

Big Data Visualization DATA_SCI 7040

Exercise-8 Visualization Report on Electric Vehicle Population Data in USA

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Data Set - [Electric Vehicle Population Data](#)

Column Name	Description
County	The county where the vehicle is registered.
City	The city where the vehicle is registered.
State	The state where the vehicle is registered
Model.Year	The model year of the vehicle.
Make	The manufacturer of the vehicle
Model	The specific model of the vehicle
Electric.Vehicle.Type	Type of EV: Battery Electric Vehicle (BEV) or Plug-in Hybrid Electric Vehicle (PHEV).
Clean.Alternative.Fuel.Vehicle..CAFV..Eligibility	Indicates if the vehicle qualifies for Clean Alternative Fuel incentives.
Electric.Range	The estimated range of the vehicle in miles on electric power alone.
Vehicle.Location	The geographic location of the vehicle in latitude and longitude.



Data Story:

Understanding Electric Vehicle Adoption in US State

Audience:

Policy makers, environmental analysts, automotive industry stakeholders, and citizens interested in the growth and impact of electric vehicles.

Purpose:

This story explores the adoption trends, geographical distribution, and vehicle attributes of electric vehicles in US States.

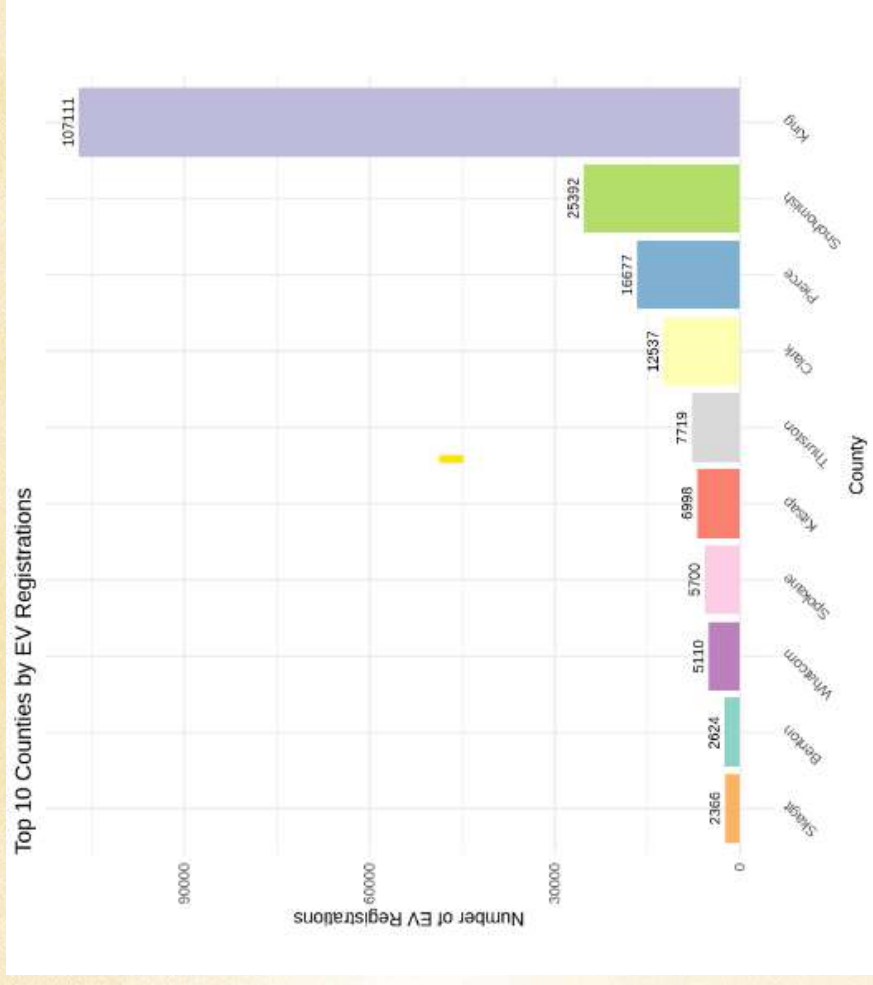
Highlight key trends in electric vehicle adoption. Highlight trends (time series), comparisons (bar charts), and geographical insights (maps).

The purpose is to demonstrate the growth and distribution of EVs, emphasizing the environmental and economic impacts of transitioning to cleaner vehicle technologies.



Bar chart showing the top 10 counties by EV registrations by County

King County leads significantly in EV registrations, far surpassing other counties. Snohomish and Pierce follow but at much lower levels, indicating that EV adoption is heavily concentrated in urban areas. The remaining counties show moderate to low adoption, highlighting potential for growth in EV infrastructure and incentives in less urbanized regions.

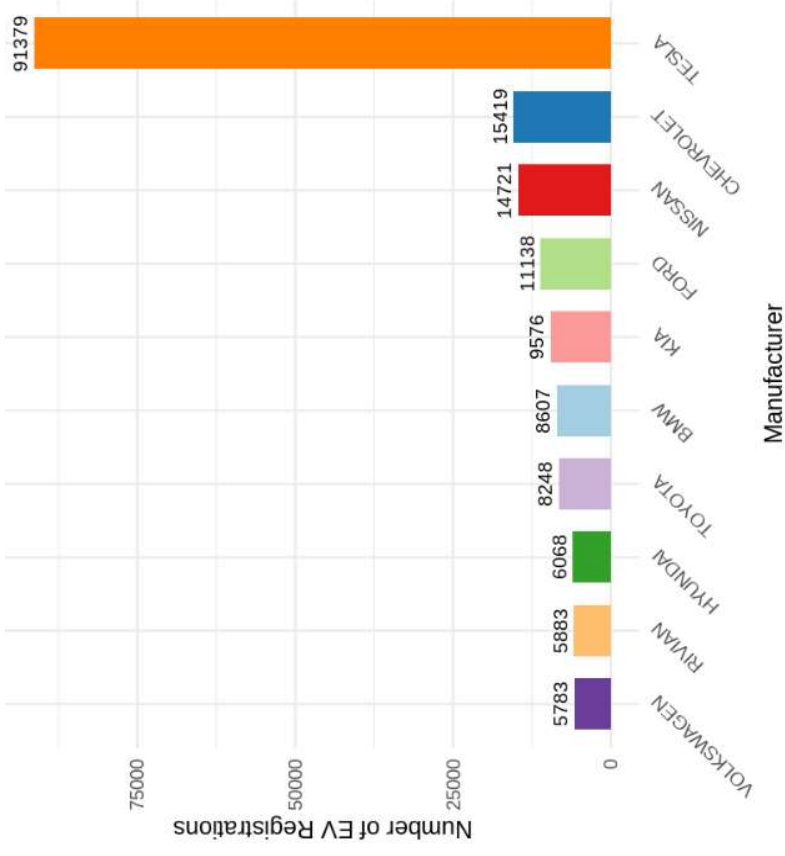


Top EV Manufacturers in Washington State

Tesla leads by a large margin with over 91,000 EV registrations, dominating the market. Other notable manufacturers include Chevrolet (15,419) and Nissan (14,721), showing strong competition in the EV space. Emerging brands like Rivian are starting to gain traction, highlighting a growing competitive landscape.

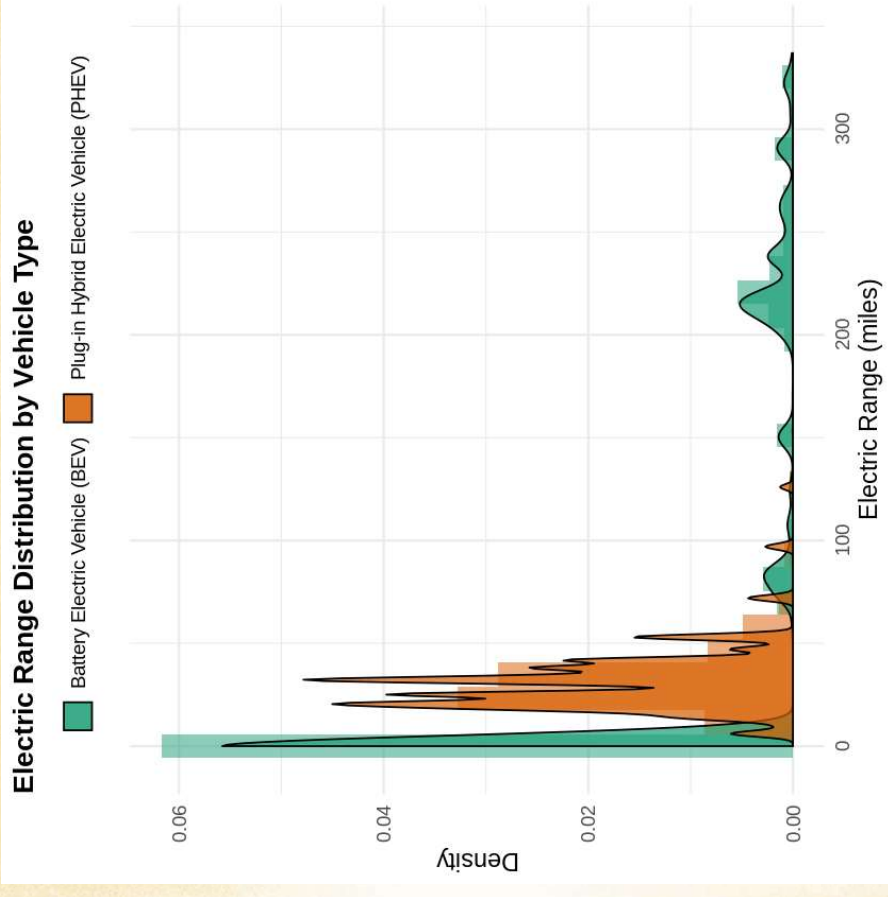
Top 10 EV Manufacturers in Washington State

Focusing on the companies with the highest electric vehicle registrations



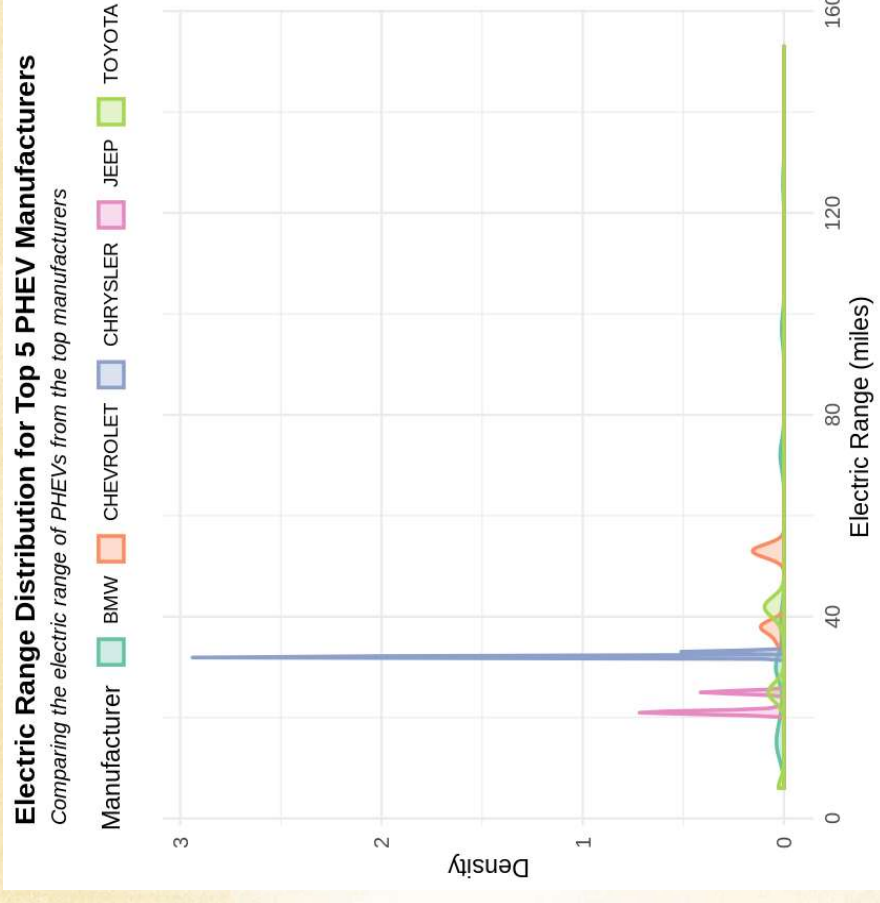
Electric Range Distribution by Vehicle Type

- **Battery Electric Vehicles (BEVs)** show a wide distribution of ranges, with a significant density around the 200-300 mile mark, indicating higher capability for long-distance travel.
- **Plug-in Hybrid Electric Vehicles (PHEVs)** tend to cluster around lower ranges, with most falling below 50 miles, highlighting their design for shorter trips and reliance on dual power sources.
- The dual peaks in BEVs suggest a mix of older models with shorter ranges and newer models with extended capabilities.



Electric Range Comparison for Top PHEV Manufacturers

- **Chrysler** dominates with a sharp peak, indicating a narrow focus on lower-range PHEVs.
- **Chevrolet** and **Toyota** show more varied range distributions, highlighting diverse model offerings.
- **BMW** and **Jeep** contribute with lower peaks, suggesting limited model availability or specialized market focus.
- The density distributions emphasize different strategies among manufacturers, with some focusing on short-range PHEVs and others offering higher-range options.

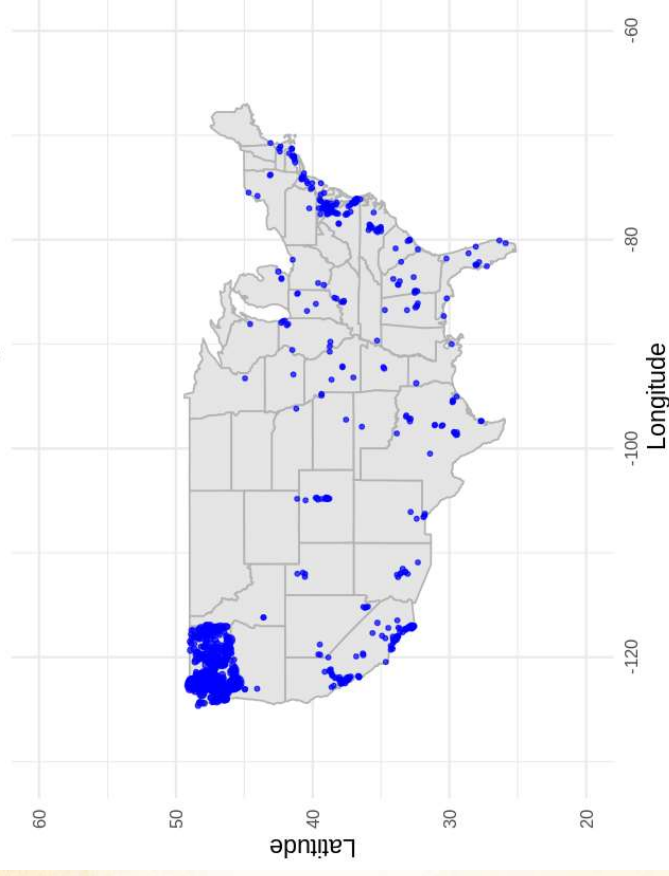


Geographical Distribution of EV Registrations in the US

- The **West Coast**, particularly the Pacific Northwest, shows the highest concentration of EV registrations.
- Urban areas** across the country, including the Northeast and parts of California, exhibit significant EV adoption.
- Sparse registration activity in central and rural regions highlights opportunities for EV market growth in those areas.

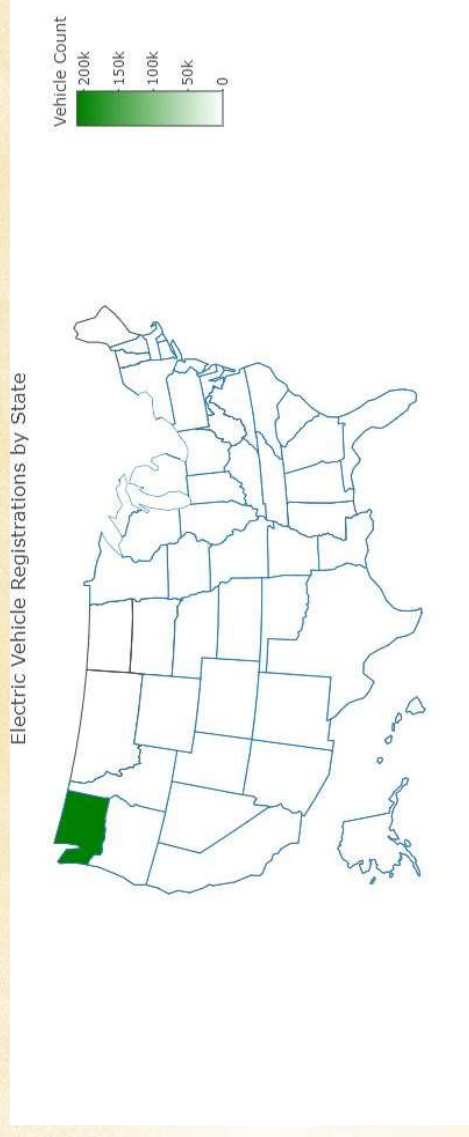
Vehicle Locations and Counts in the US

Bubble size indicates the number of vehicles registered at each location



State-Level EV Registrations in the US

- Washington State leads in EV registrations, reflecting its strong market and supportive policies.
- Other states show varying adoption levels, with many states in central and southern regions reporting low EV counts.
- This map highlights the disparity in EV adoption across the U.S., emphasizing the need for broader infrastructure and policy initiatives.



EV Distribution by Location and Type in the US

- **Battery Electric Vehicles (BEVs)** dominate across most urban locations, particularly on the West Coast.
- **Plug-in Hybrid Electric Vehicles (PHEVs)** are less concentrated but are spread across key locations.
- This visualization highlights the clustering of EVs in urban centers and the distribution pattern of different EV types.

