MARKET SEGMENT ANALYSIS

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1. EV DATA ANALYSIS
2. EV CHARGING STATION DATA VISUALISATION

GITHUB LINK:

https://github.com/raibhavesh/Feynn_Labs_Task1R

1.EV DATA ANALYSIS

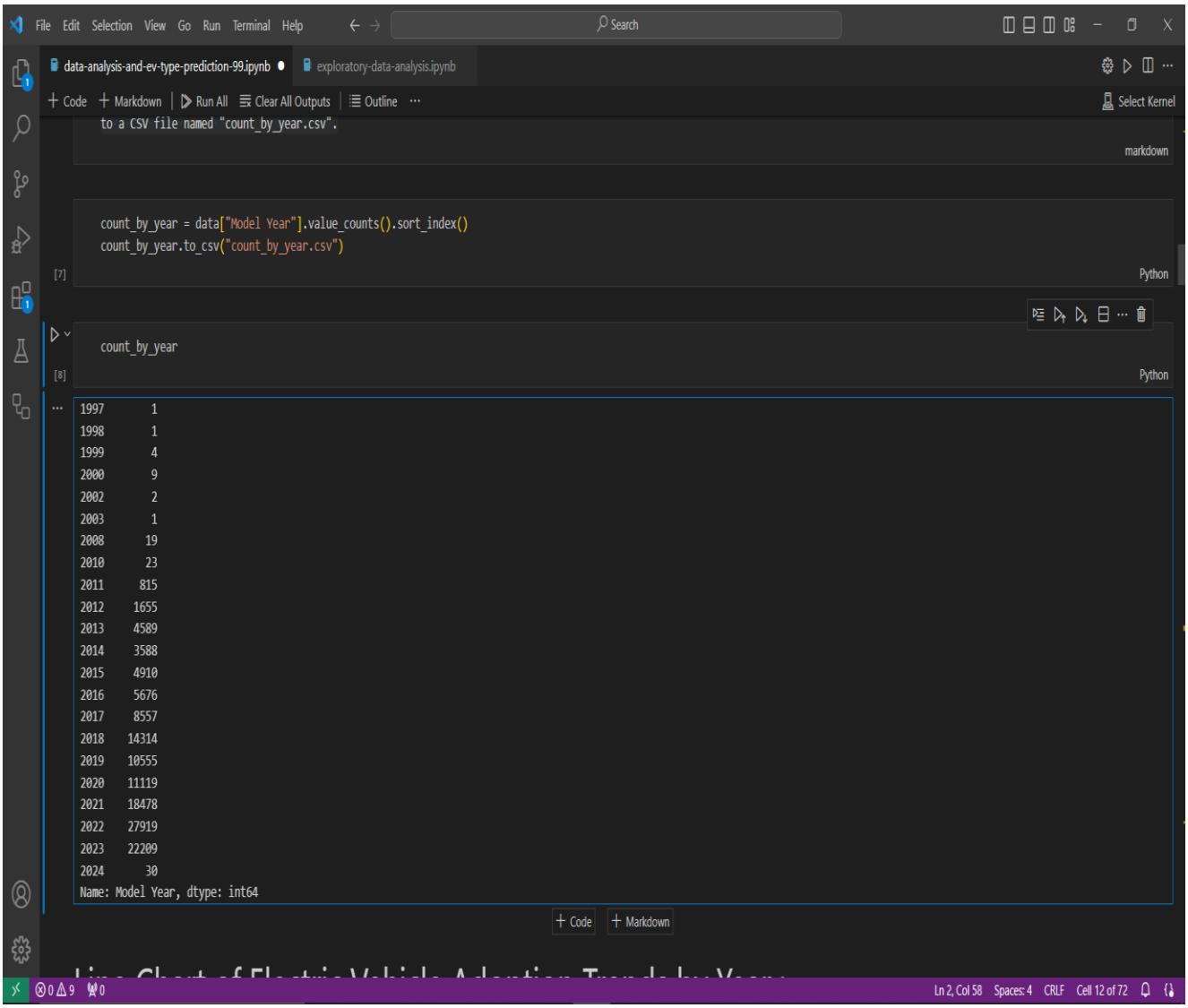
ABSTRACT

This collection of code snippets performs various analyses on the dataset of Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs) registered through the Washington State Department of Licensing. The codes generate insights such as statistics on electric range by city, counts of CAFV eligibility, popularity of electric vehicle manufacturers, range statistics (max, min, average), distribution of electric vehicle types, adoption trends by model year, and adoption by county. The results are saved in CSV files and visualized through bar charts, line charts, and pie charts. These analyses provide valuable insights into the electric vehicle landscape and adoption patterns in Washington.

Electric Vehicle Adoption by County

Count of Electric Vehicles by Model Year

This code counts the number of electric vehicles in the dataset for each model year. The counts are sorted in ascending order based on the model year, and the results are saved to a CSV file named "count_by_year.csv" .

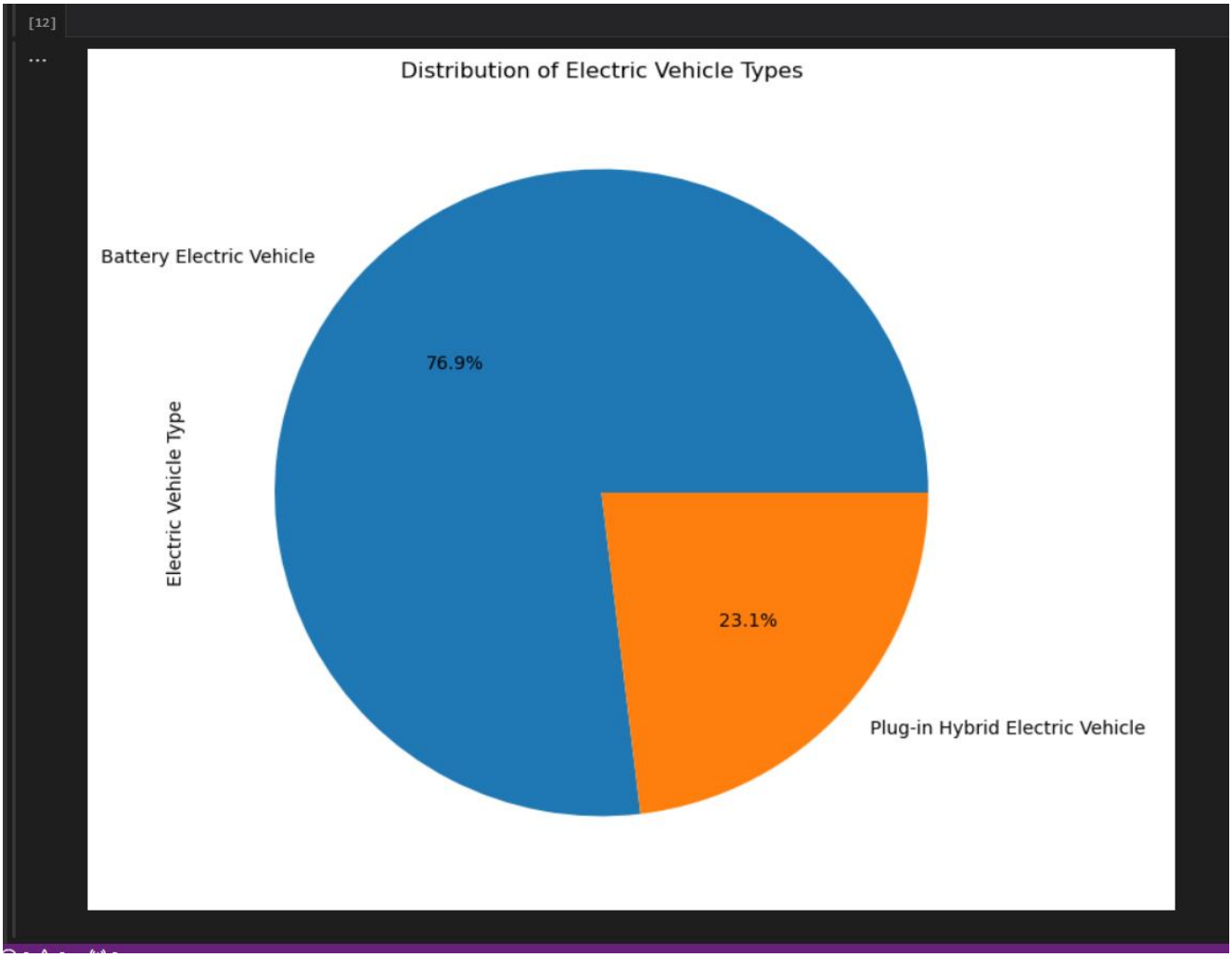


Line Chart of Electric Vehicle Adoption Trends by Year

This code creates a line chart showing the adoption trends of electric vehicles over different model years. The x-axis represents the model years, while the y-axis represents the count of electric vehicles. The chart displays the trend of electric vehicle adoption over time. The title of the chart is "Electric Vehicle Adoption Trends by Year".

Pie Chart of Electric Vehicle Types Distribution

This code creates a pie chart displaying the distribution of different types of electric vehicles. Each slice of the pie represents a specific vehicle type, and the percentage of each type is shown on the chart. The title of the chart is "Distribution of Electric Vehicle Types".



Bar Chart of Popular Electric Vehicle Manufacturers

This code creates a bar chart showing the count of electric vehicles by popular manufacturers. The chart is displayed with the x-axis labeled as "Make" representing the manufacturers and the y-axis labeled as "Count" representing the number of vehicles. The title of the chart is "Popular Electric Vehicle Manufacturers."

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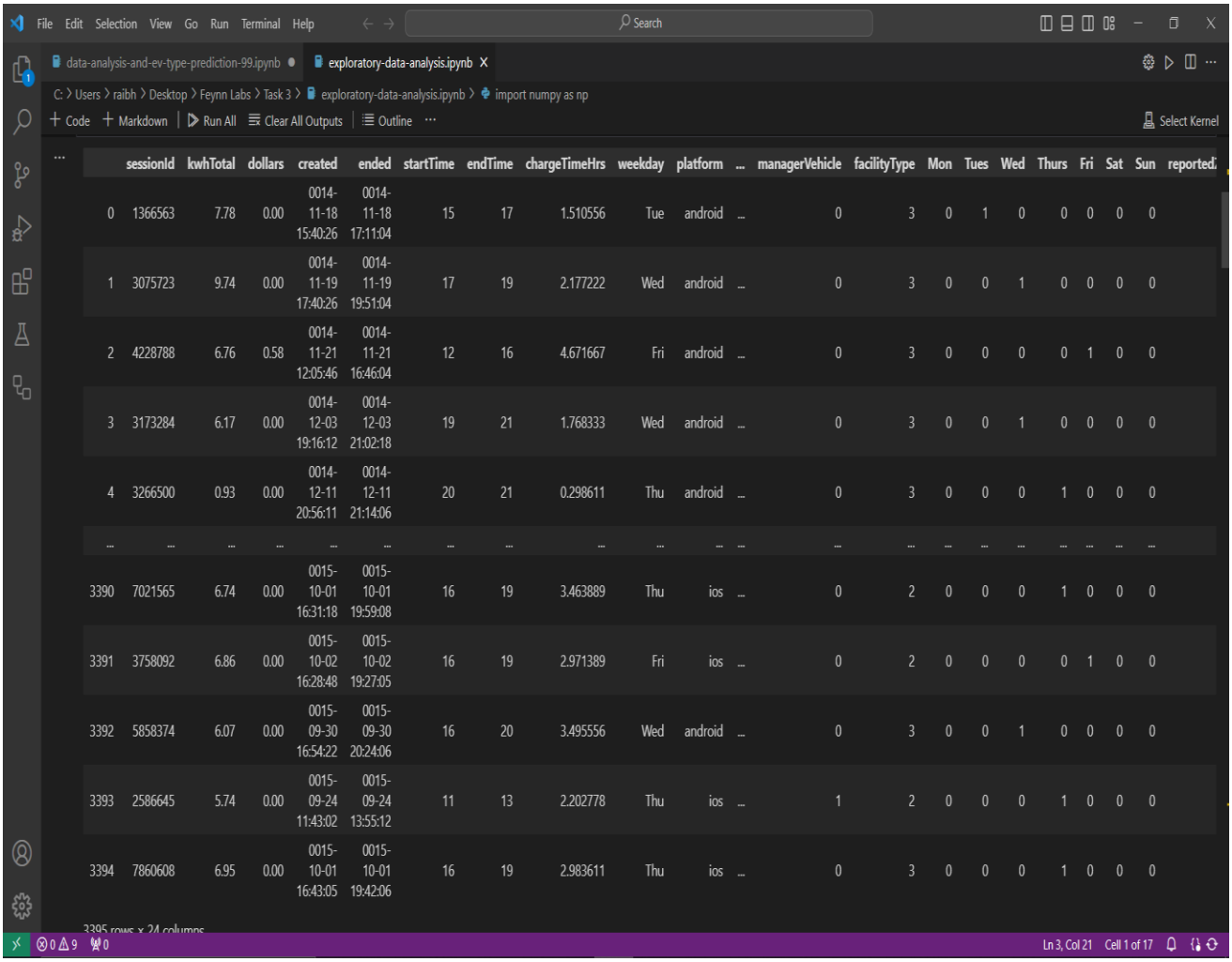
2. EV CHARGING STATION DATA VISUALISATION

Power consumed for EV charging

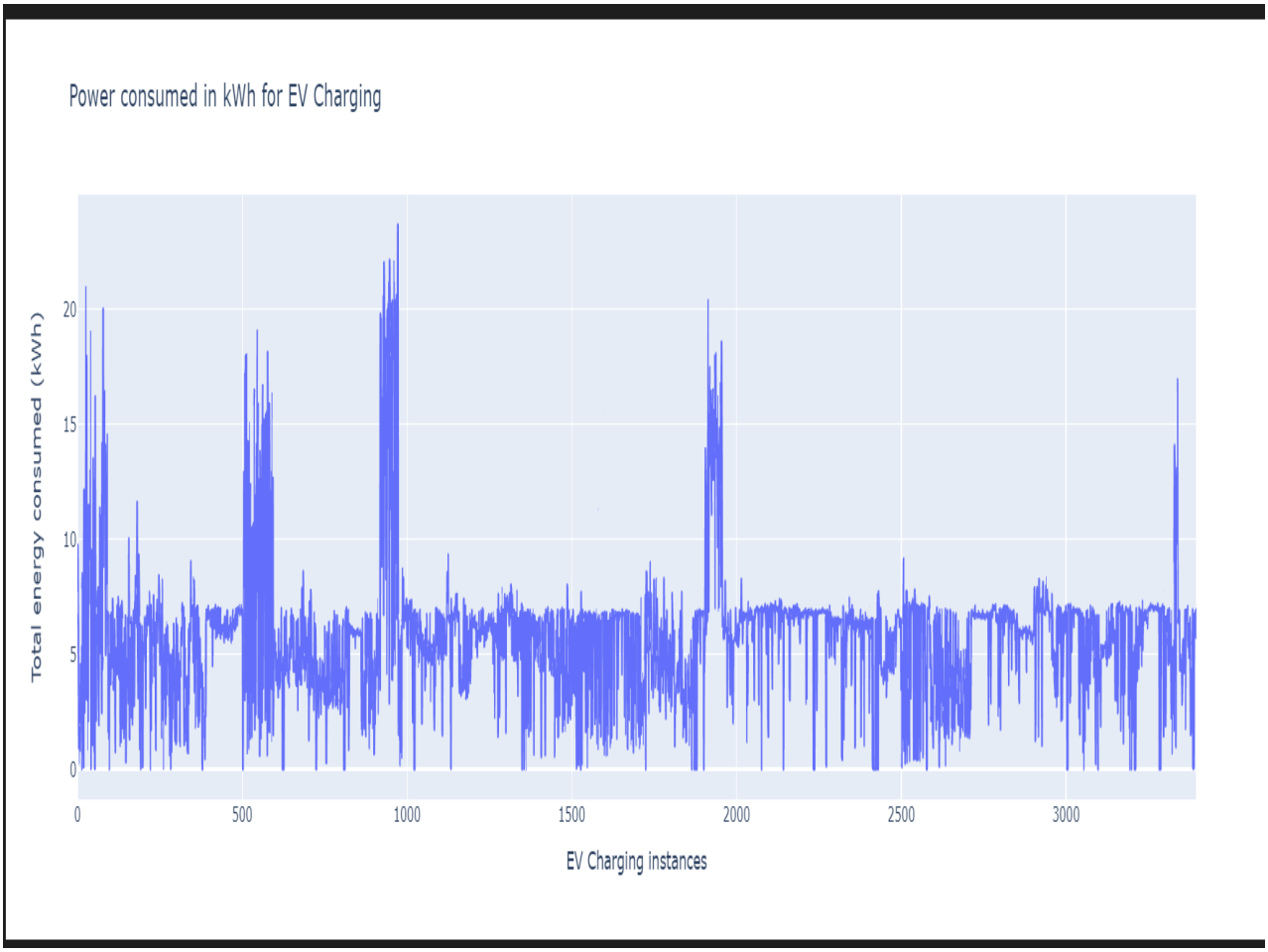
The graph depicts the total power consumed for around 3400 charging instances. The mean power (kWh) is around 5 kWh. We do see spikes going above 10 in clusters. Chances are they are the higher rated Teslas with supercharger/fastcharger capacity (as it draws more power).



	sessionId	kwhTotal	dollars	created	ended	startTime	endTime	chargeTimeHrs	weekday	platform	...	managerVehicle	facilityType	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	reported
0	1366563	7.78	0.00	0014-11-18 15:40:26	0014-11-18 17:11:04	15	17	1.510556	Tue	android	...	0	3	0	1	0	0	0	0	0	
1	3075723	9.74	0.00	0014-11-19 17:40:26	0014-11-19 19:51:04	17	19	2.177222	Wed	android	...	0	3	0	0	1	0	0	0	0	
2	4228788	6.76	0.58	0014-11-21 12:05:46	0014-11-21 16:46:04	12	16	4.671667	Fri	android	...	0	3	0	0	0	0	1	0	0	
3	3173284	6.17	0.00	0014-12-03 19:16:12	0014-12-03 21:02:18	19	21	1.768333	Wed	android	...	0	3	0	0	1	0	0	0	0	
4	3266500	0.93	0.00	0014-12-11 20:56:11	0014-12-11 21:14:06	20	21	0.298611	Thu	android	...	0	3	0	0	0	1	0	0	0	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3390	7021565	6.74	0.00	0015-10-01 16:31:18	0015-10-01 19:59:08	16	19	3.463889	Thu	ios	...	0	2	0	0	0	1	0	0	0	
3391	3758092	6.86	0.00	0015-10-02 16:28:48	0015-10-02 19:27:05	16	19	2.971389	Fri	ios	...	0	2	0	0	0	0	1	0	0	
3392	5858374	6.07	0.00	0015-09-30 16:54:22	0015-09-30 20:24:06	16	20	3.495556	Wed	android	...	0	3	0	0	1	0	0	0	0	
3393	2586645	5.74	0.00	0015-09-24 11:43:02	0015-09-24 13:55:12	11	13	2.202778	Thu	ios	...	1	2	0	0	0	1	0	0	0	
3394	7860608	6.95	0.00	0015-10-01 16:43:05	0015-10-01 19:42:06	16	19	2.983611	Thu	ios	...	0	3	0	0	0	1	0	0	0	

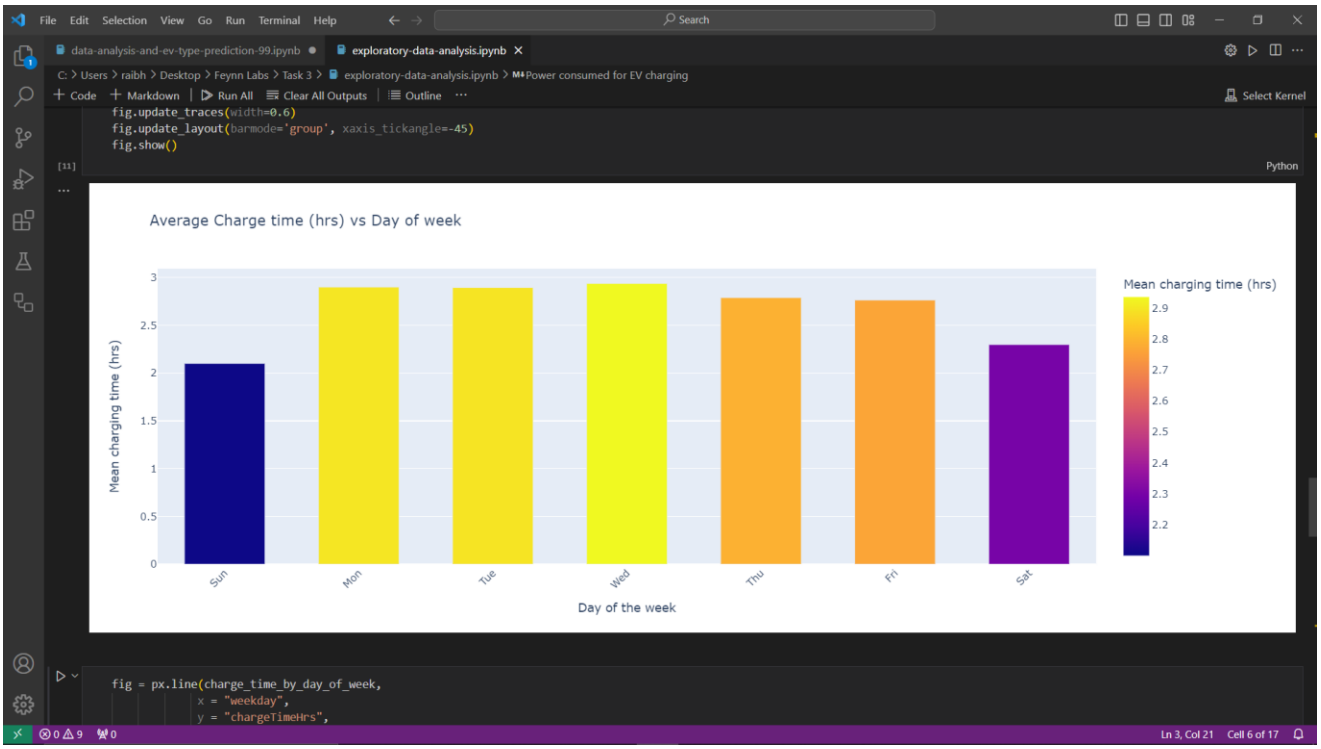
3395 rows x 24 columns

The graph depicts the total power consumed for around 3400 charging instances. The mean power (kWh) is around 5 kWh. We do see spikes going above 10 in clusters. Chances are they are the higher rated Teslas with supercharger/fastcharger capacity (as it draws more power).



Average Charging Time per day

As we can see in the below graph(s), the mean charging time peaks at Wednesday and is relatively low on Sunday.



PieChart:

A pie chart is a circular chart that shows how data sets relate to one another. Using matplotlib.pyplot piechart visualization is done with the following code.

```
import plotly.graph_objects as g labels=['R&D','Office','Manufacturing','Others']
values = [1832, 862, 593, 108]
fig = go.Figure(data=[go.Pie(labels=labels, values=values)])
fig.show()
```

CONCLUSION

Data visualization is a powerful tool for promoting the adoption of electric vehicles by providing information, enhancing user experience, and supporting informed decision-making by consumers, policymakers, and industry stakeholders. As the electric vehicle ecosystem continues to evolve, so too will the need for innovative and informative data visualization solutions.