ELECTRIC VEHICLE ANALYSIS IN WASHINGTON FOR IMPLEMENTATION IN IKN

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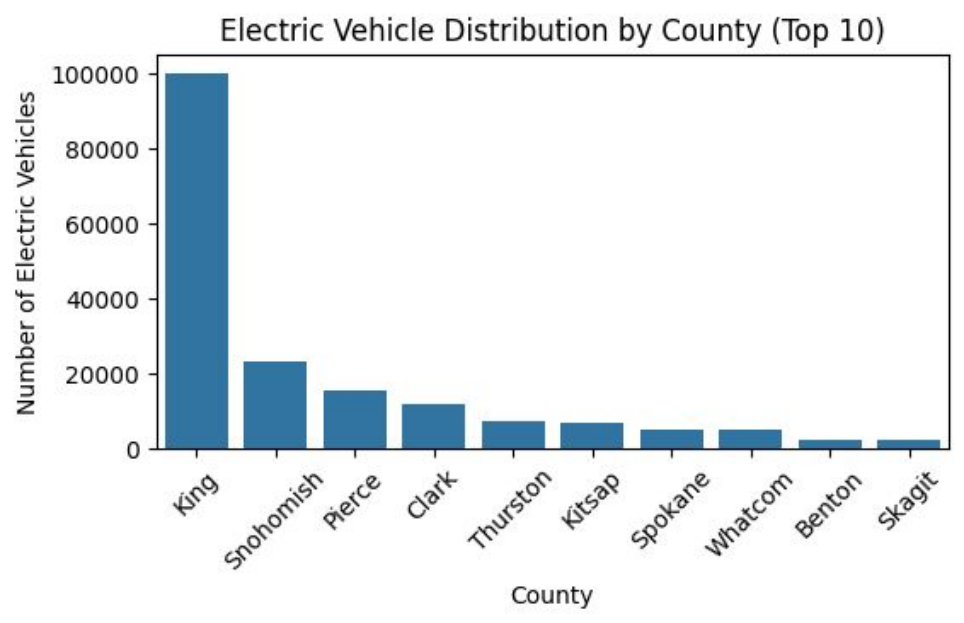
“In an effort to support the green and sustainable vision of the Indonesian Capital City (IKN), which only allows the use of electric vehicles, the analysis of electric cars in the city of Washington provides an in-depth view of the distribution, types, and potential of electric vehicles. By considering global trends and regional data, this study aims to support infrastructure planning, energy provision, and appropriate transportation regulations, to ensure an environmentally friendly future for mobility in IKN.”

—ELECTRIC VEHICLES

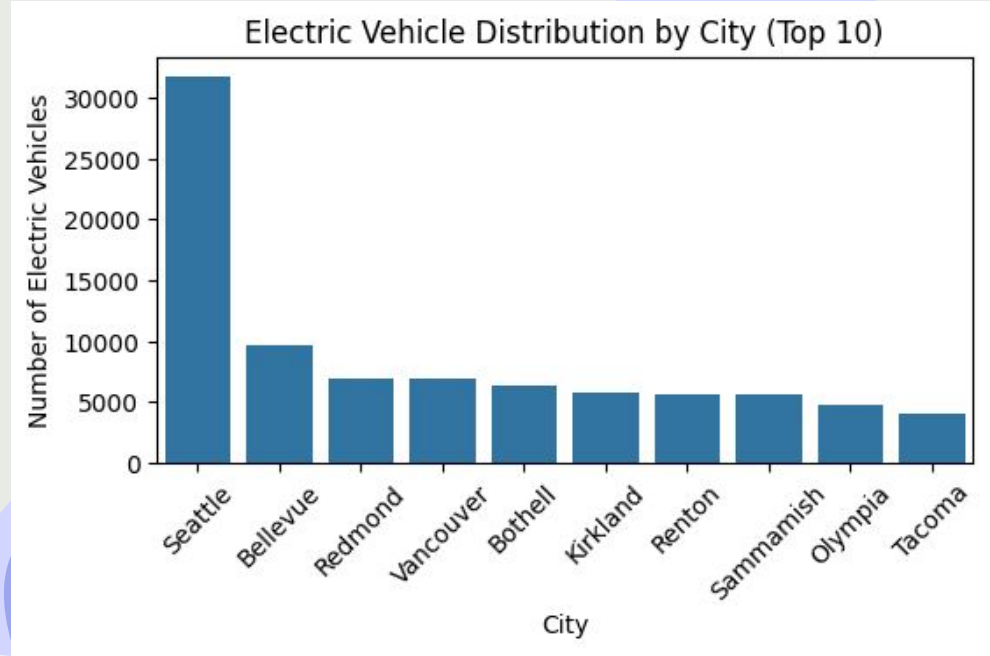
Electric Vehicle Distribution by County

This shows that EV adoption in Washington is still concentrated in a few areas with larger populations, especially in metropolitan areas such as King County. If applied as a reference for the National Capital Region (IKN) which will limit only electric vehicles, this shows that EV adoption can start in areas with high populations and ready infrastructure. It is also important to ensure the development of supporting infrastructure in smaller areas, so that the distribution of EVs can be more equitable and support the sustainability plan in the IKN.



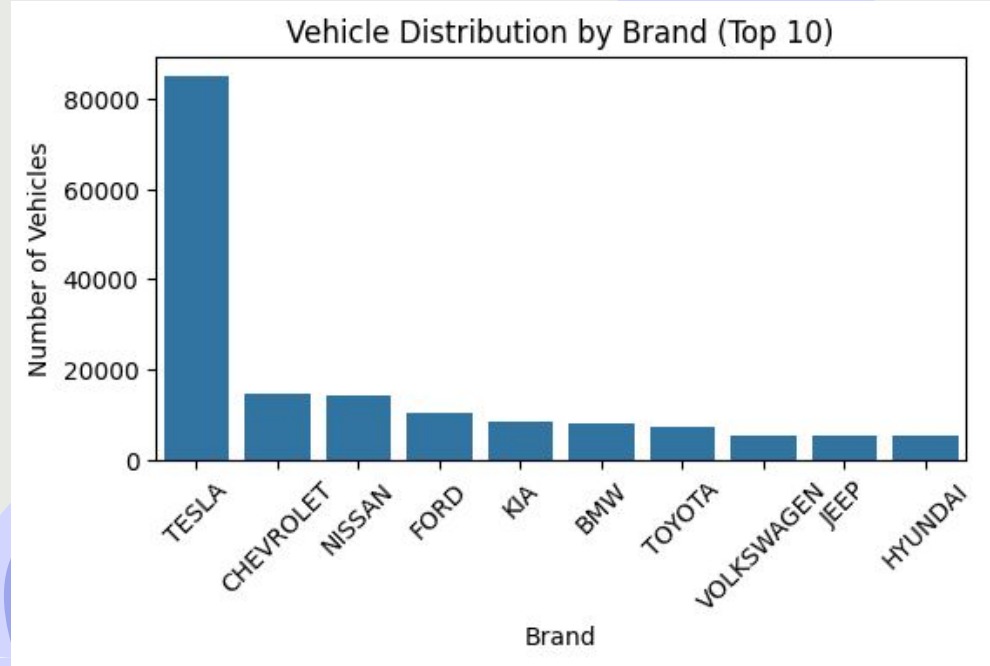
Electric Vehicle Distribution by City

The results also show that large and densely populated cities tend to have higher EV adoption, likely due to more advanced infrastructure and greater environmental awareness. If implemented in the Capital City (IKN) which will only allow electric vehicles, the government can learn from Seattle in terms of building infrastructure that supports electric vehicles in the main city first, before expanding it to smaller cities or areas around the IKN. Early adoption in major urban centers can be the key to success in the transition to electric vehicles.



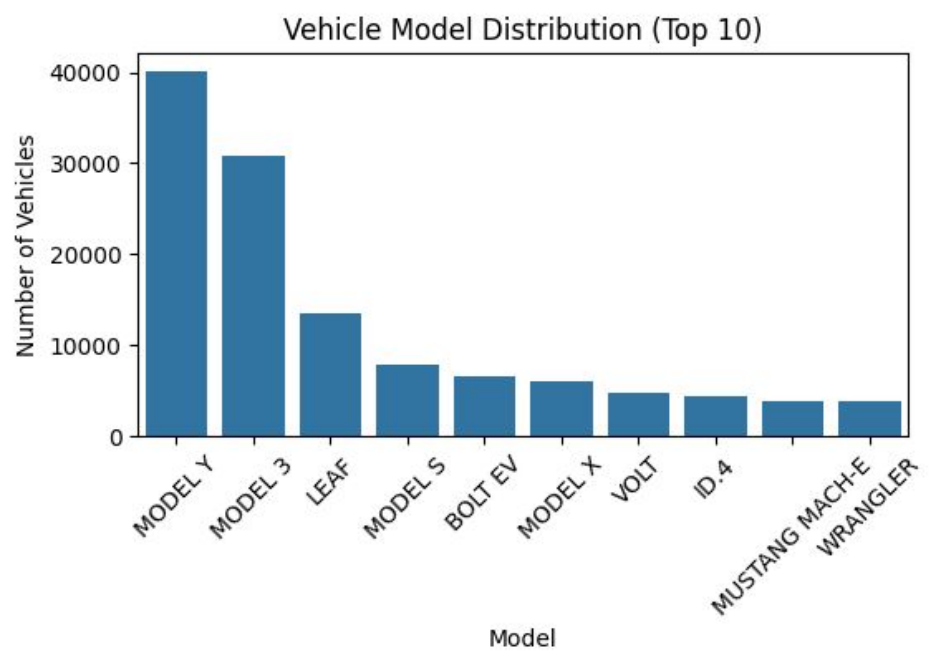
Electric Vehicle Distribution by Brand

Tesla is the preferred choice for electric vehicles in Washington, reflecting Tesla's dominance in the electric vehicle market. If used as a reference for the National Capital City (IKN) which will limit only electric vehicles, it is important for the government to consider this brand trend in related planning and policies. The development of charging infrastructure and after-sales services that support the Tesla brand may be an initial priority, but it needs to be balanced with support for other brands to encourage market diversification and expand the adoption of electric vehicles in IKN.



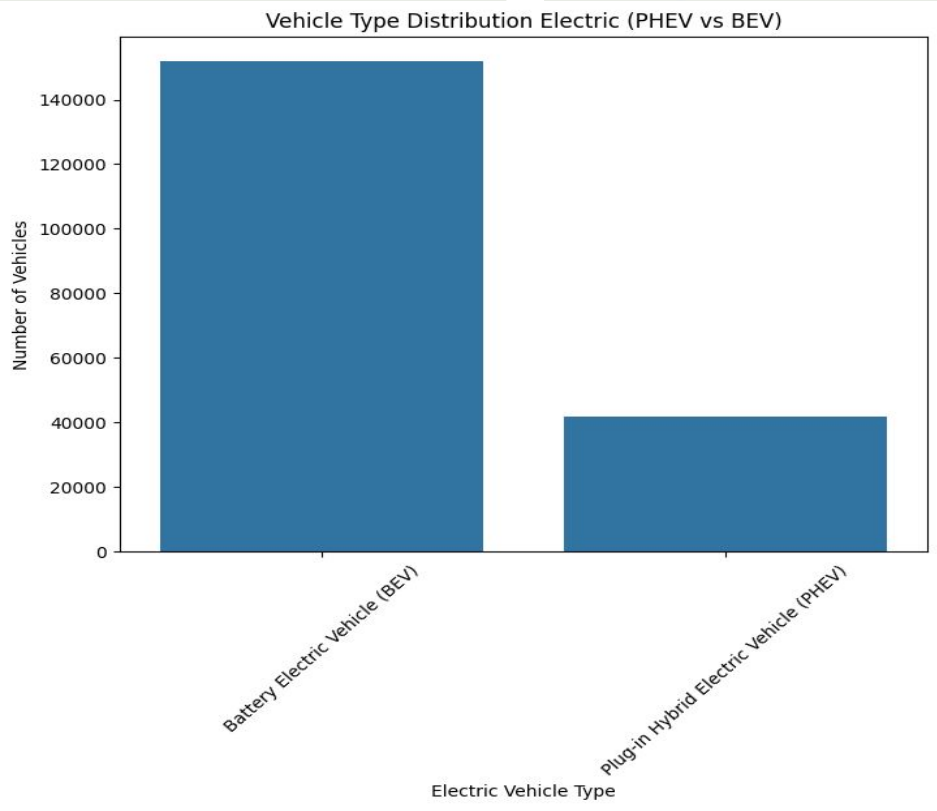
Vehicle Model Distribution

Tesla leads in terms of popularity of electric vehicle models, especially the Model Y and Model 3, which offer a combination of high performance, technology, and range. When used as a reference for the Capital City of the Republic of Indonesia (IKN), this trend shows that efficient, powerful models with a good support network will be very important for mass adoption of electric vehicles. Therefore, the IKN government needs to prepare infrastructure that supports various types of electric vehicles, with a special focus on more popular brands and models to meet the transportation needs in the region.



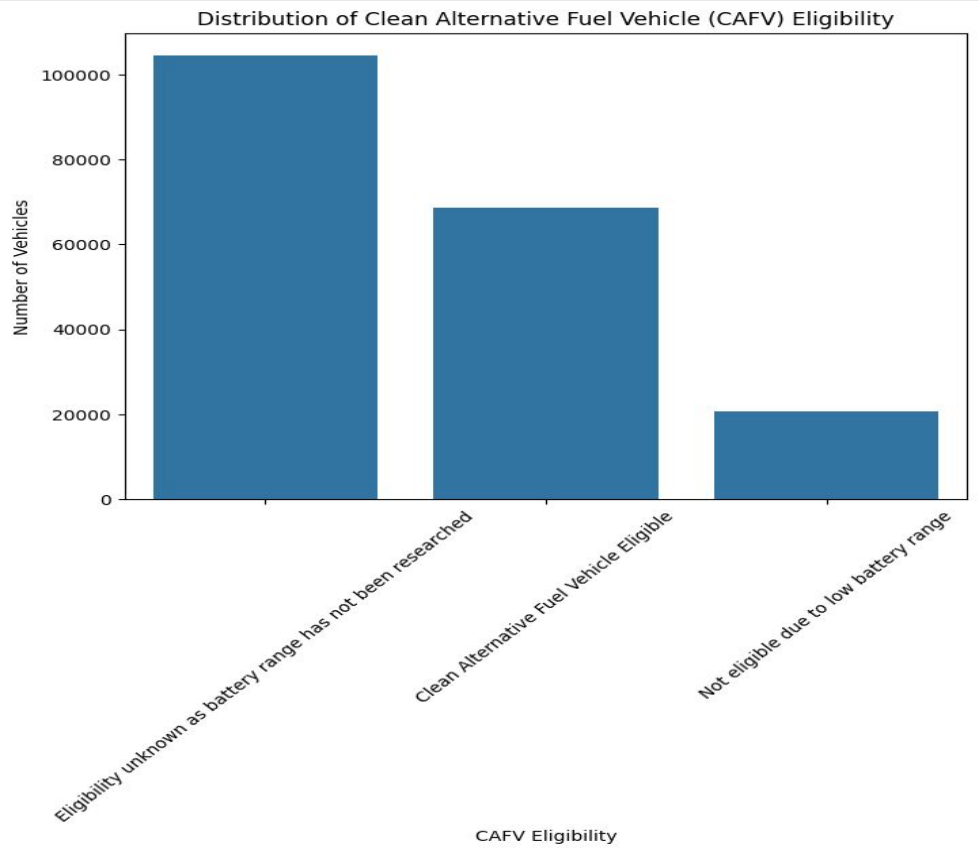
Vehicle Type Distribution (PHEV vs BEV)

Types of electric vehicles between Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV), it is seen that BEVs dominate with more than 140,000 vehicles, far surpassing PHEVs which only have around 50,000 units. If the focus of the IKN city is on full sustainability and carbon emission reduction, BEVs can be a more relevant primary choice because they do not depend on fossil fuels. In addition, it is important to develop adequate charging infrastructure to support wider BEV adoption in IKN.



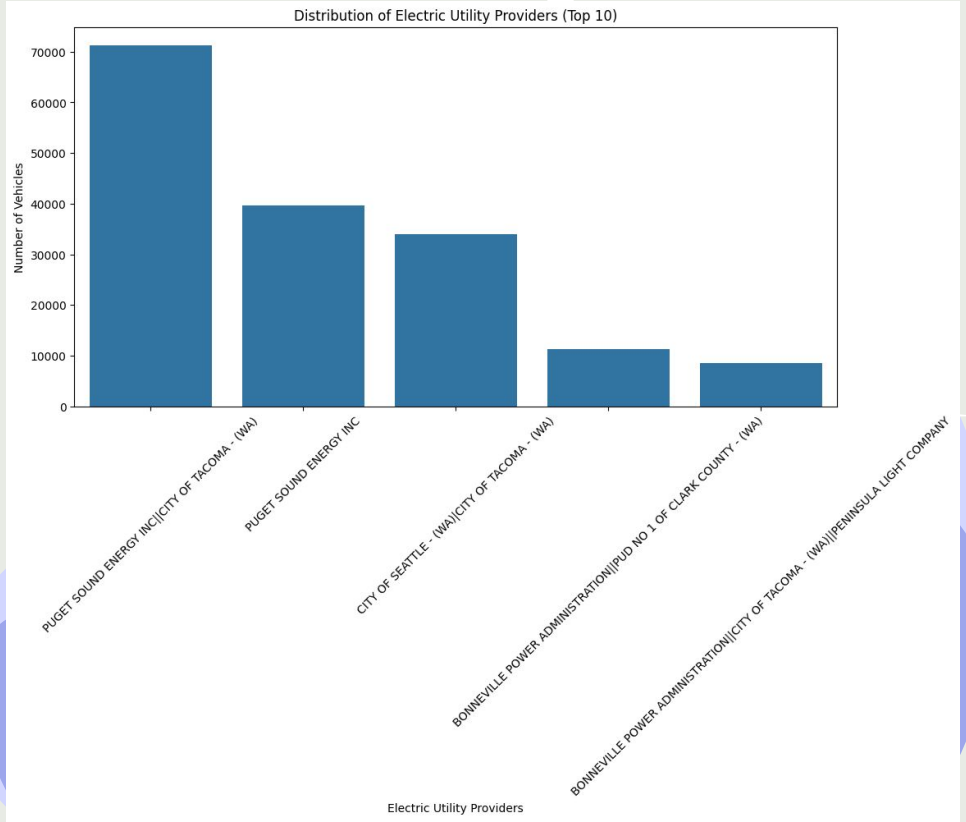
Distribution of Clean Alternative Fuel

Based on the visualization of the distribution of the eligibility of "Clean Alternative Fuel Vehicle" (CAFV), there are three categories analyzed, although most vehicles have not been confirmed as eligibility as CAFV, there is great potential to encourage the transition to clean alternative fuel vehicles in the Capital City of the State (IKN). With more research on battery range, the IKN government can identify and optimize vehicles that are eligible for use, while encouraging technological improvements for vehicles that do not yet meet the requirements. This is important in creating an environmentally friendly transportation environment in the IKN.



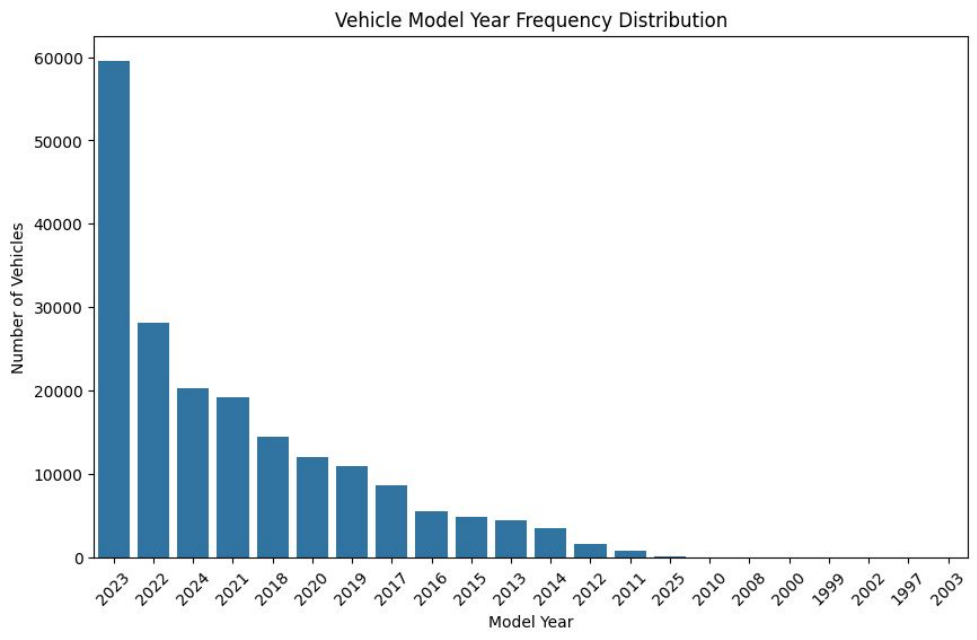
Distribution of Electric Utility Providers

Areas with major electricity providers such as “Puget Sound Energy” and “City of Tacoma,” EV adoption is very high, likely due to better infrastructure and services that are more ready to support EVs. If implemented in the Capital City of the Nation (IKN), the government needs to ensure strong cooperation with major electricity providers and expand their reach to support a full transition to EVs. The provision of reliable and equitable electricity infrastructure will be a key factor in the success of EV adoption in IKN.



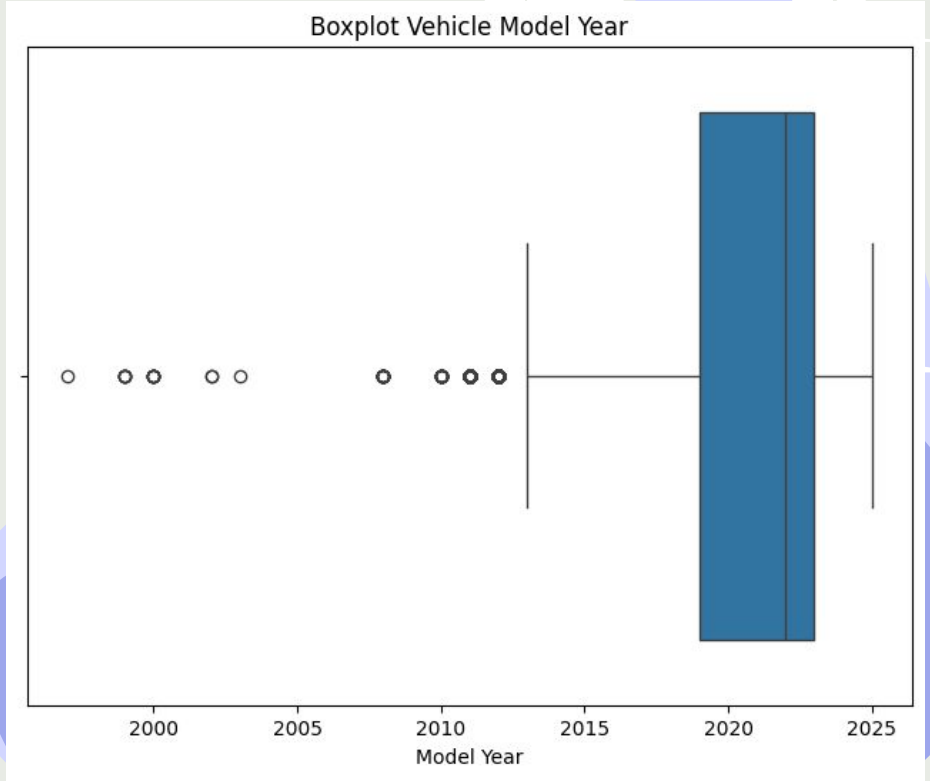
Vehicle Model Year Frequency Distribution

Consumers tend to adopt newer electric vehicles, likely due to more advanced technology, larger battery capacity, and higher efficiency. To be implemented in the National Capital City (IKN), it is important for the government to encourage the use of electric vehicles with the latest technology, while creating policies that facilitate regular vehicle updates. This also shows that the electric vehicle market in IKN will likely be dominated by the latest model vehicles, which means that charging infrastructure and technical support must be adjusted to the latest technology.



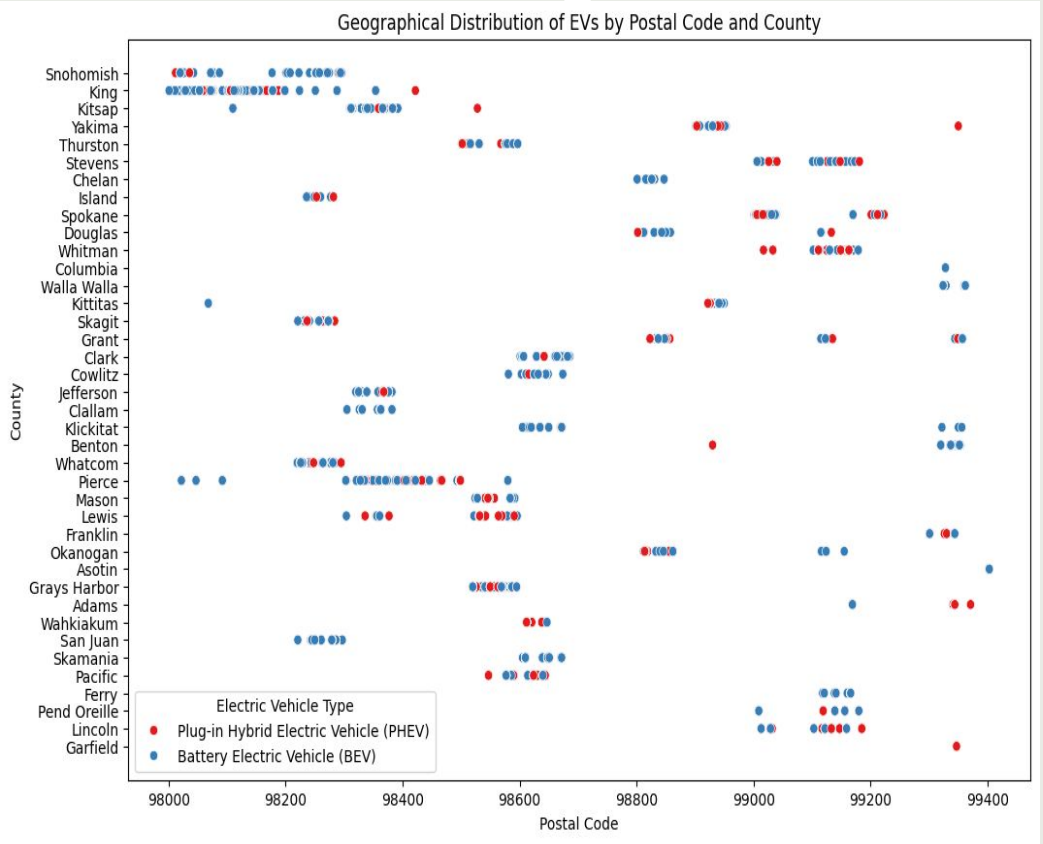
Boxplot Vehicle Model Year

It can be seen that the majority of EVs are from 2017 to 2023, with a major concentration in those years. The median year of production is around 2020, indicating that most EVs in the region are relatively new. In addition, there are a few outliers, namely vehicles manufactured before 2010, but these are very few, and there are not many vehicles from older years. For the National Capital City (IKN) which will adopt electric vehicles exclusively, this emphasizes the importance of focusing policies on new vehicles with the latest technology to ensure efficiency and sustainability.



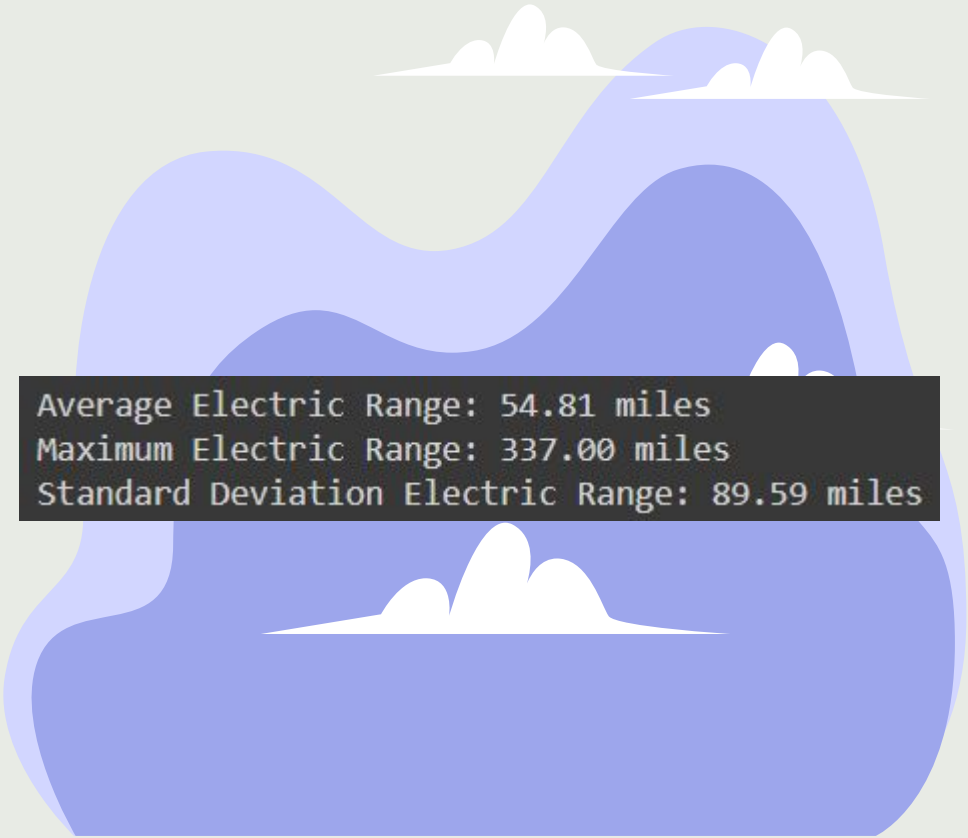
Geographical Distribution of EVs by Postal Code and County

The adoption of electric vehicles in metropolitan areas is more significant compared to rural or less dense areas. This shows that supporting infrastructure such as charging stations are more concentrated in urban areas. If applied to the National Capital City (IKN), this distribution emphasizes the importance of starting the development of electric vehicle infrastructure in major city centers, while ensuring that more remote or developing areas also receive attention so that the adoption of electric vehicles can be evenly distributed.



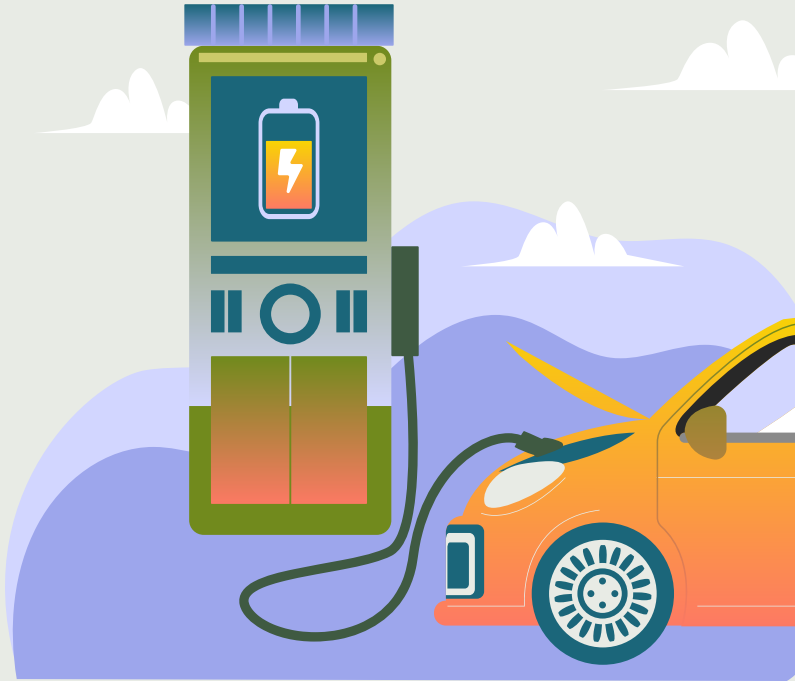
Vehicle Range Statistics

It is known that the average range of electric vehicles is 54.81 miles, with a maximum range of 337 miles and a standard deviation of 89.59 miles. for the implementation of electric vehicles in the Capital City of the State (IKN), it is necessary to consider adequate charging infrastructure throughout the city, considering that the average range of electric vehicles is still quite limited. However, the presence of vehicles with a longer range also provides an opportunity to support more efficient inter-regional mobility, especially for vehicles used for long-distance travel. The IKN government must balance infrastructure development to accommodate vehicles with various range capabilities.



Conclusion

Analysis of electric vehicles in Washington can be used as a reference for the National Capital (IKN) showing that the adoption of electric vehicles is dominated by the latest model vehicles and the Tesla brand, with a range that varies on average is still quite limited. The distribution of electric vehicles is concentrated in large metropolitan areas with more ready infrastructure, while rural areas still show lower adoption. This emphasizes the importance of developing an even charging infrastructure, especially in the city center, as well as the encouragement to prioritize the latest technology to support sustainability in the IKN which will only allow electric vehicles.



THANKS

Electric vehicles are a real step towards a clean, sustainable and environmentally friendly future for future generations.