Market Segment Analysis of Electronic Vehicle in India

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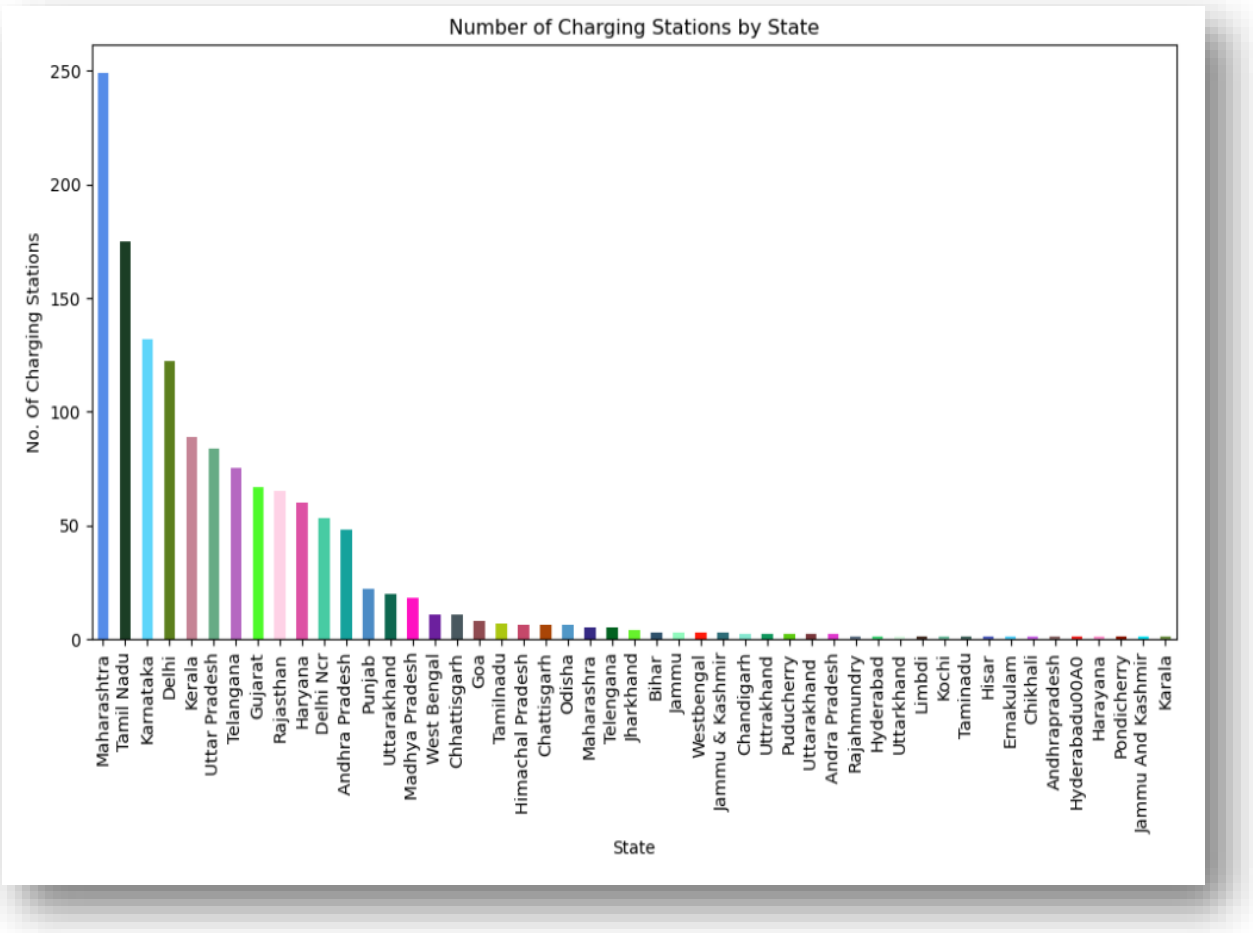
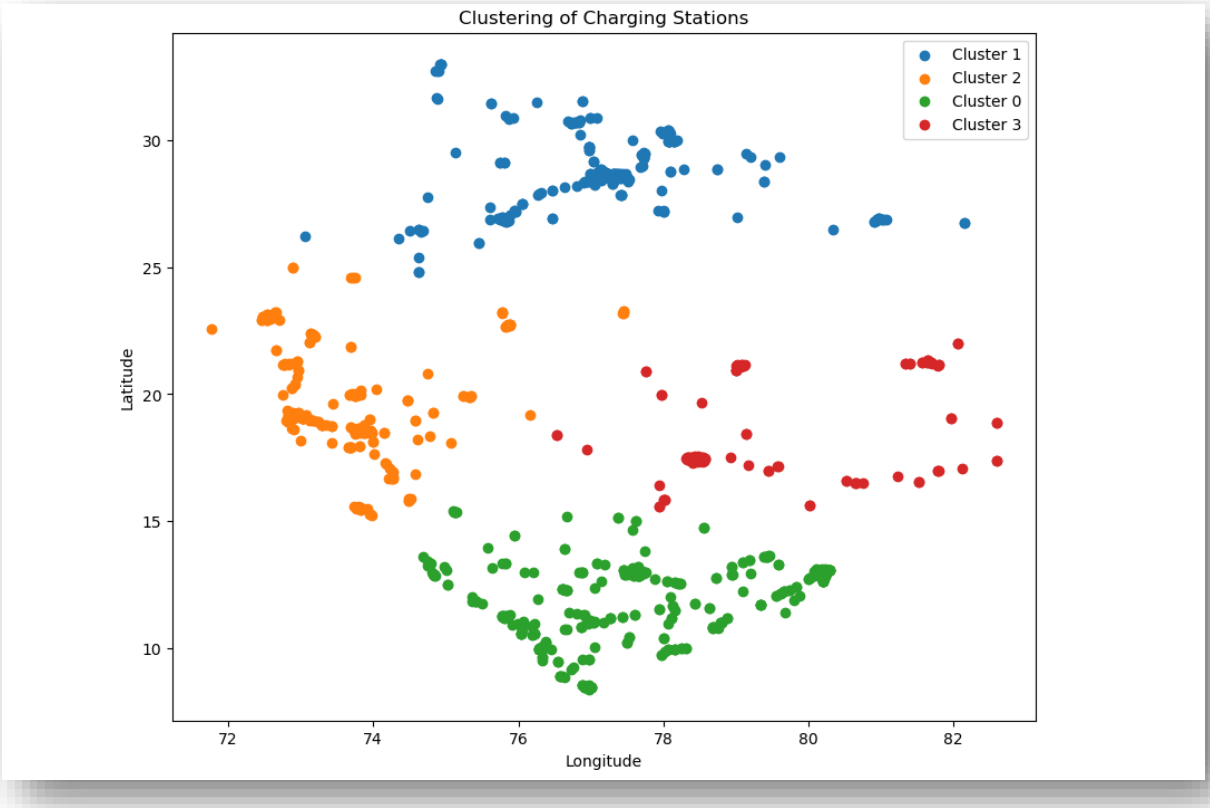
SURIYA:

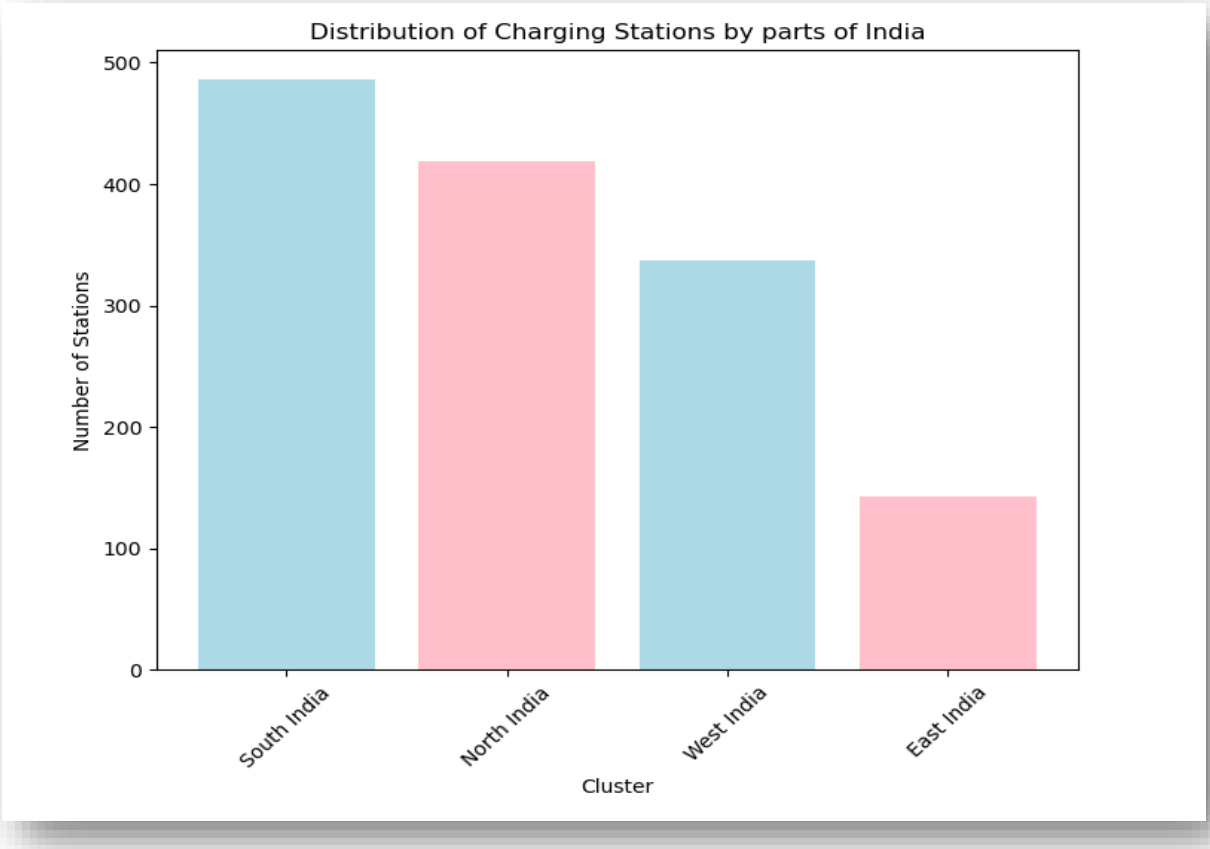


The Top-Most EV Vehicle Charging stations in india are Maharastra, Tamil Nadu, Karnataka, Delhi, Kerala.

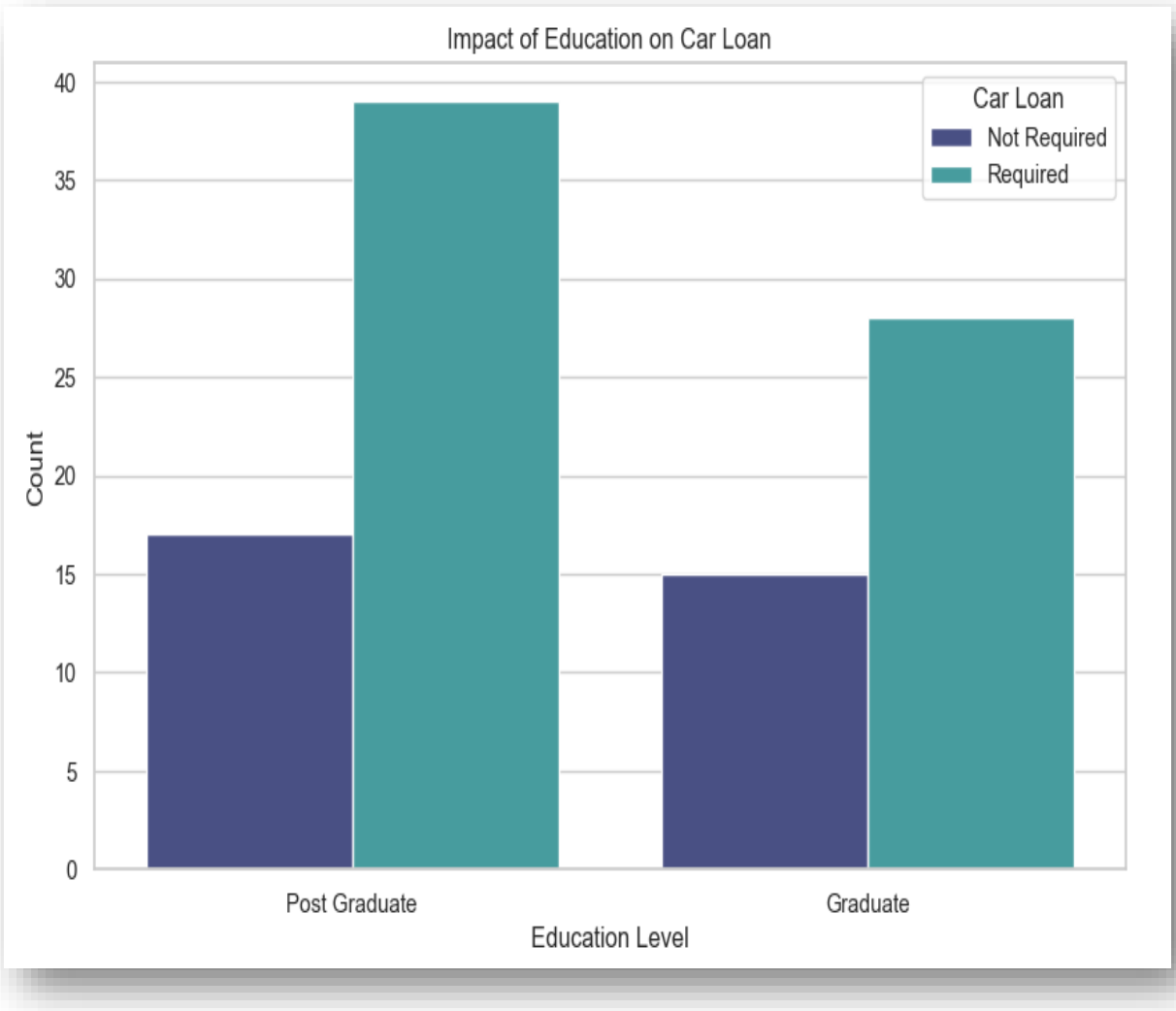
Cluster Names :

- ✓ 0: 'South India',
- ✓ 1: 'North India',
- ✓ 2: 'West India',
- ✓ 3: 'East India'

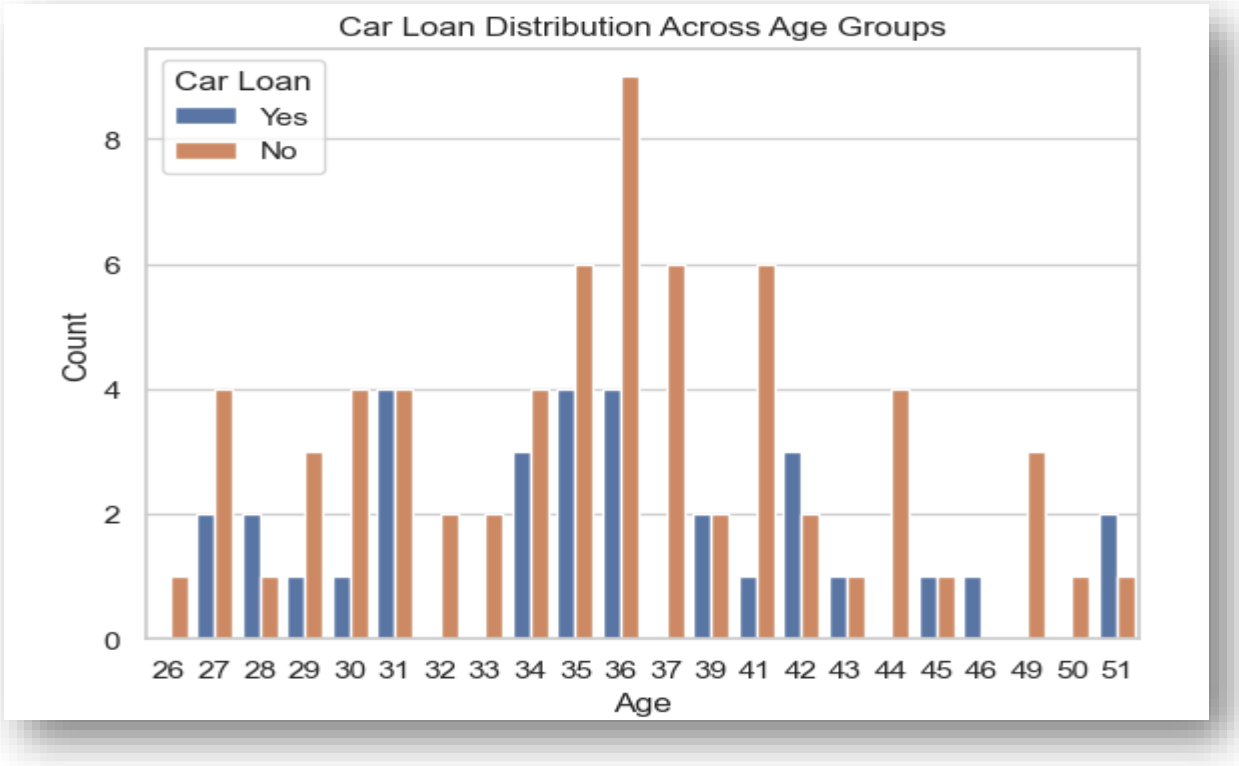

Clustering of Charging Stations
Cluster 1
Cluster 2
Cluster 0
Cluster 3
Latitude
Longitude
30
25
20
15
10
72
74
76
78
80
82


Distribution of Charging Stations by parts of India
Number of Stations
Cluster
500
400
300
200
100
0
South India
North India
West India
East India

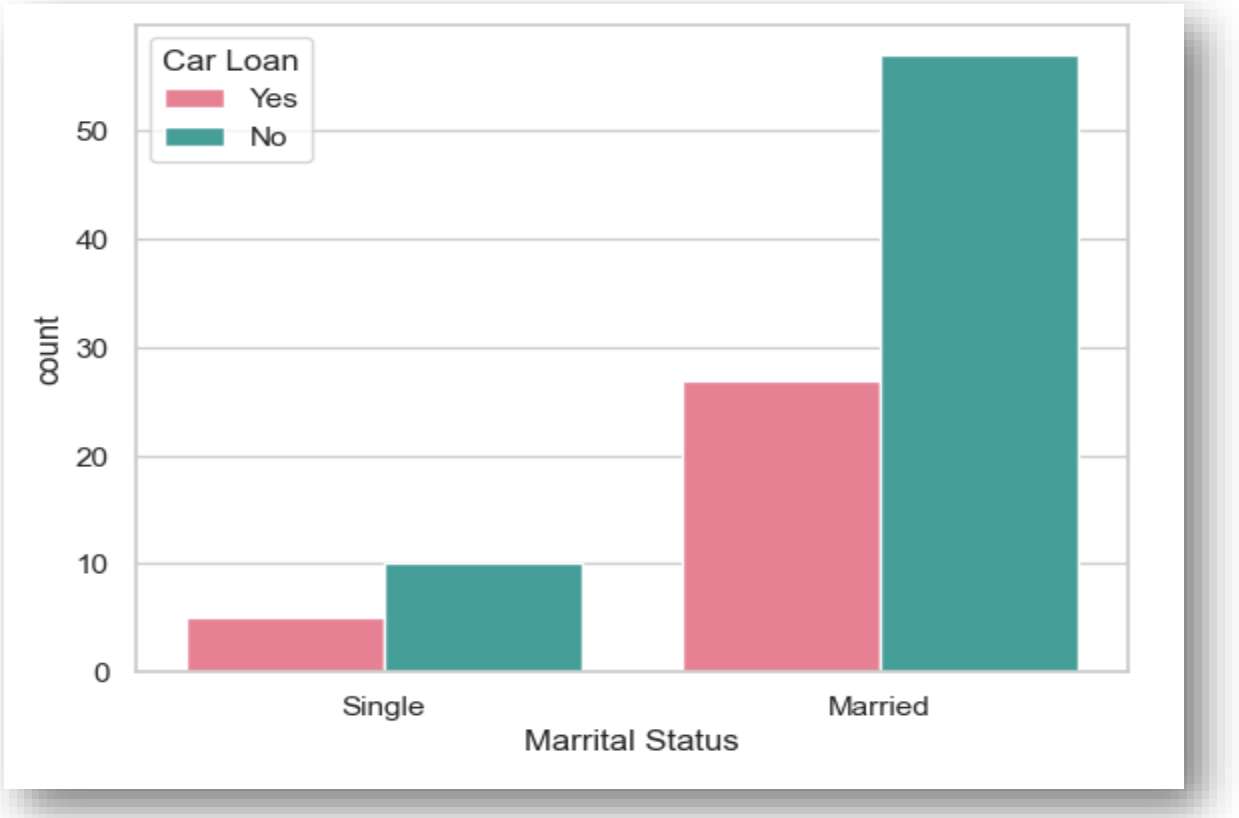
Major Distribution of Charging Sataion by Parts of India are South India and North India and Least in East India.



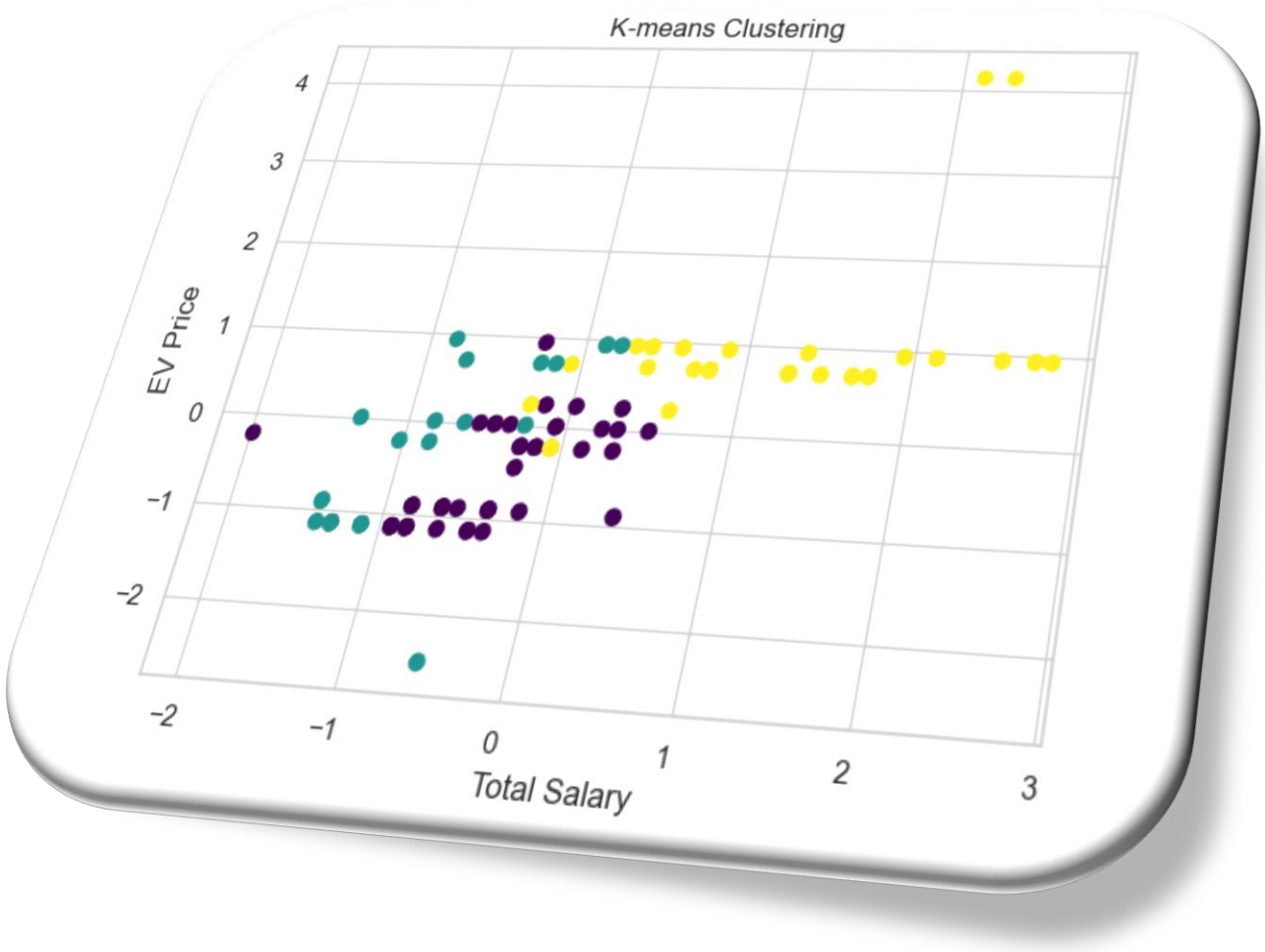
Based on the analysis of the dataset, it is evident that individuals with a post-graduate education level show a higher tendency to opt for car loans. This conclusion is drawn from the countplot, which illustrates the distribution of car loans among different education levels.



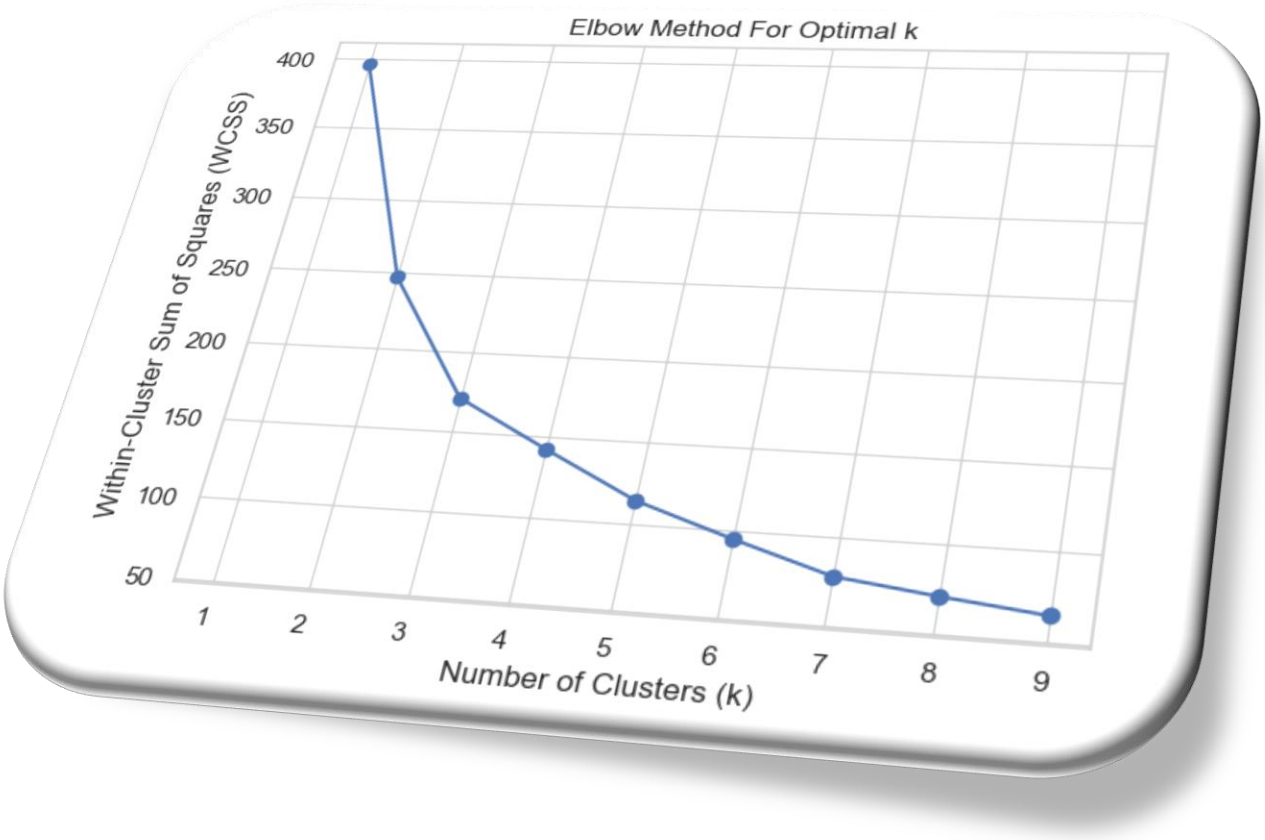
In This, Car Loan Distribution Across Age Group there are lost more are Not Buying the car Loan But Few of them Buying The Car loan in The Age Group Between 31 – 36 and also 46.



Married individuals show a pronounced preference for car loans, indicating a correlation between marital status and financing decisions. This trend may be influenced by family needs and heightened financial responsibilities. The findings emphasize the relevance of considering marital status in designing targeted financial products and strategies.



K-Means Clustering of Behavioural Status on Age, No. of Depends, Total Salary, EV Price. The above Plot Shows The Relation Between EV Price and Total Salary here No. of clusters is 3



In this above elbow chart we conclude the Best K number is 3.

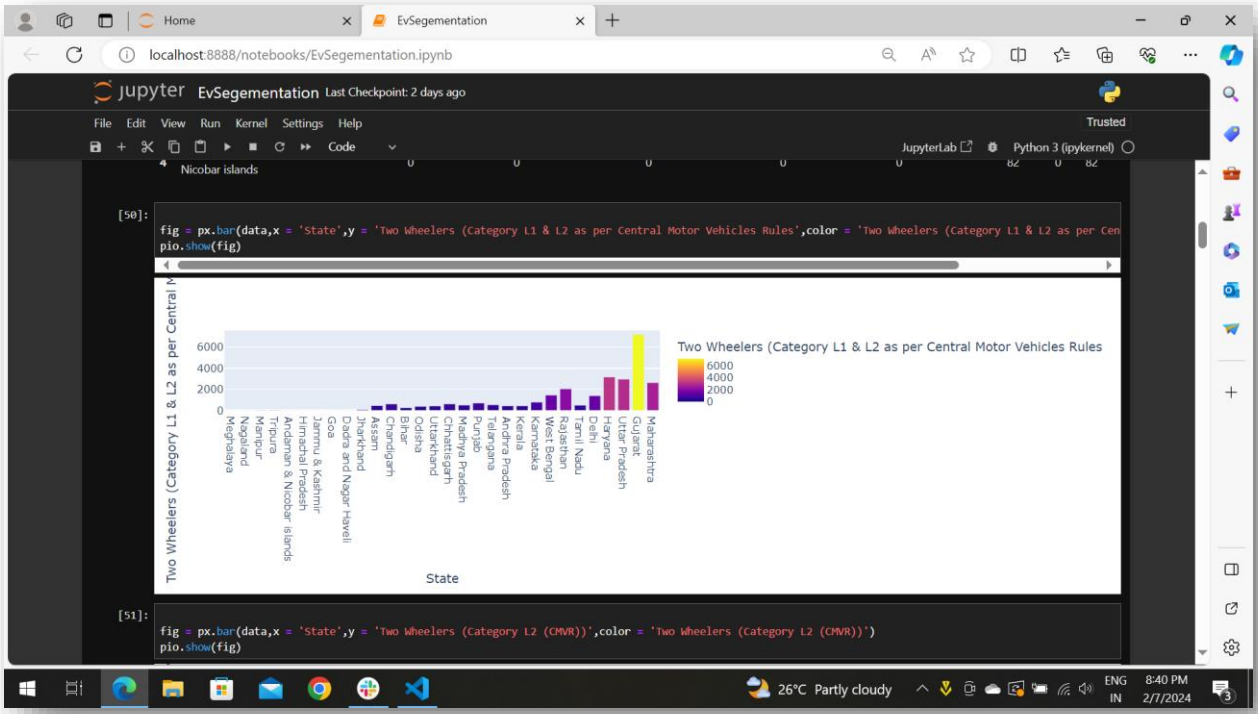
Conclusion:

In conclusion, the analysis of EV vehicle segmentation highlights key insights for strategic planning. The top-performing states for EV charging stations are Maharashtra, Tamil Nadu, Karnataka, Delhi, and Kerala, with a notable concentration in South and North India. Car loan distribution across age groups reveals lower interest overall, but a slight increase in applicants between 31-36 and 46 years old.

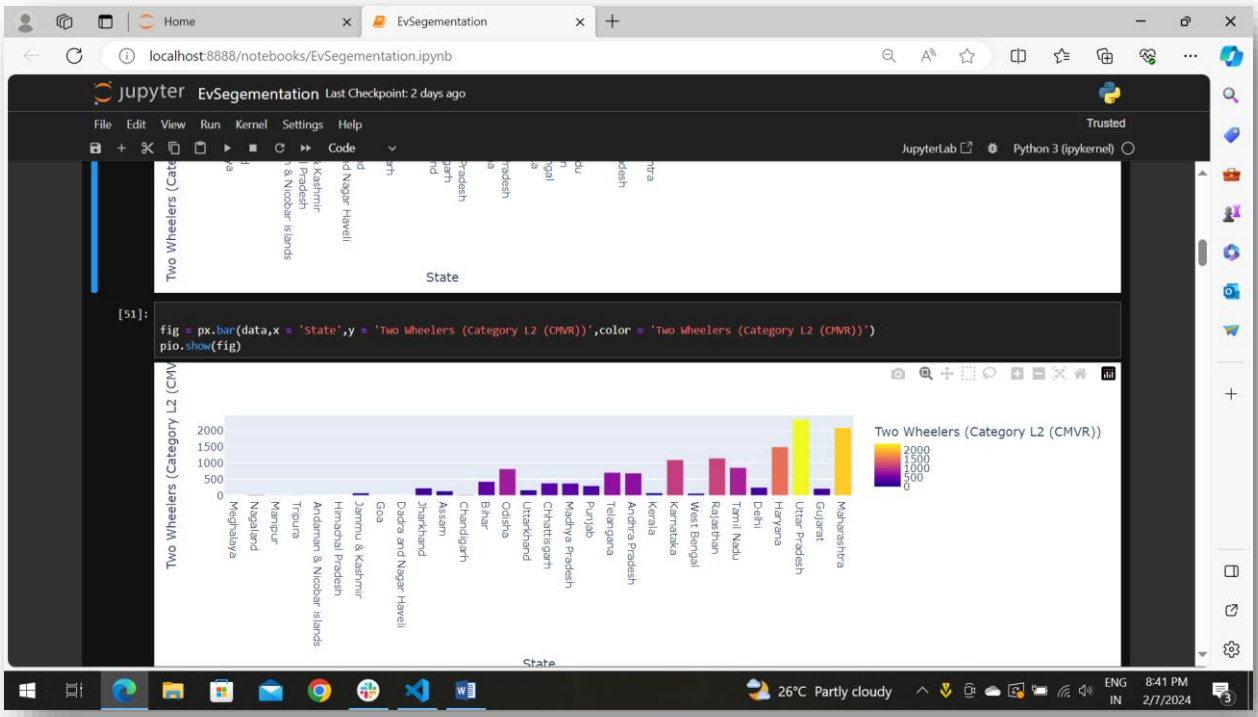
Moreover, a significant correlation is observed between higher education levels and a propensity for car loans, suggesting a potential market segment for targeting educated individuals. Marital status also plays a role, with married individuals showing a higher count of car loan applicants, possibly driven by family needs and increased financial responsibilities.

To maximize EV sales, focus on states with established charging infrastructure, particularly Maharashtra, Tamil Nadu, and Karnataka. Target educated individuals, especially those aged 31-36 and 46, and consider marketing strategies that resonate with the preferences and financial considerations of married individuals. Additionally, explore opportunities to expand EV sales in regions with lower charging station density.

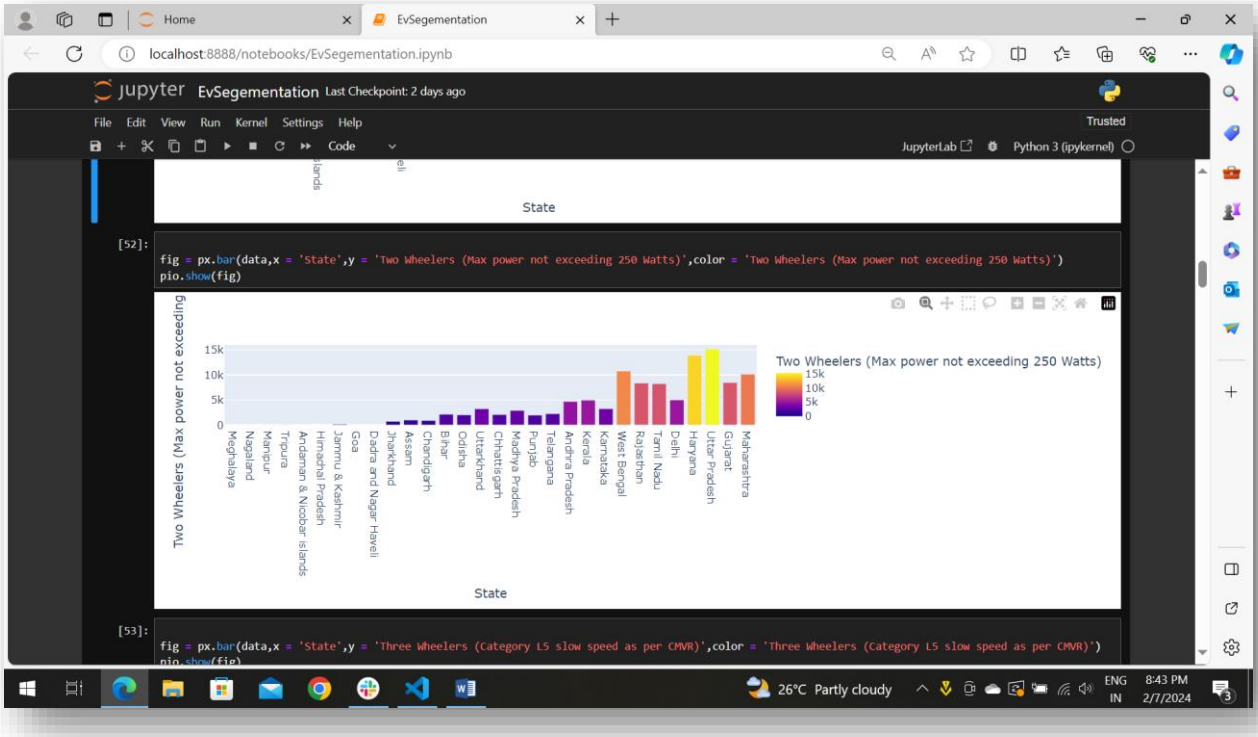
.**SWANAND KULKARNI:**



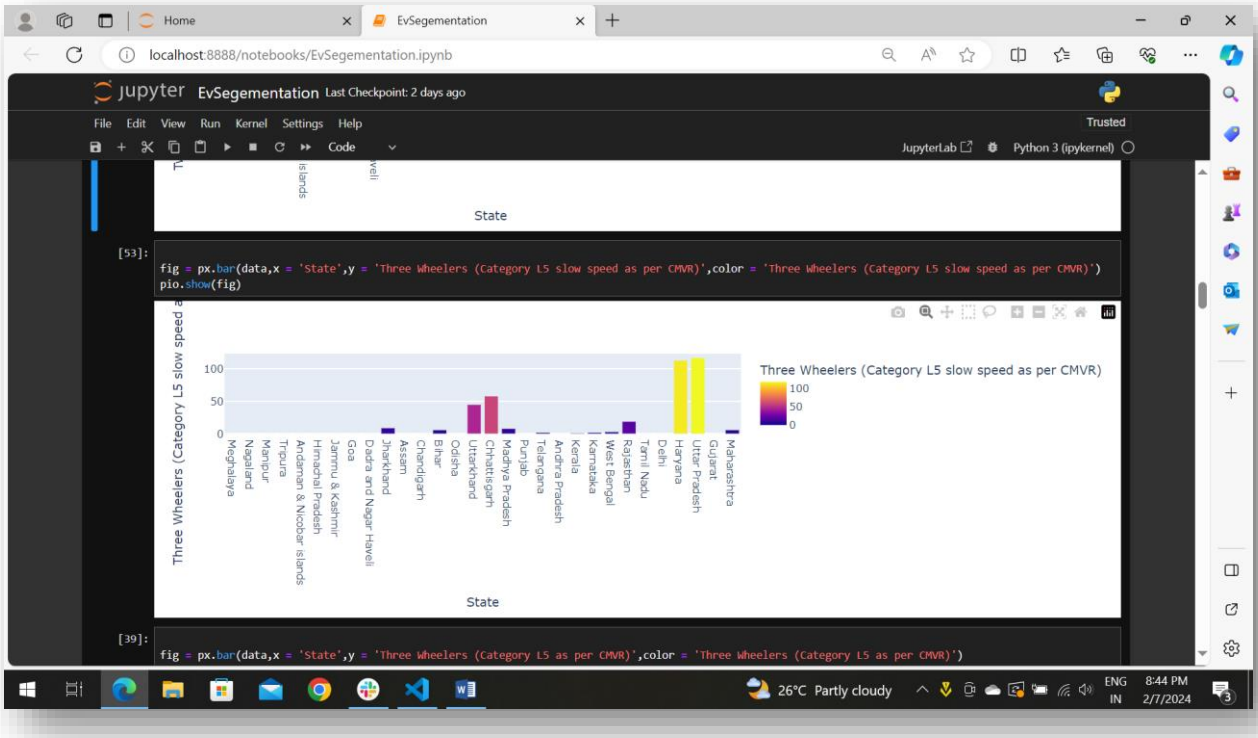
In above visualization we get to know that the Two Wheelers (Category L1 & L2 as per Central Motor Vehicles Rules is most in the Gujarat State



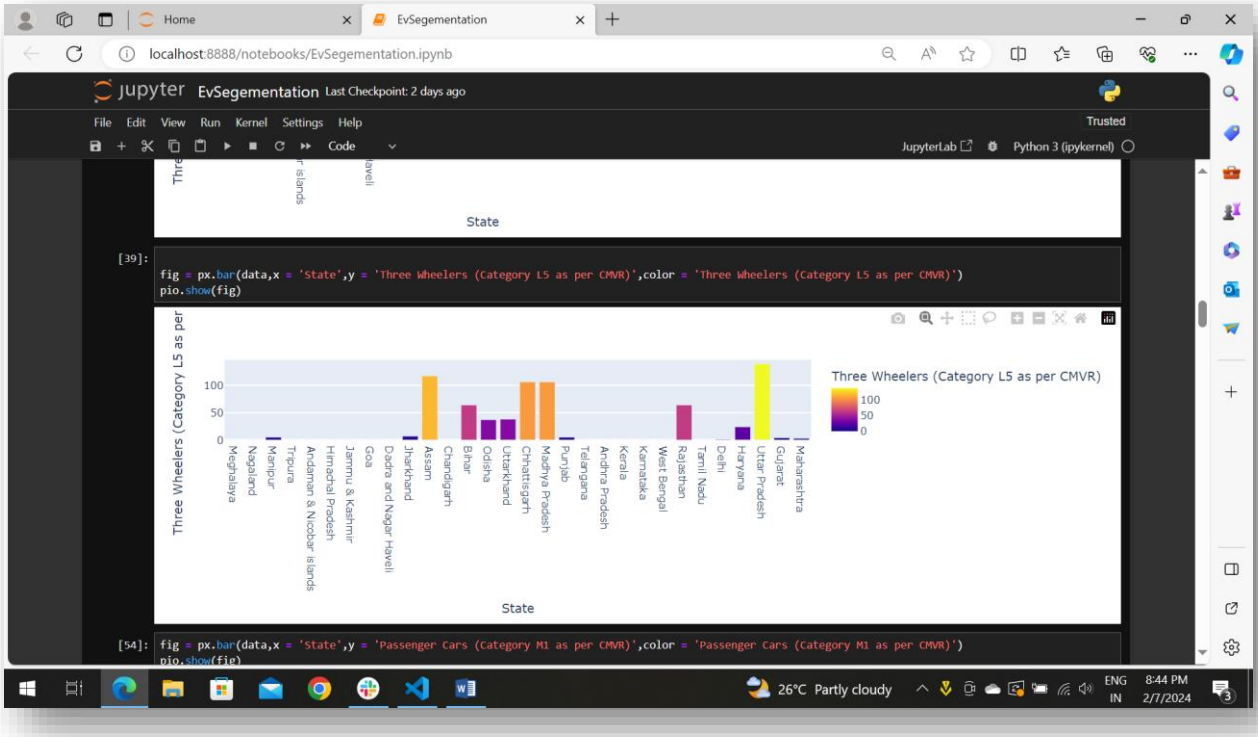
In above visualization we get to know that the Two Wheelers (Category L2 (CMVR)) is most in the Maharashtra and Uttar Pradesh



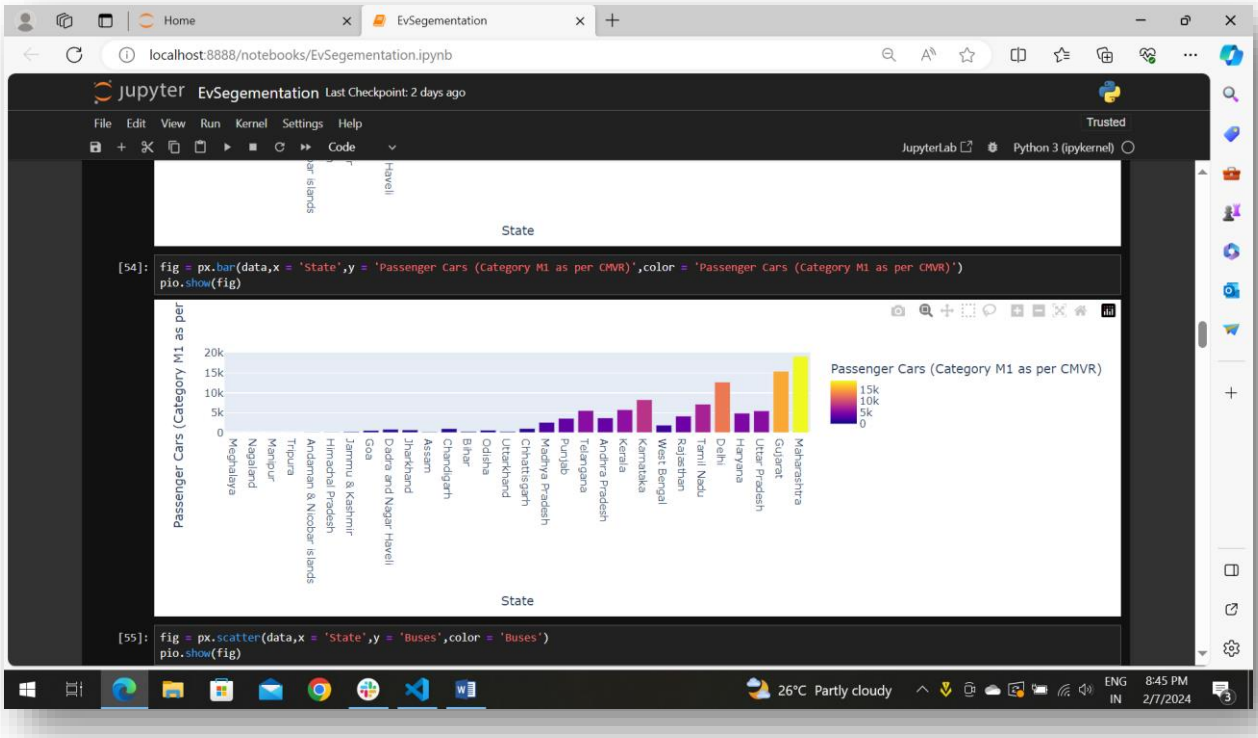
In above visualization we get to know that the Two Wheelers (Max power not exceeding 250 Watts) is most in the Uttar Pradesh and Haryana



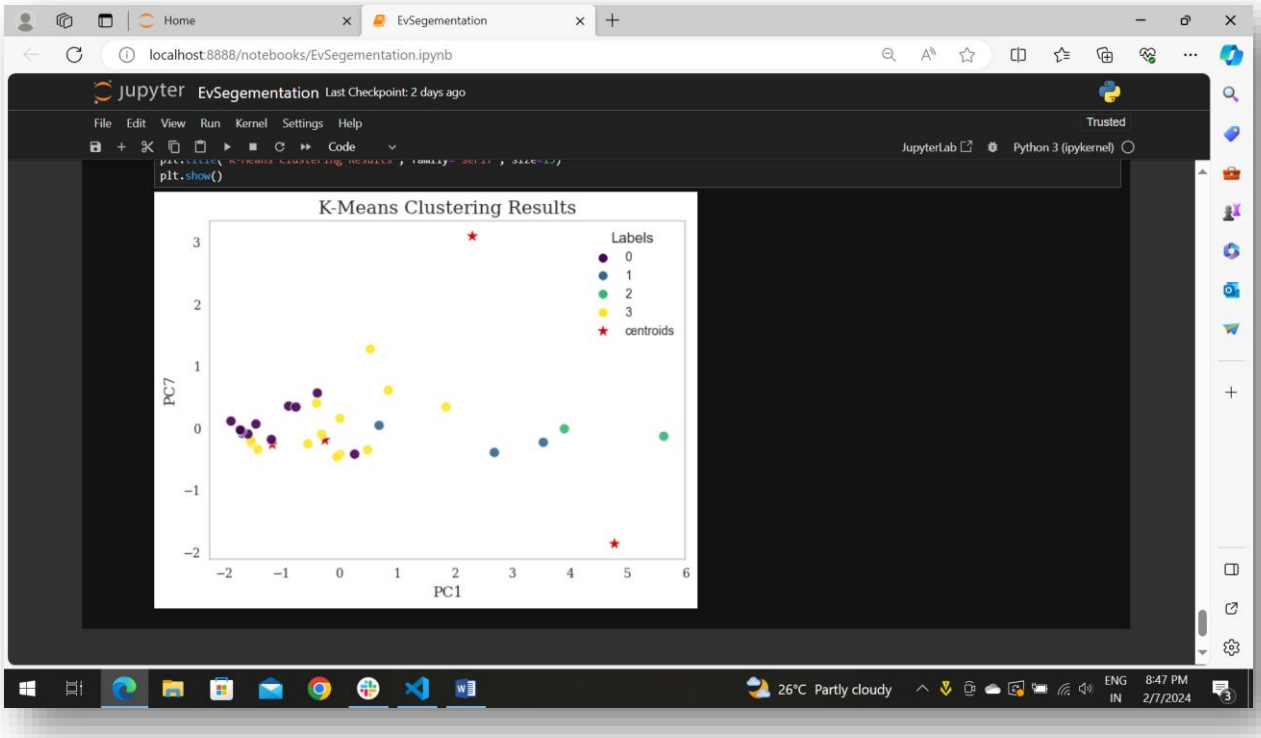
In above visualization we get to know that the Three Wheelers (Category L5 slow speed as per CMVR) is most in the Uttar Pradesh and Haryana



In above visualization we get to know that the Three Wheelers (Category L5 as per CMVR) is most in the Uttar Pradesh and Assam



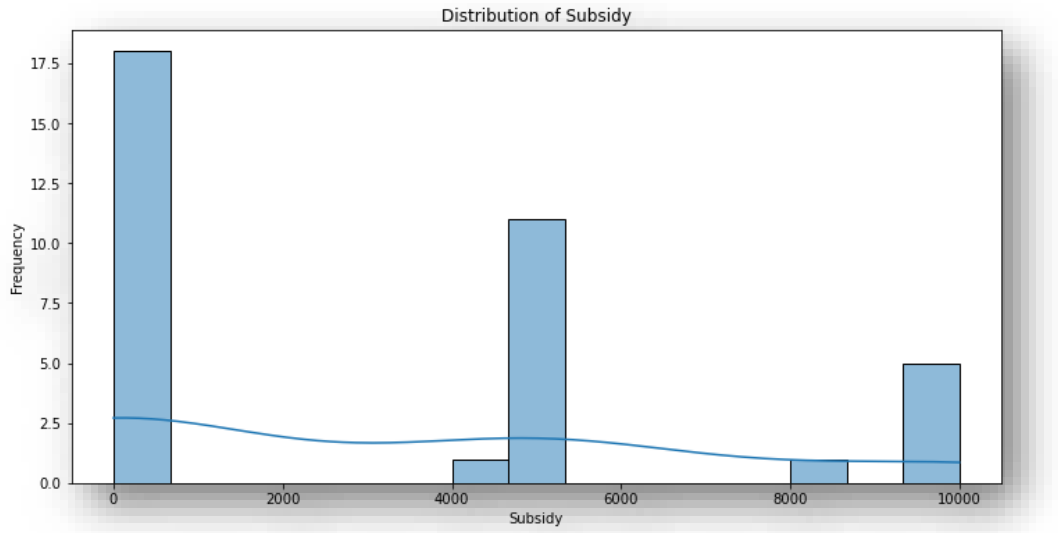
In above visualization we get to know that the Passenger Cars (Category M1 as per CMVR) is most in the Maharashtra and Gujarat



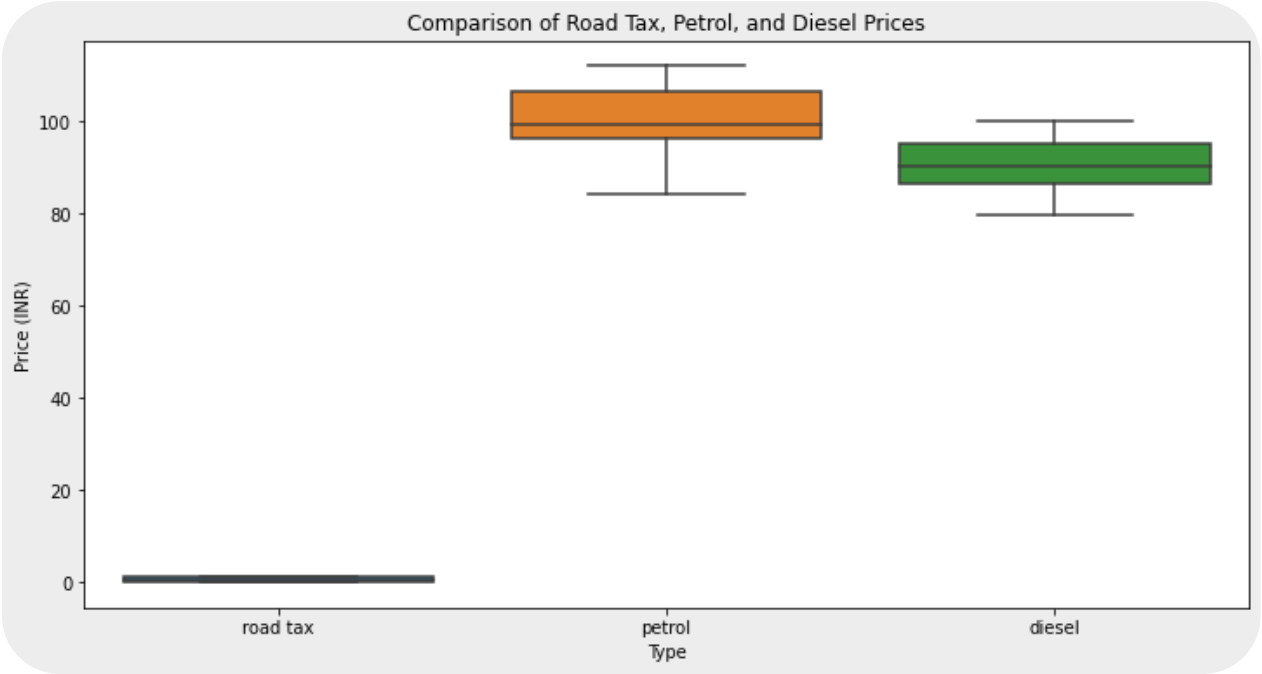
Conclusion:

The Conclusion of the segmentation provides that It will be a great opportunity to start A startup of The EV vehicles in the Southern part of India and in North Eastern part of India as there is no EV market present in the Assam and all that part which will give a great success in those areas as there is no much competition in those parts and also in Southern part of India very few EV users where detected so By providing proper exposure will help the startup to grow and make profit in those regions with less amount of investment and great outcome.

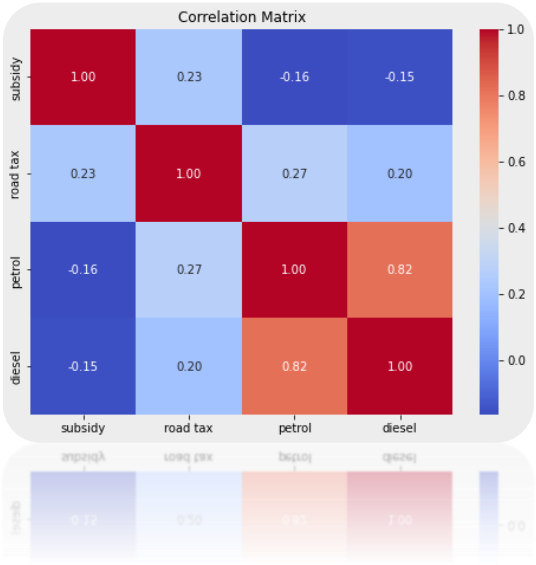
KASHAP VELAMPALLI:



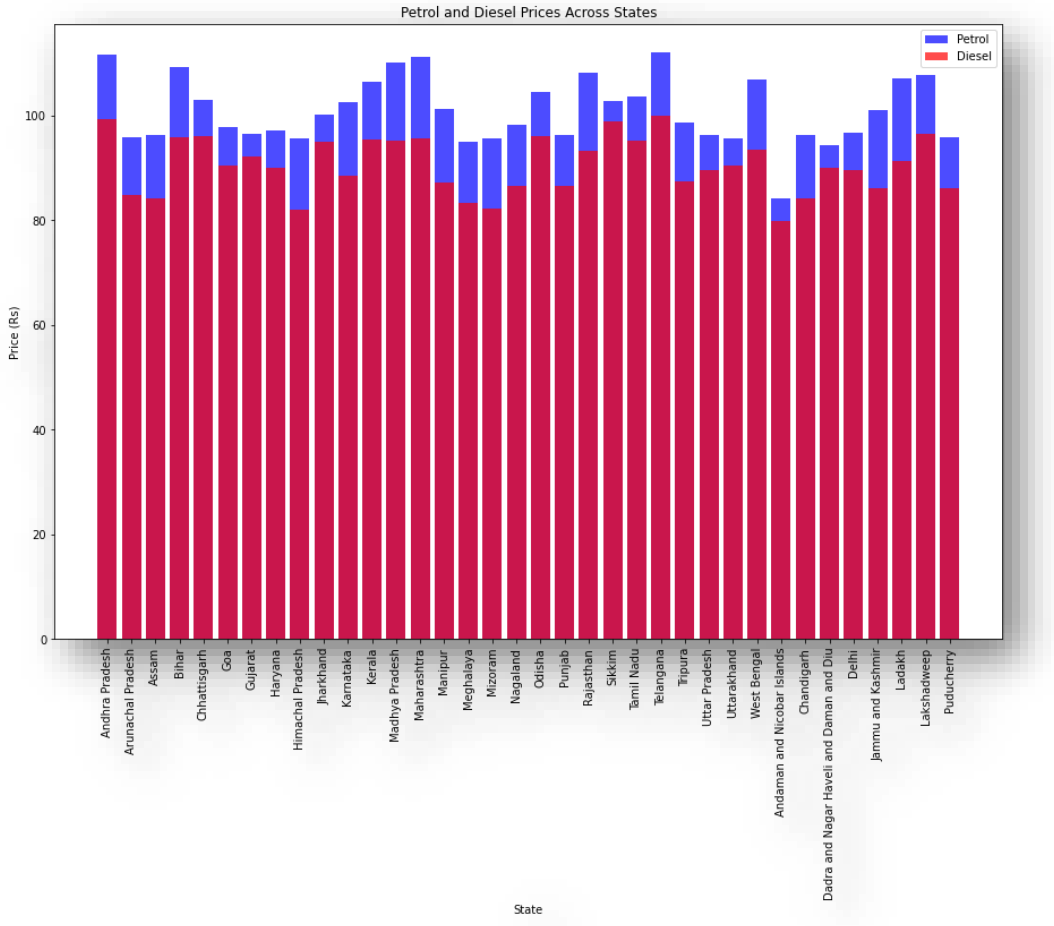
The above distribution shows the pattern of how subsidies are given, with modal values being less, however hinting three different patterns, which can be binned as no subsidy, mediocre subsidies and high subsidies



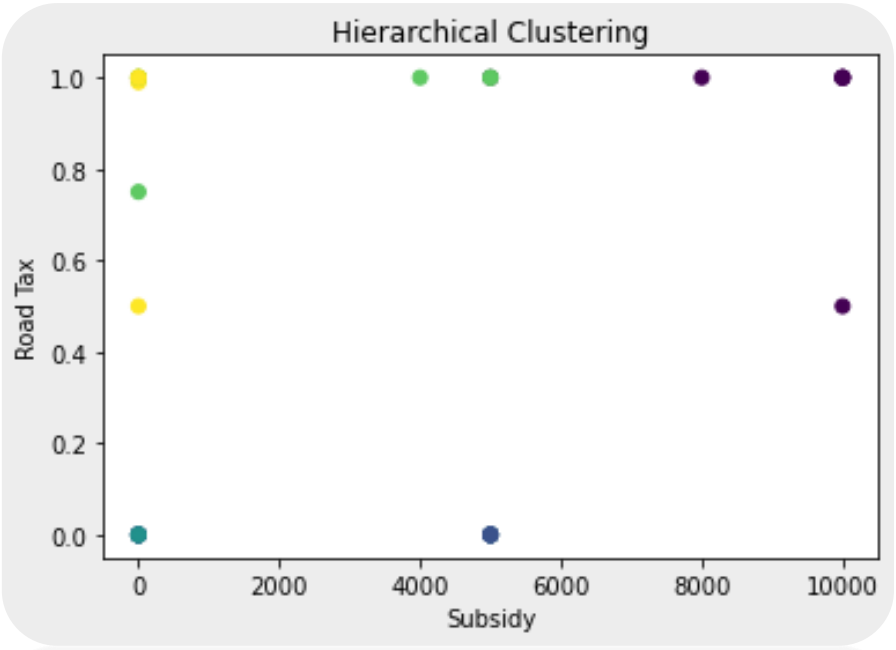
The petrol and diesel taxes are significantly higher compared to road taxes

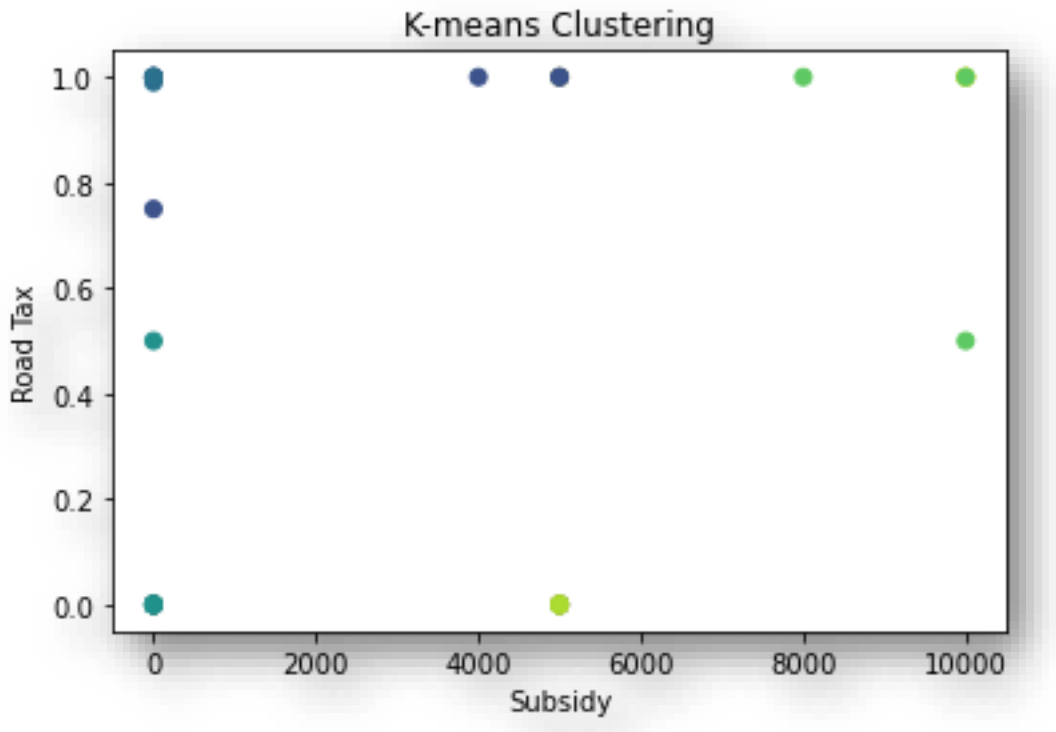


A significant positive correlation exists between the prices of petrol and diesel in the market



Results of various clustering algorithms





Conclusions:

- Cluster 0 includes states like Andaman and Nicobar Islands, Chandigarh, Dadra and Nagar Haveli, Daman and Diu, and Puducherry, characterized by high petrol prices but low diesel prices.
- Cluster 1 consists of states like Chhattisgarh, Jharkhand, Meghalaya, and Tripura, with high petrol and diesel prices.
- Cluster 2 comprises states like Karnataka, Kerala, Uttar Pradesh, and Punjab, which have no subsidies and low road tax rates.
- Cluster 3 includes states like Andhra Pradesh, Madhya Pradesh, Odisha, and Telangana, characterized by no subsidies but high road tax rates.
- Cluster 4 consists of states like Delhi, Ladakh, Rajasthan, and Sikkim, with moderate petrol and diesel prices.
- Cluster 5 encompasses states like Jammu and Kashmir, Mizoram, Uttarakhand, and Lakshadweep, which have low petrol and diesel prices.
- Cluster 6 includes states like Goa, Gujarat, Haryana, and Tamil Nadu, with moderate subsidies and low road tax rates.
- Cluster 7 comprises states like Arunachal Pradesh, Manipur, Nagaland, and Puducherry, with low petrol prices but high diesel prices. Cluster 8 consists of states like Assam, Bihar, Maharashtra, and West Bengal, which receive the highest subsidies and have high road tax rates.

The categorization of states into clusters based on subsidy levels, road tax rates, and fuel prices is relevant in the context of planning the sale of electric vehicles (EVs) by a company. Understanding the different incentives and cost factors across states allows the company to strategize its market entry and distribution channels effectively. For instance, states in Cluster 8 with high subsidies and road tax rates might be prioritized for initial sales due to the favorable financial incentives for EV buyers. Conversely, states in Cluster 3 with high road tax rates but no subsidies may require different marketing and pricing strategies to encourage adoption. Similarly, states in Clusters 5 and 7 with low fuel prices might present unique challenges or opportunities for promoting EVs compared to states with higher fuel prices. By analyzing these clusters, the company can tailor its approach to maximize the uptake of EVs in different regions of India.

GitHub Link:

- Suriya: https://github.com/theSuriya/Ev-Vehicle-Segmentation.
- Swanand Kulkarni: https://github.com/SSK007-b/EV_Segementation.
- Kasyap Velampalli: https://github.com/kashyyvel/EV-Market-Segmentation