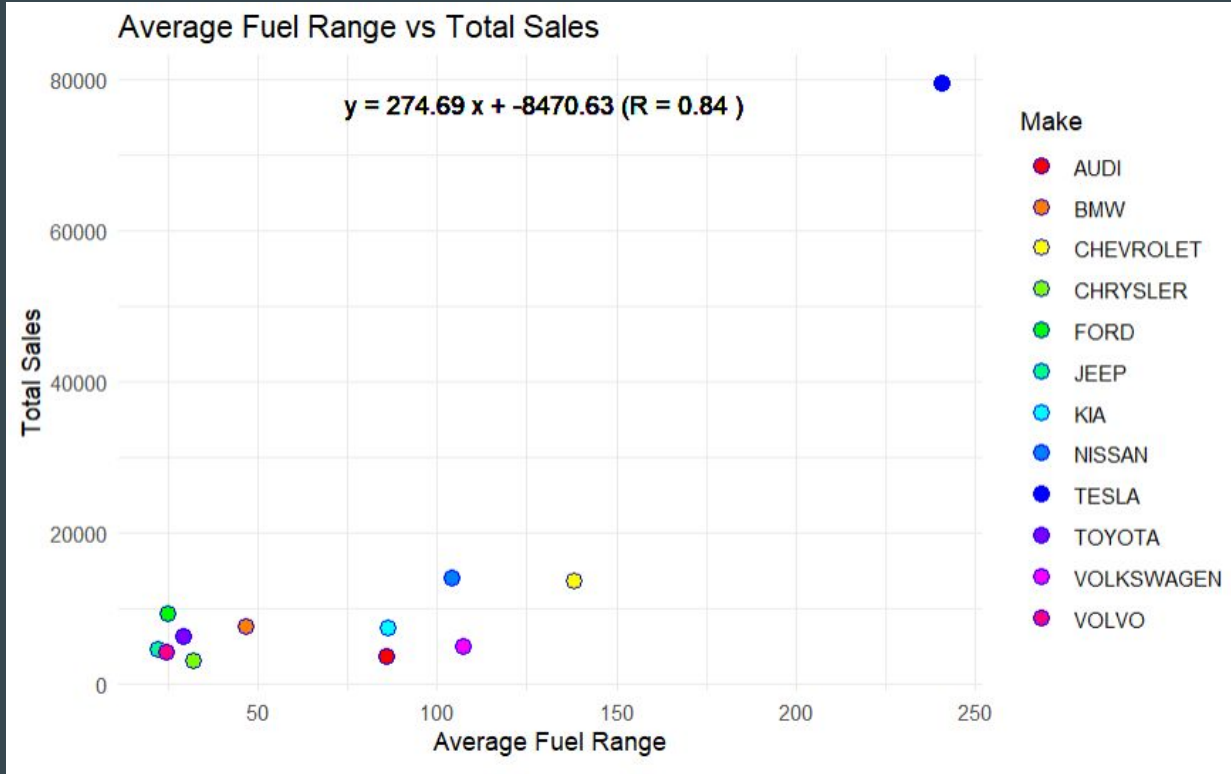# What vehicle brand is most popular for consumers? (top 15)
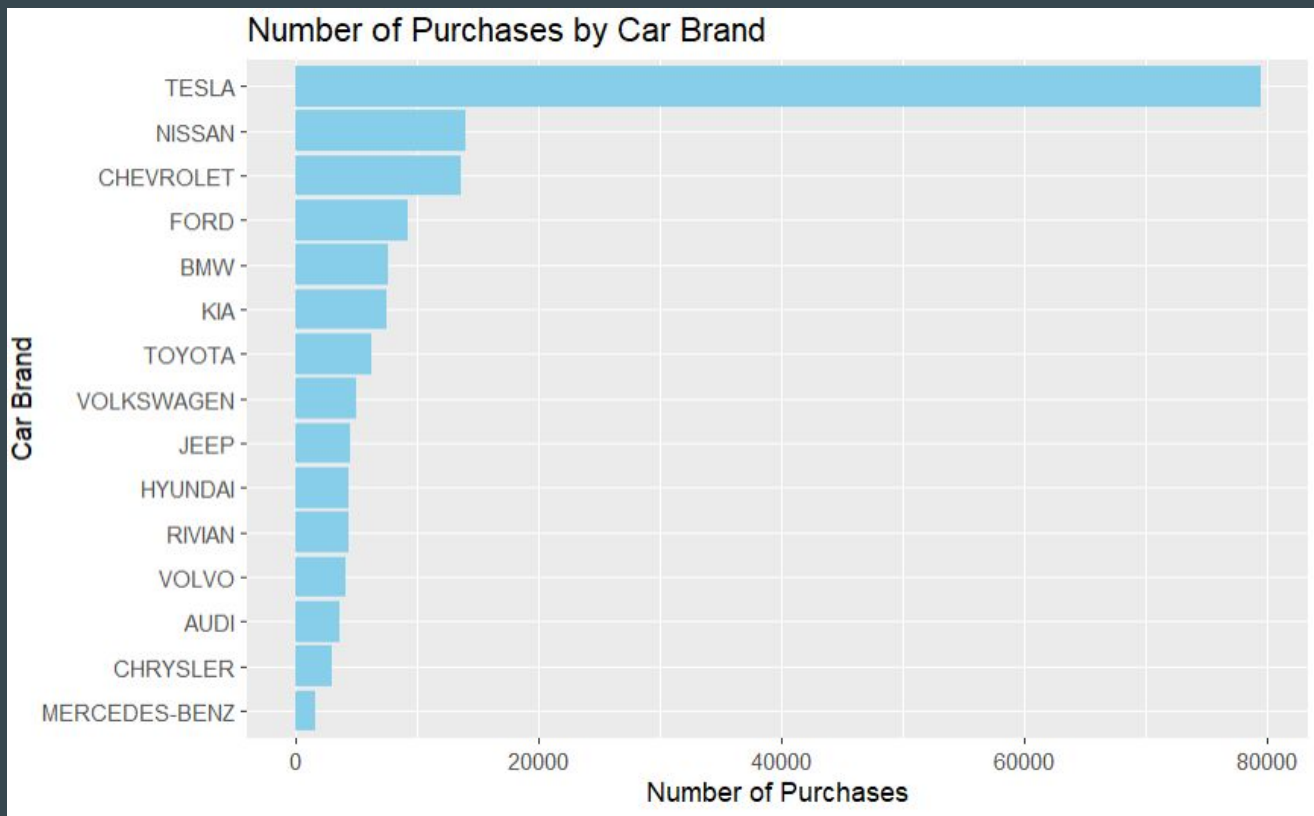
Number of Purchases by Car Brand

What brands are the trends for consumers over the years?
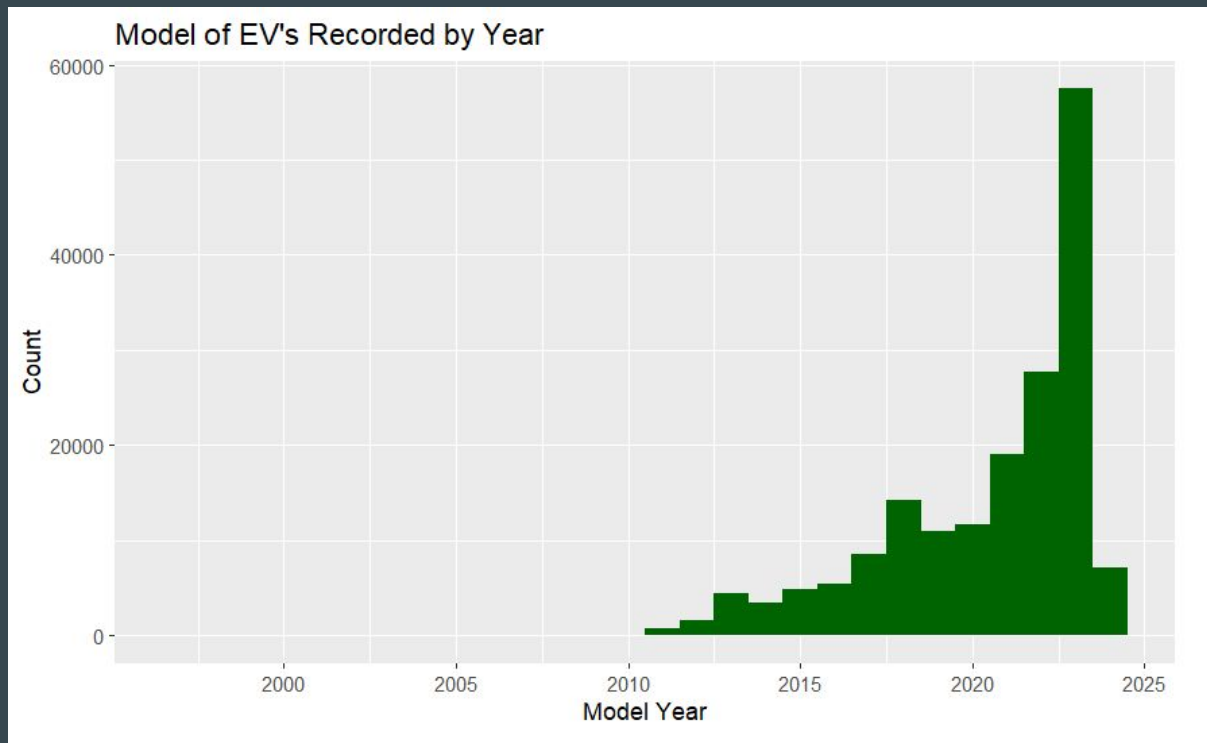

Brand Trends Over the Years for Top Brands

What brand has the highest fuel range?

Is fuel range a selling point for consumers?

Average Fuel Range vs Total Sales
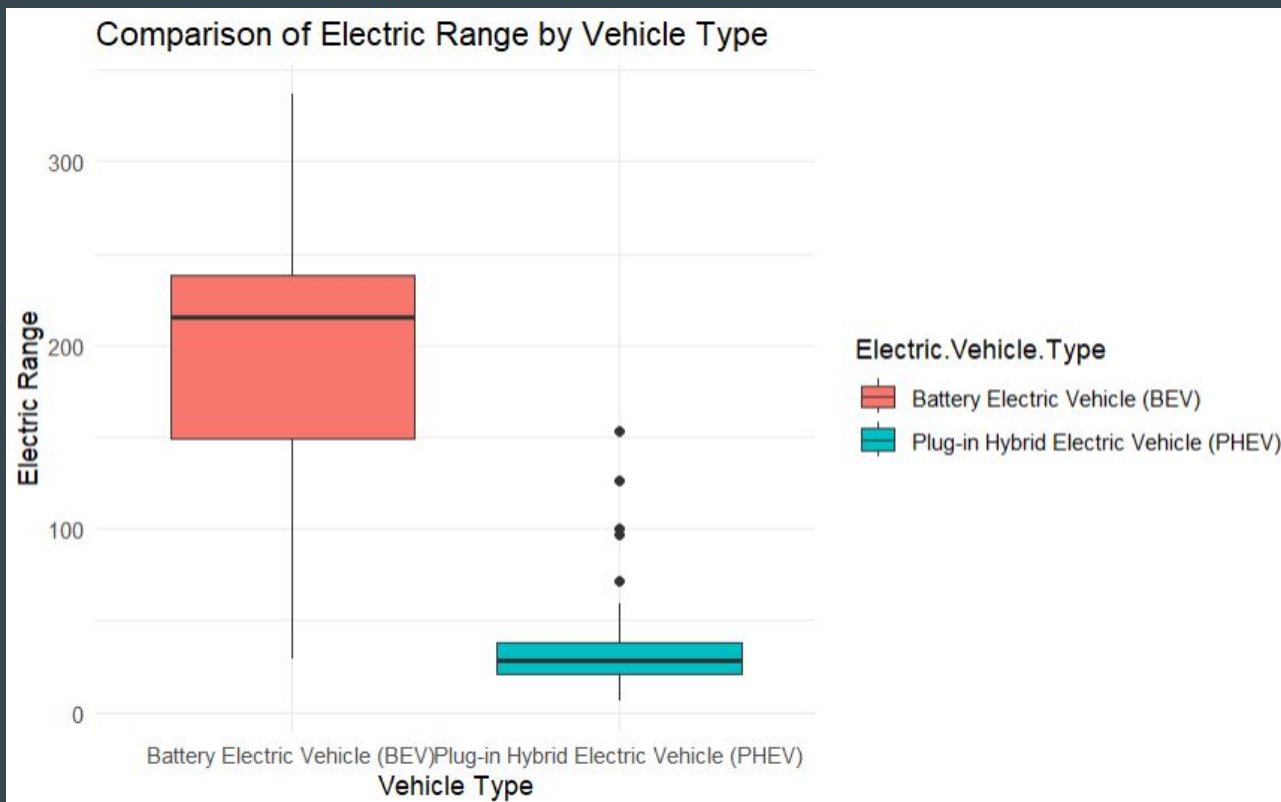
y = 274.69 x + -8470.63 (R = 0.84)

Age of EV

How has the electric range changed for the top ten brands over the years?

Does the electric vehicle type matter to consumers?

Which vehicle type has better electric range?

Comparison of Electric Range by Vehicle Type
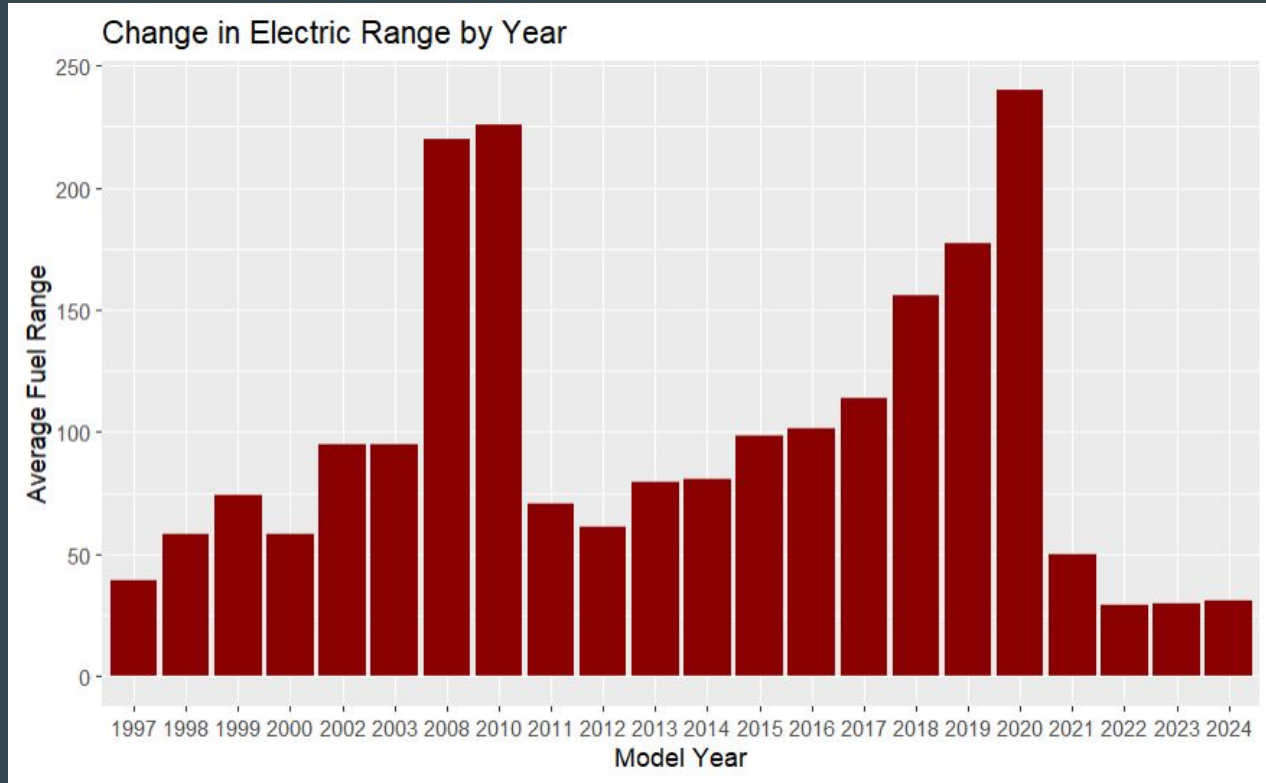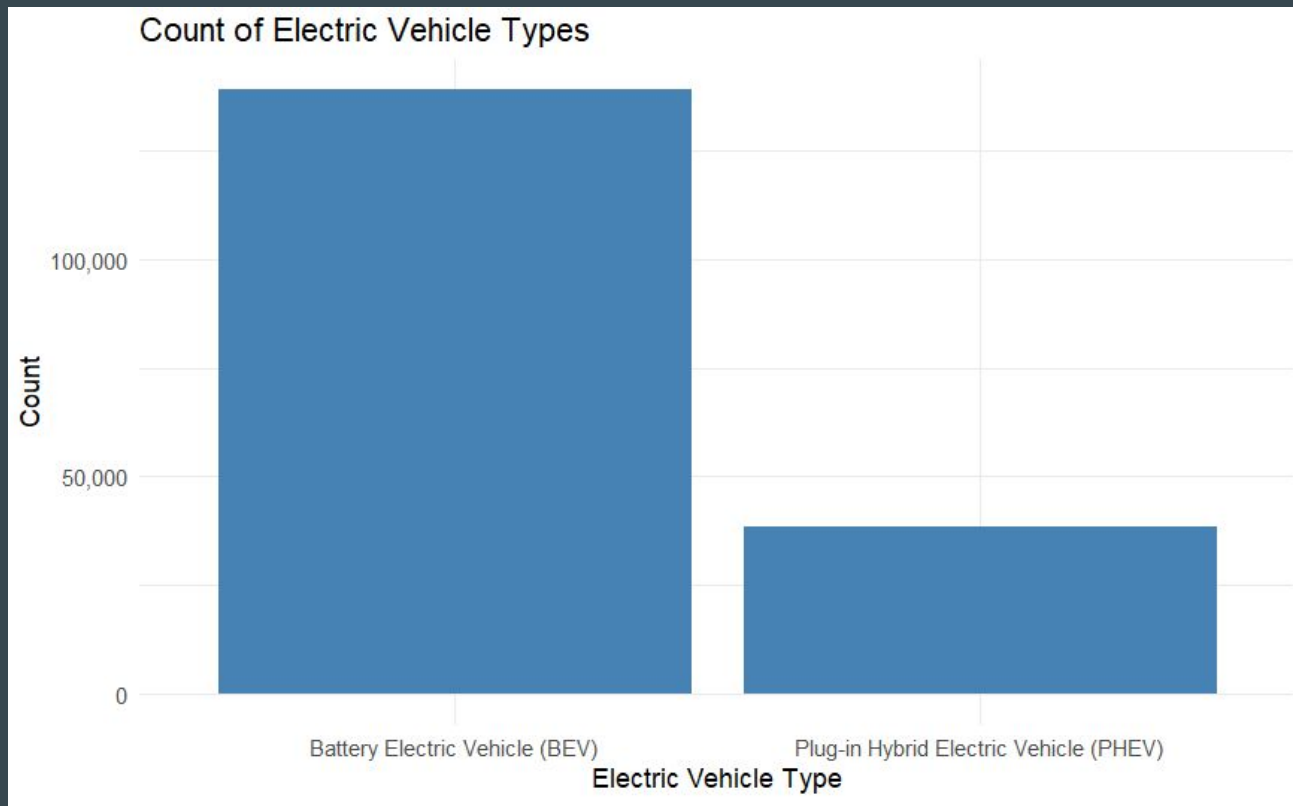
How does location in Washington influence the amount of EVs?
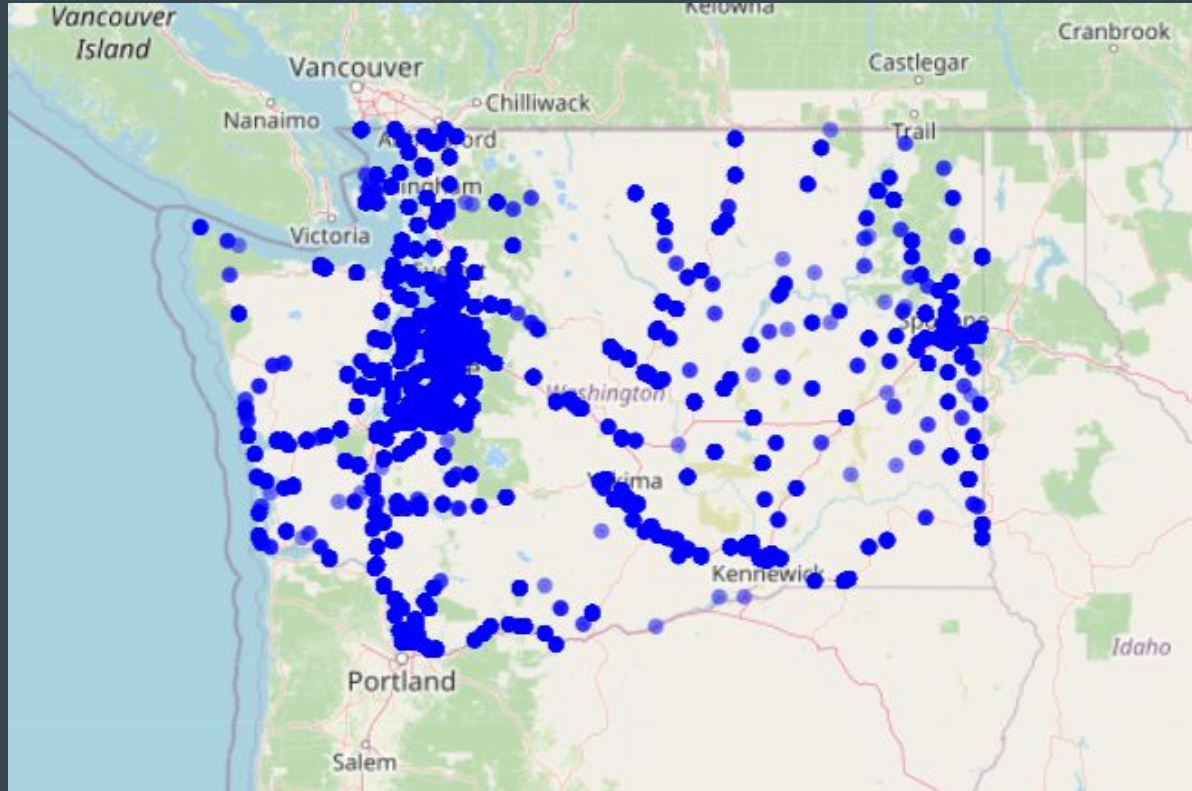
Conclusion

- Tesla dominates the EV market in Washington State.

- Tesla's appeal is linked to superior electrical fuel range.

- EV popularity has surged from 2021 models onward.

- Average electric range dropped post-2020, prompting investigation into BEV vs. PHEV differences.

- BEVs significantly outperform PHEVs, affecting average range statistics.

- Geographic concentration of EV ownership in urban areas, less in rural regions.

- Insights into evolving consumer values and EV industry trends.