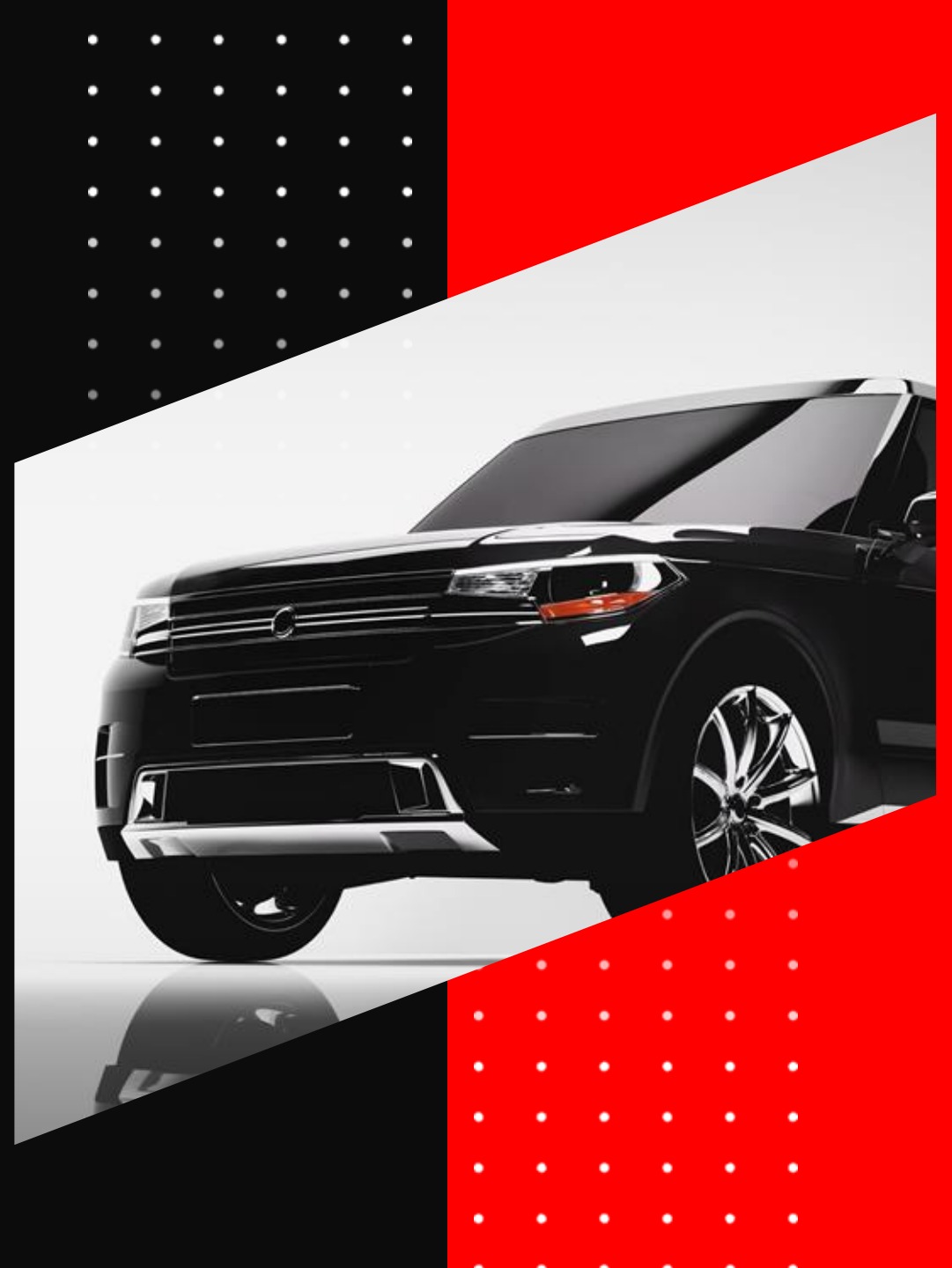




ELECTRIC VEHICLE (**EV**) ADOPTION DYNAMICS

–A case of Seven (7) States in US–

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- Overview
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SHAHZEB ATHER



Overview

Looking at the population of electric vehicles registered across US states, which were the most popular brands, best performing, and most affordable cars?



Project Objectives

1. EV Technology Evolution

We examined how EV technology has advanced across U.S. states from 2017–2025, how electric range has changed over time

2. Automaker Performance & Market Structure

We compared electric range trends for the top five automakers, analyzed market dominance among the top fifteen manufacturers, and evaluated MSRP patterns across models and brands.

3. Manufacturer Type & Consumer Considerations

We assessed preferred EV ranges and price expectations while comparing market contributions of born-digital EV manufacturers versus traditional legacy automakers.



Methodology



Datasets:

Atlas EV Hub: <https://www.atlasevhub.com/market-data/state-ev-registration-data/>,

WA DMV <https://data.wa.gov/Transportation/Electric-Vehicle-Registration-Activity-by-Year/tak8-xdcp>

Tools:

Python - Pandas, Matplotlib, Numpy, Pgeocode, Plotly

Cleaning:

DropNA Values, Standard Object Type, Dropping Irrelevant Columns, Sampling, Padding Zip Codes

Visuals:

Line Charts, Bar Charts, Pie Charts, Donut Charts, Scatter Plots, Treemaps, Geo Maps



Data Information



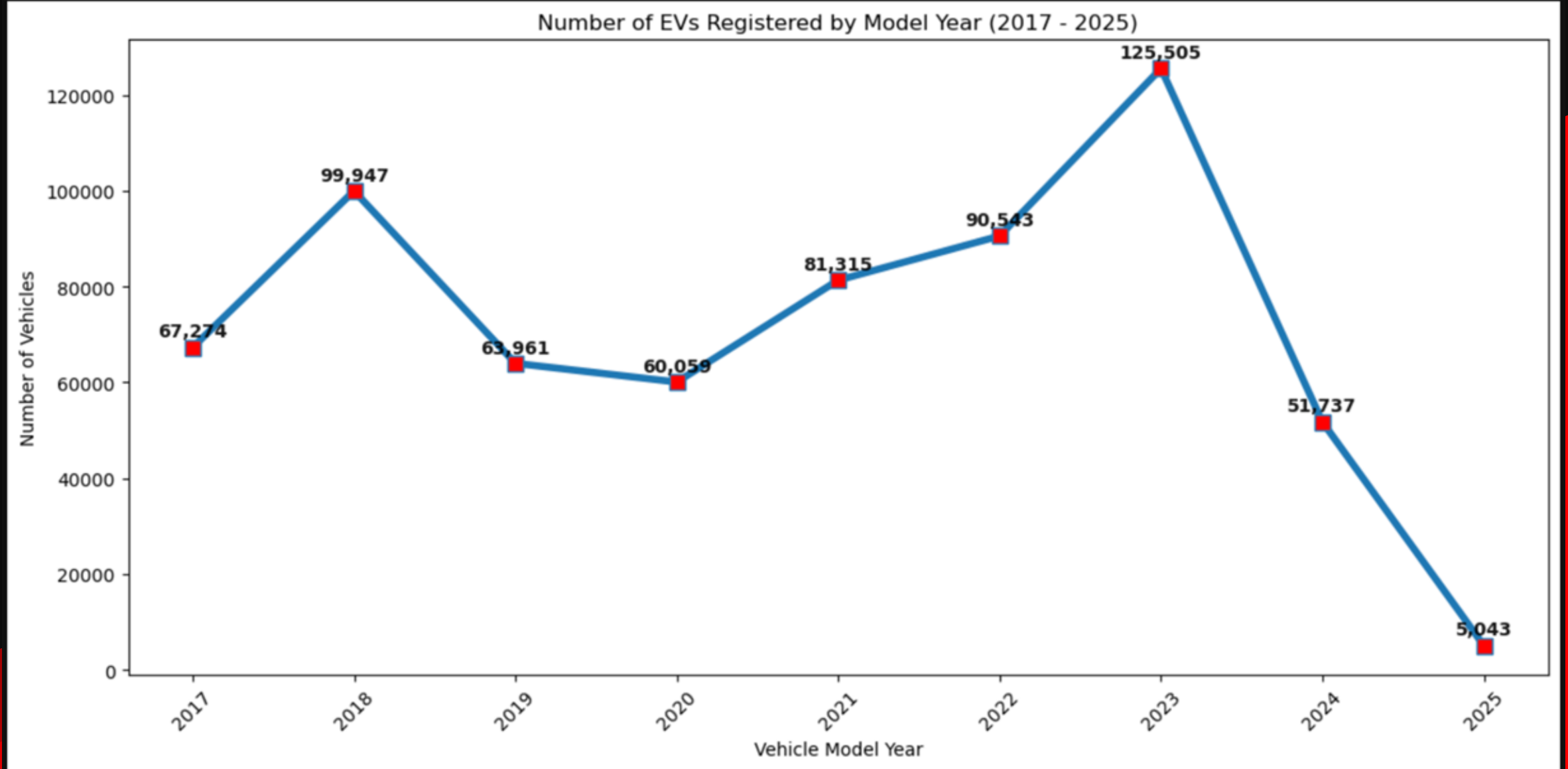
States: New York, New Jersey, New Mexico, Maine, Oregon, Texas, Washington

Columns: State, Zip Code, Registration Date, Vehicle Make, Vehicle Model, Vehicle Model Year, DriveTrain Type, Vehicle GVWR Class, Vehicle GVWR Category, Vehicle Count, DMV Snapshot ID, DMV Snapshot (Date), Latest DMW Snapshot Flag, Electric Range, Base MSRP, VIN (1-10), DOL Vehicle ID

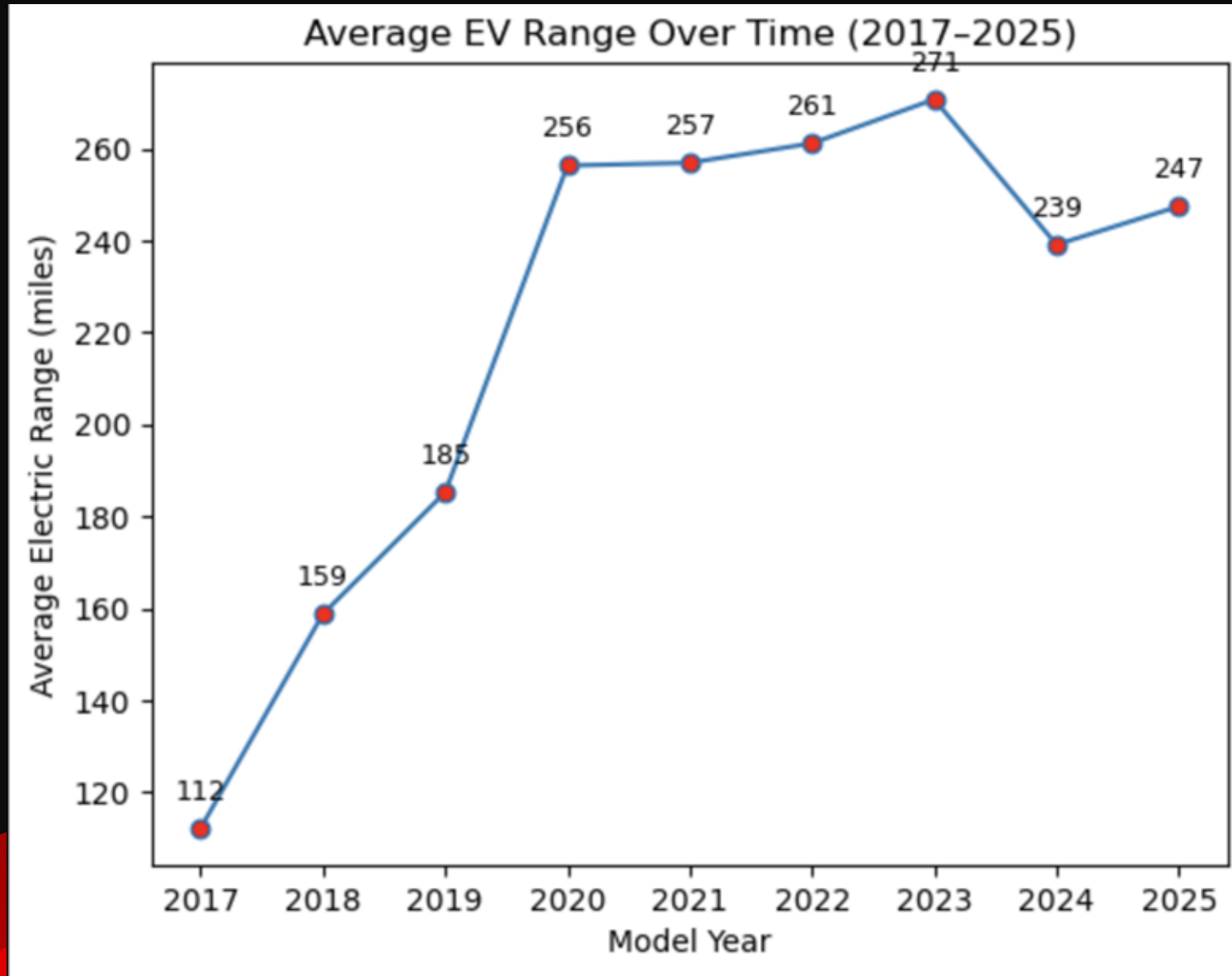


Data Points: 9,238,044

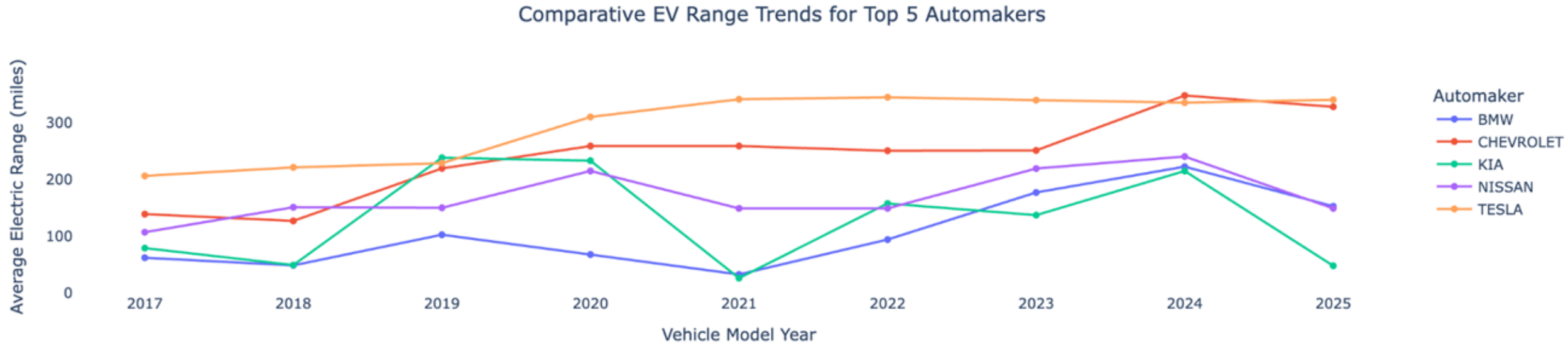
Number of EV Registered by Year



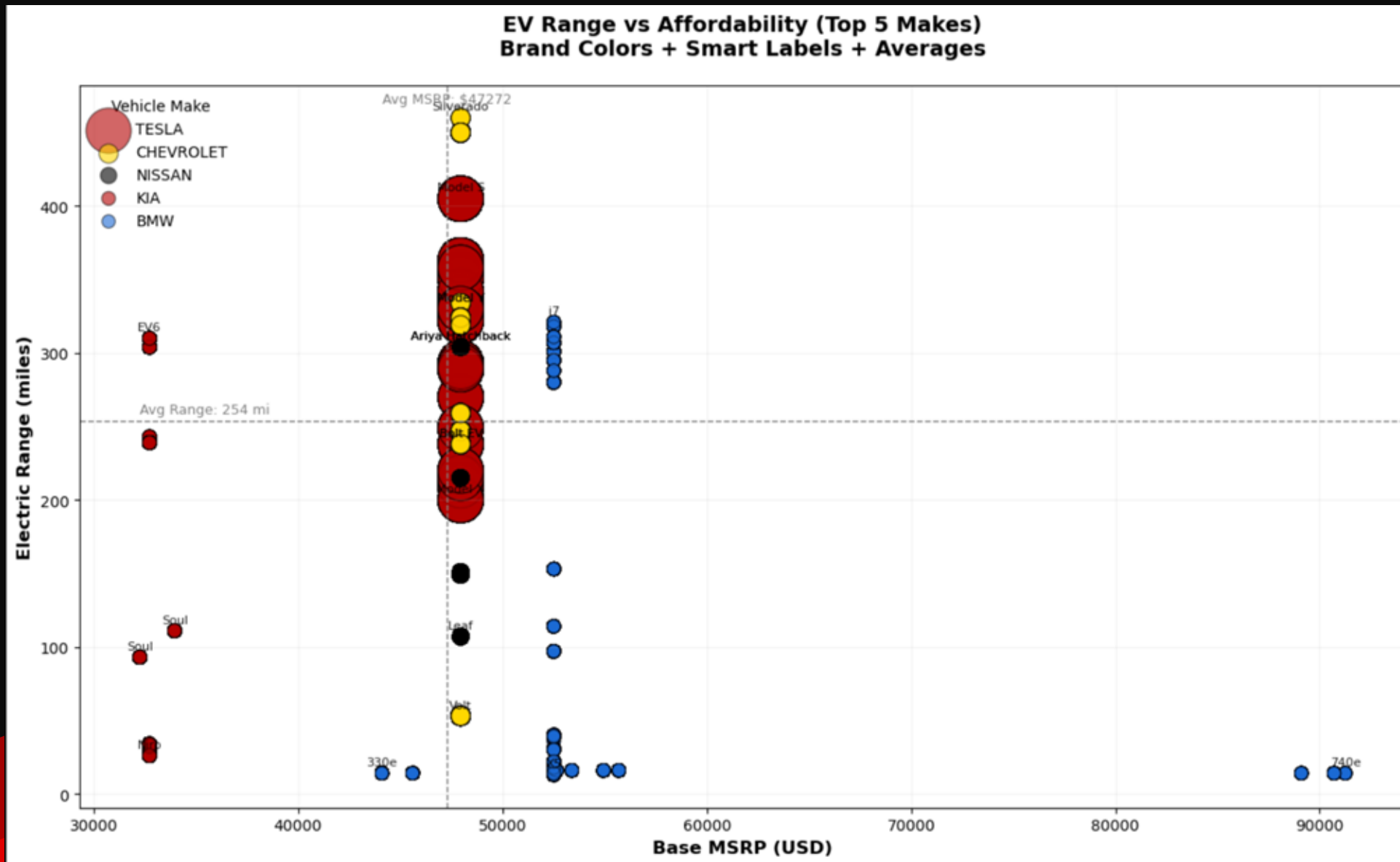
Average EV Range Over Years



EV Range for Top 5 Automakers



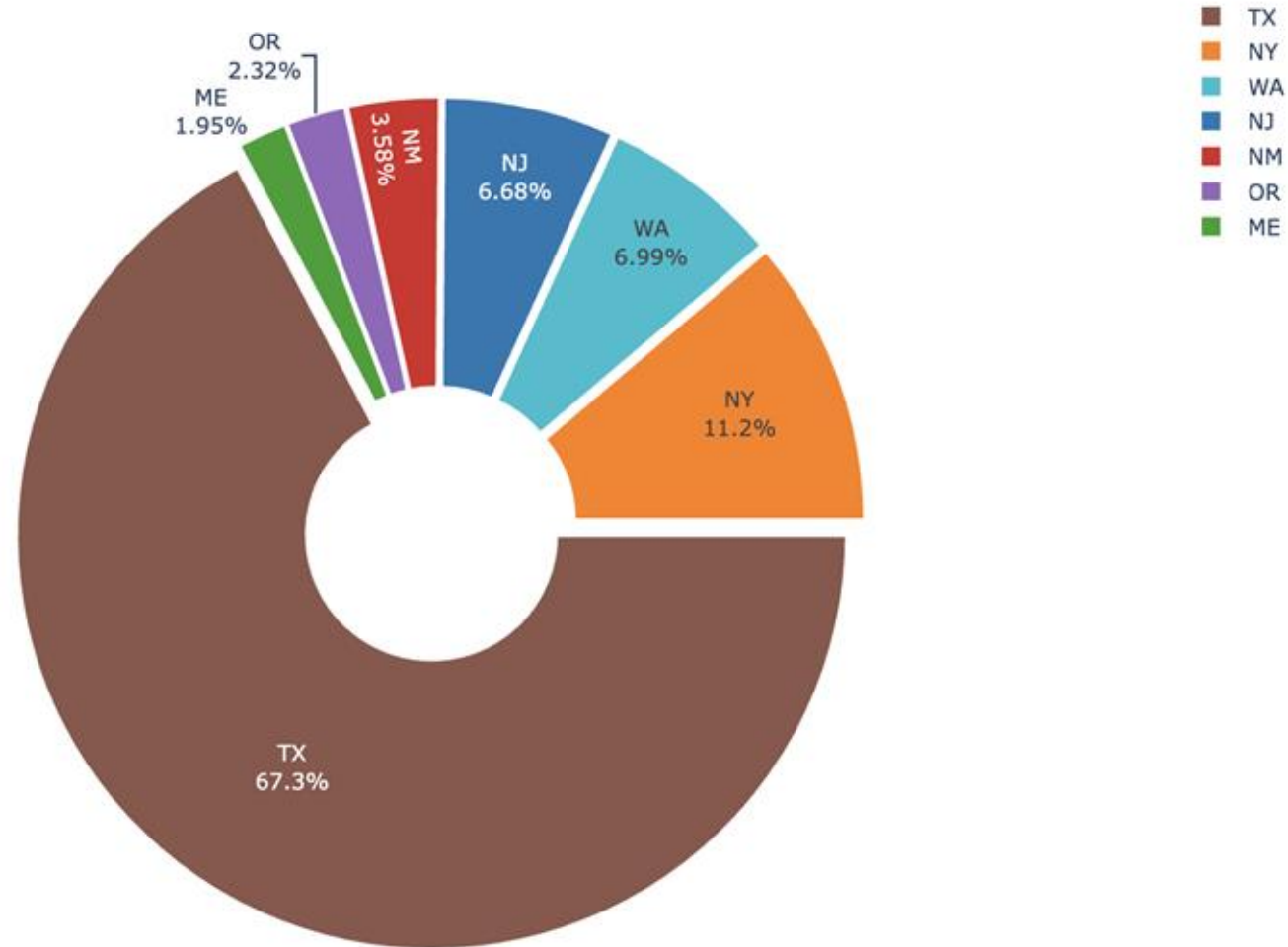
EV Range Compared to Base MSRP



EV Registration by State



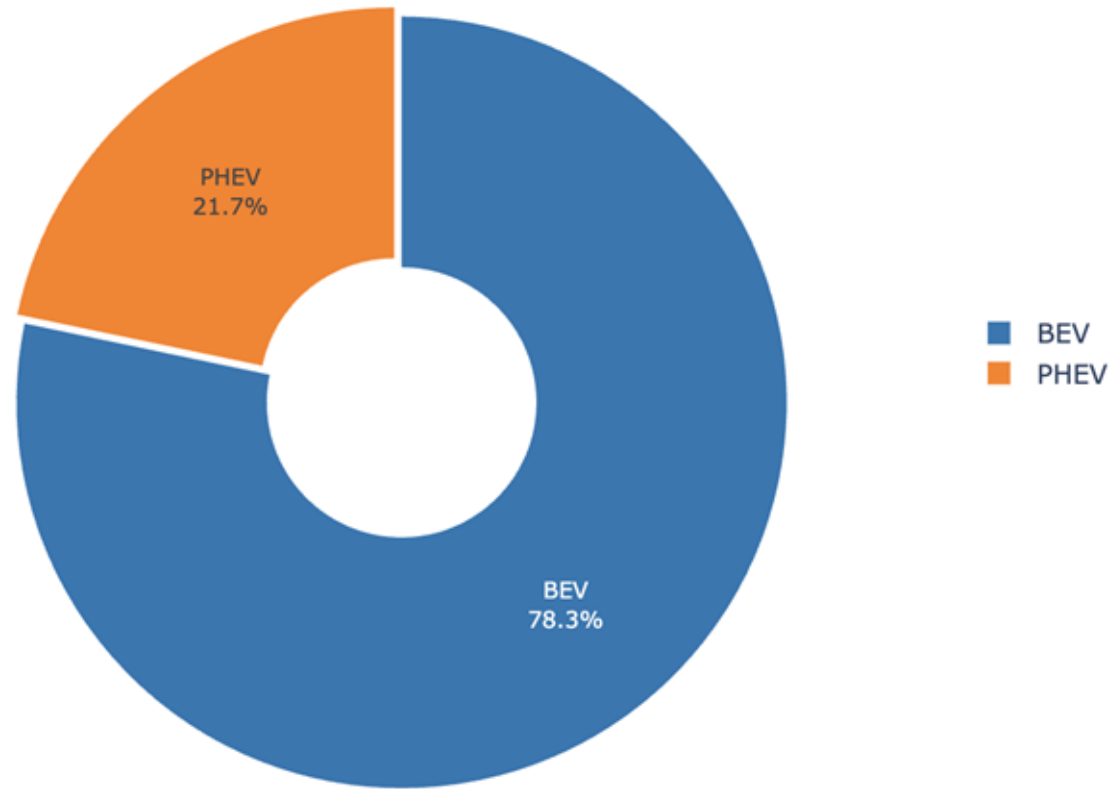
EV Registrations by State (Interactive Pie Chart)



Share of Vehicles: BEV vs PHEV



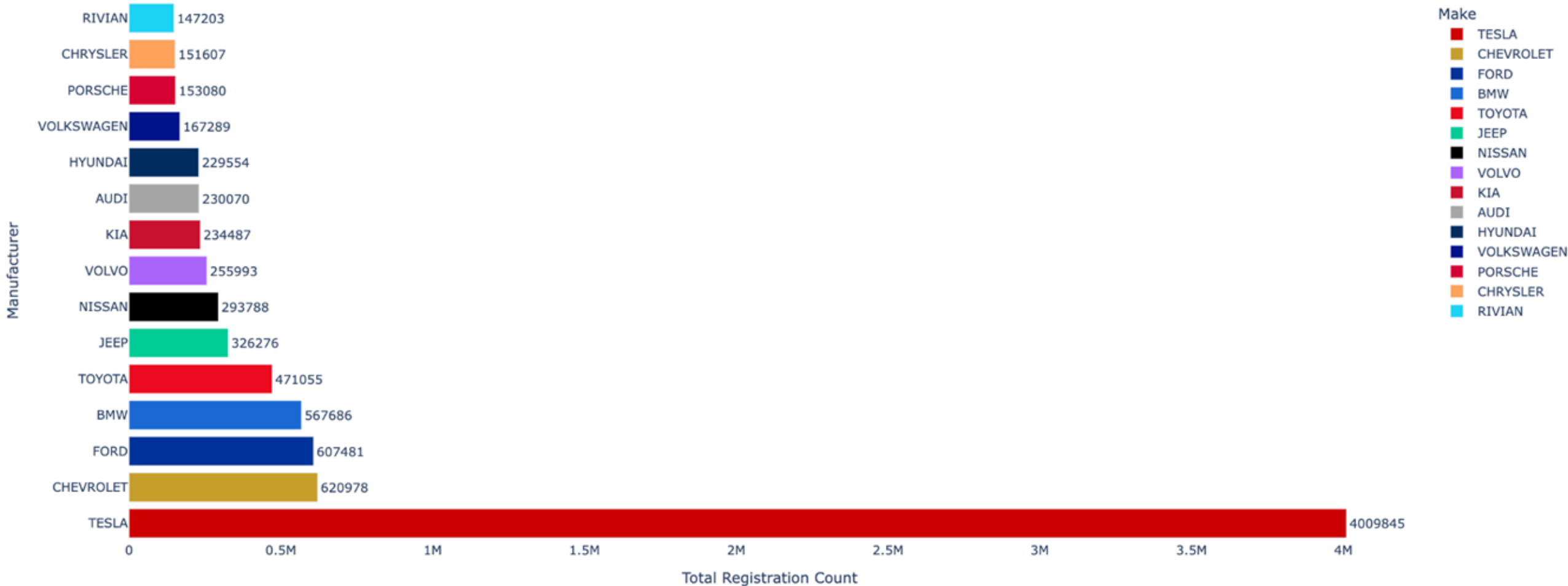
BEV vs PHEV Distribution



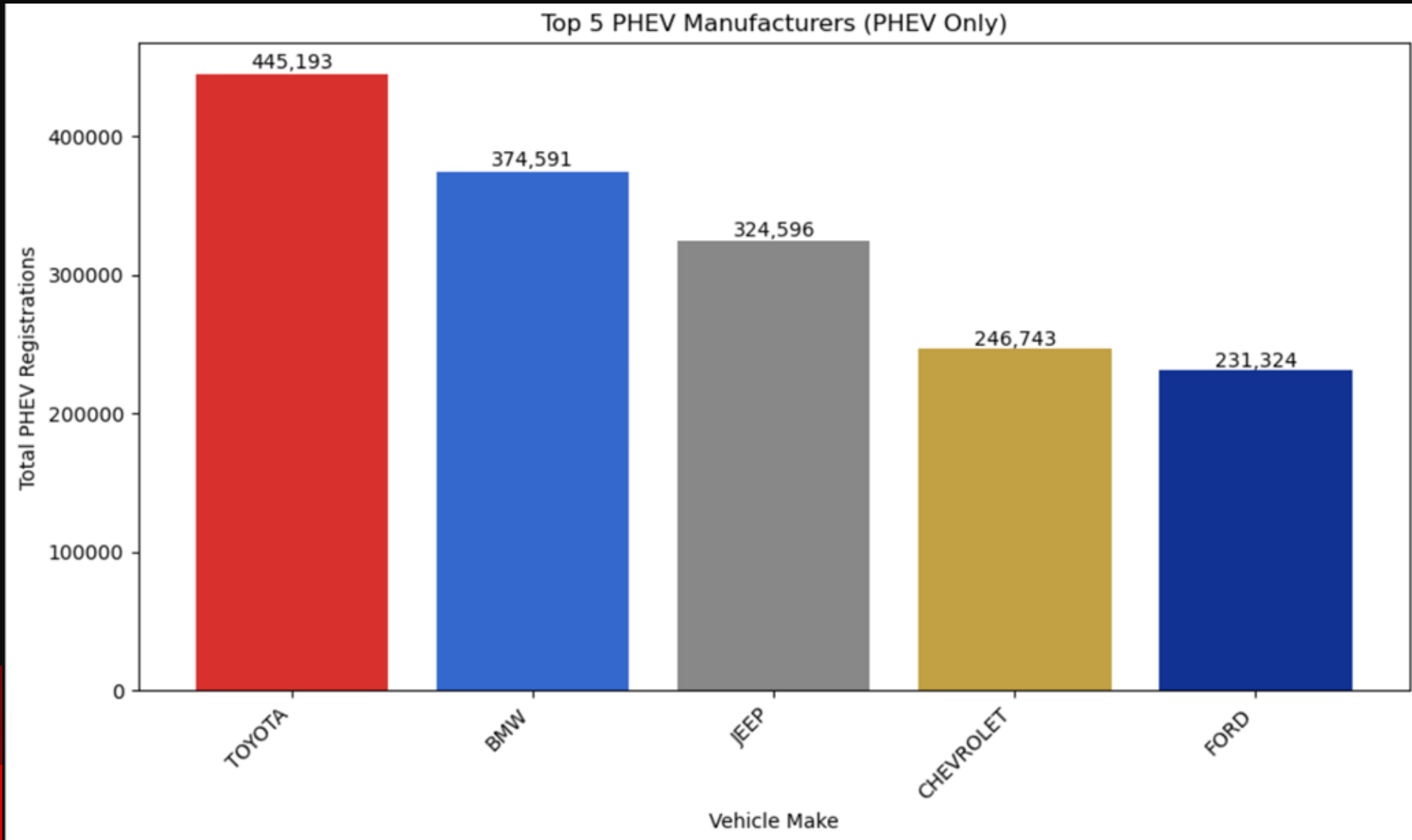
Top Electric Vehicle Manufacturers



Top 15 EV Manufacturers by Total Registrations (Interactive)



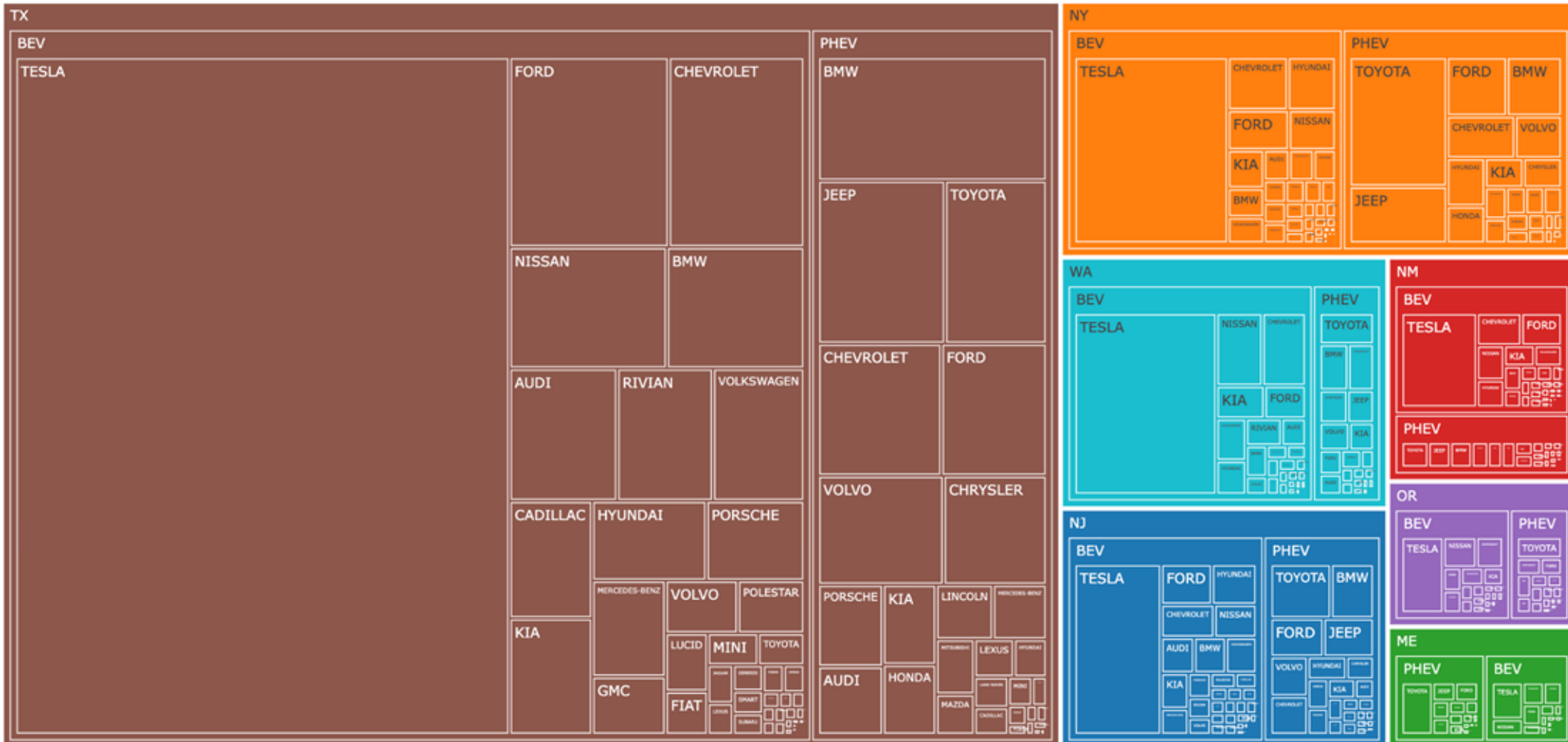
Top Plug-In EV Manufacturers



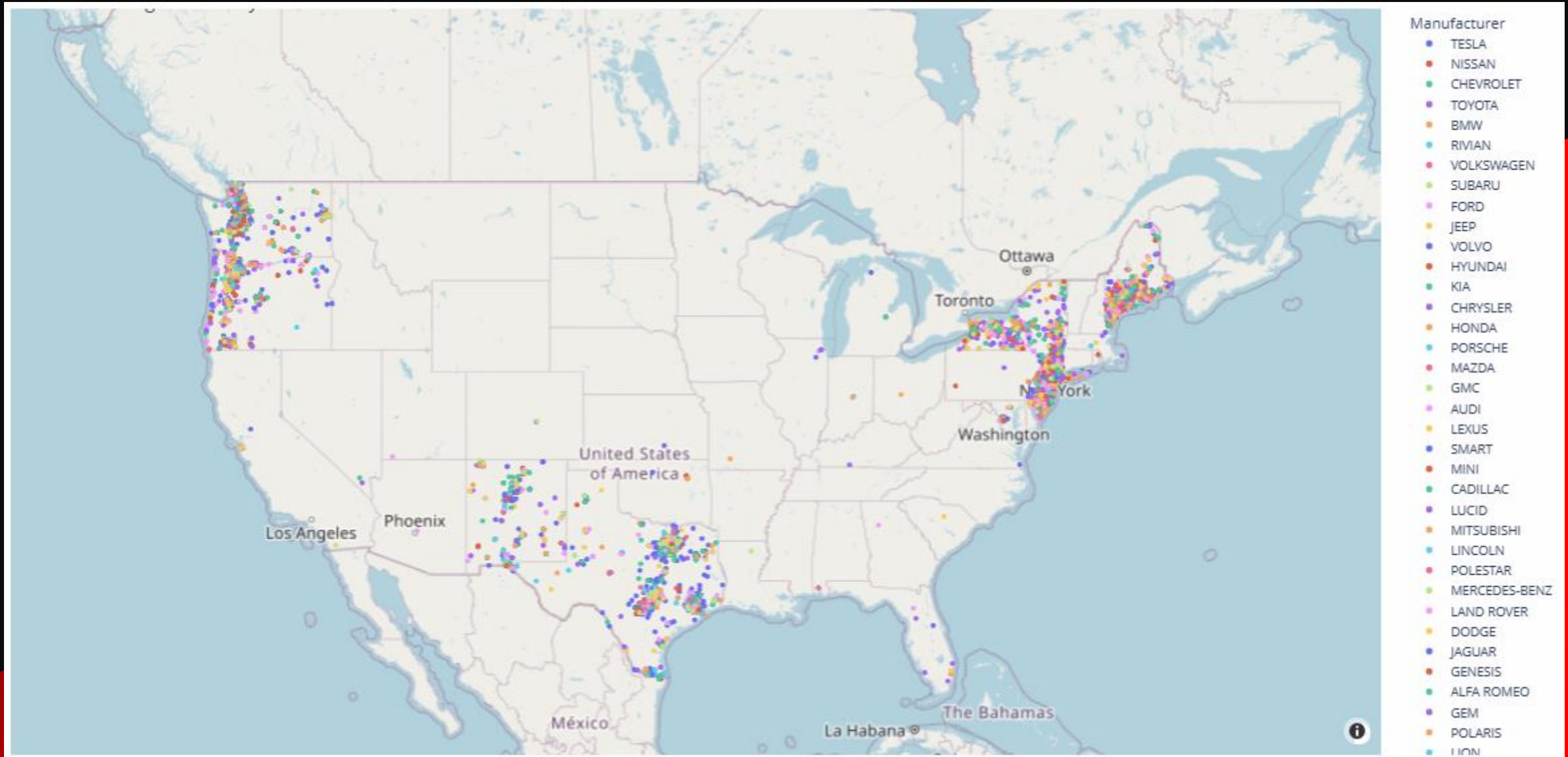
State, EV Type, Vehicle Make Treemap



Treemap: State → BEV vs PHEV → Vehicle Make



EV Registrations by Manufacturer (Sample)





Recommendations

Full Battery Electric Vehicles are becoming comparable to traditional gasoline vehicles in Range and MSRP. Plug-In Hybrid Vehicles are produced less than Battery Electric Vehicles and underperform in Range Metrics. Overall, Tesla produces the most vehicles at the fairest price with some of the best performance in the industry.





Interactive Visuals Showcase



QUESTIONS

THANK YOU