VISUALIZATION TOOL FOR ELECTRIC VEHICLE CHARGE AND RANGE ANALYSIS

1.INTRODUCTION

1.1 Overview

A vehicle that can be powered by an electric motor that draws electricity from a battery and is capable of being charged from an external source and have an electric motor instead of an internal combustion engine.

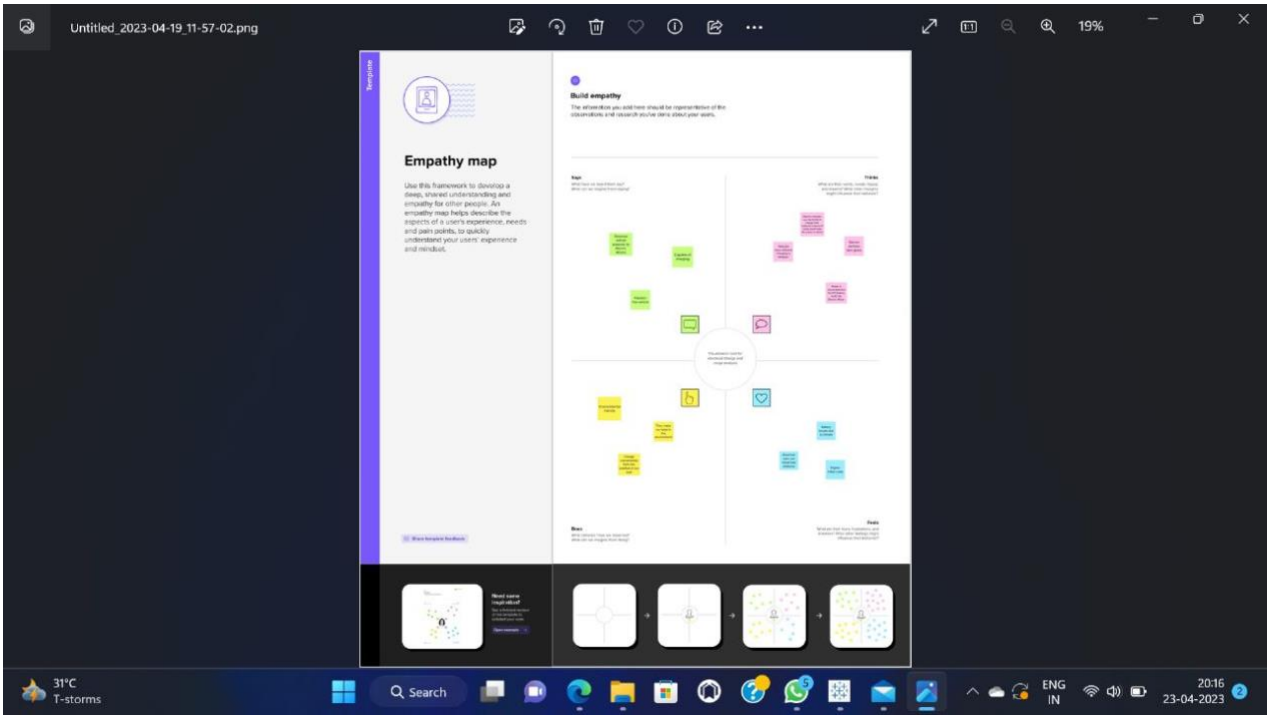
The Electric Vehicle is not new, but it has been receiving significantly more attention in recent years. Advances in both EV analytics and battery technologies have led to increased automotive market share. However, this growth is not attributed to hardware alone. The modern mechatronic vehicle marries electrical storage and propulsion systems with electronic sensors, controls, and actuators, integrated closely with software, secure data transfer, and data analysis, to form a comprehensive transportation solution. Advances in all these areas have contributed to the overall rise of EV's, but the common thread that runs through all these elements is data analytics.

The new EV's are combined Electrical storage and propulsion systems with electronic sensors, controls, and actuators, integrated closely with software, secure data transfer to form a comprehensive transportation solution.

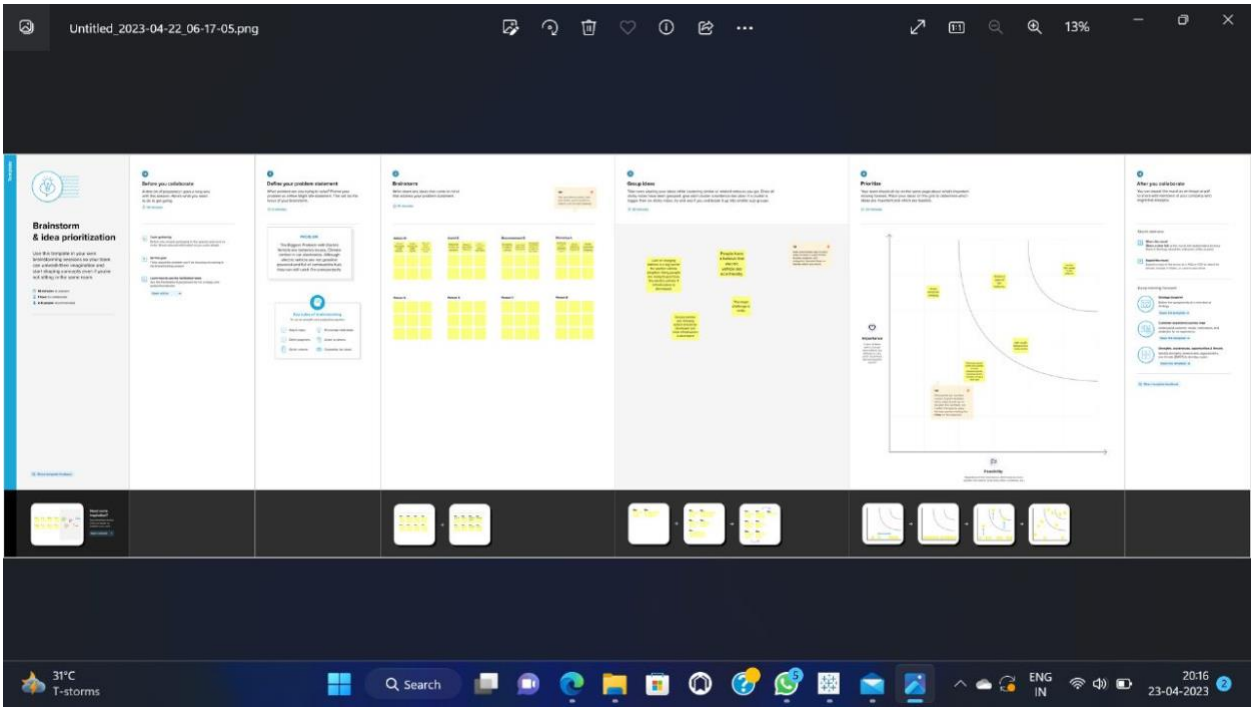
1.2 Purpose

For example: reliability, affordability, driving range, range prediction, charging station availability, overall trip time and especially convenience of long-range travel and comfort under all ambient conditions and traffic situations.

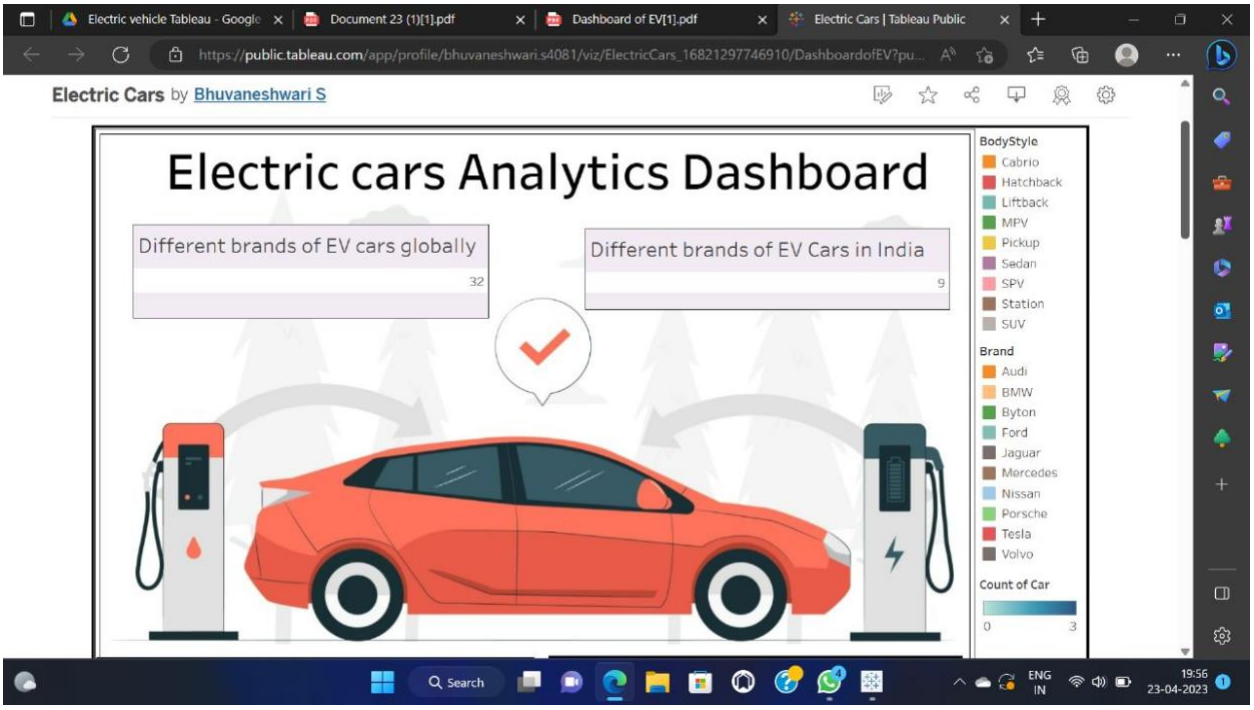
2.1 Empathy map



2.2 Ideation and Brainstorming



3. Result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Electric Cars by Bhuvaneshwari S
Electric cars Analytics Dashboard
Different brands of EV cars globally
32
Different brands of EV Cars in India
9
BodyStyle
Cabrio
Hatchback
Liftback
MPV
Pickup
Sedan
SPV
Station
SUV
Brand
Audi
BMW
Byton
Ford
Jaguar
Mercedes
Nissan
Porsche
Tesla
Volvo
Count of Car
0
3
Search
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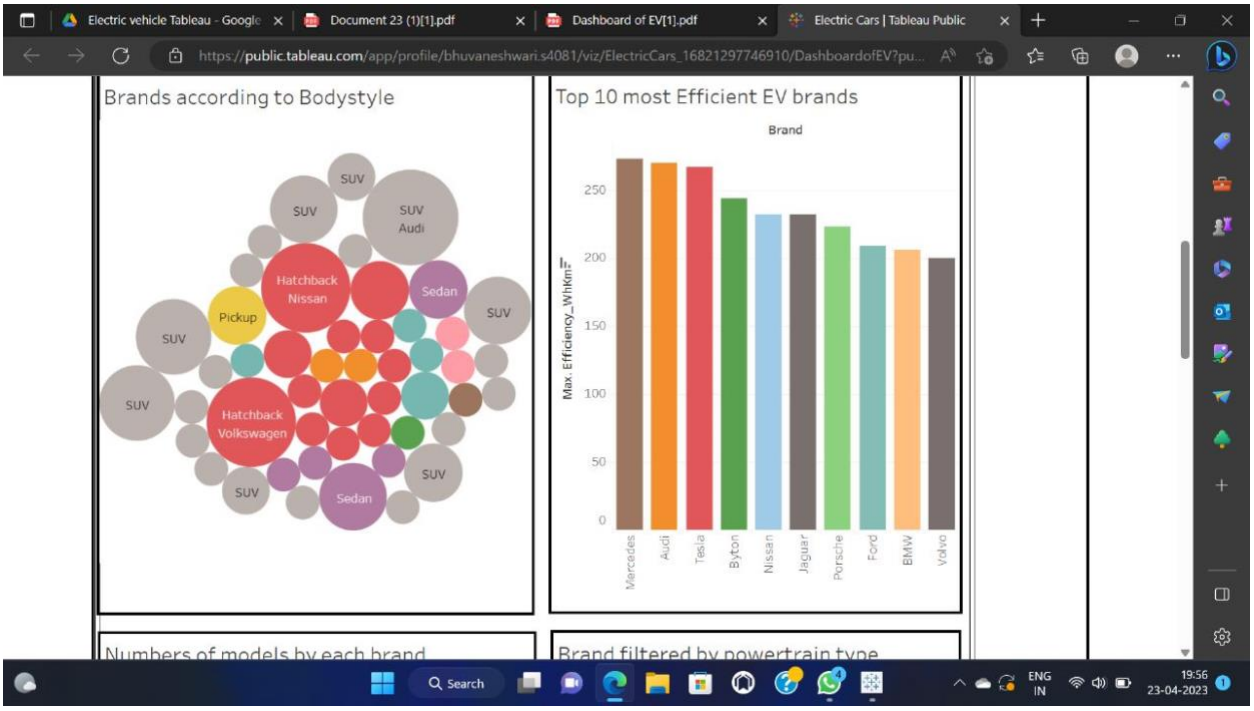
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Brands according to Bodystyle
SUV
SUV
SUV Audi
Hatchback Nissan
Sedan
SUV
Pickup
SUV
SUV
Hatchback Volkswagen
SUV
SUV
Sedan
Top 10 most Efficient EV brands
Brand
Max. Efficiency_WhKm
250
200
150
100
50
0
Mercedes
Audi
Tesla
Byton
Nissan
Jaguar
Porsche
Ford
BMW
Volvo
Numbers of models by each brand
Brand filtered by powertrain type
Search
ENG
IN
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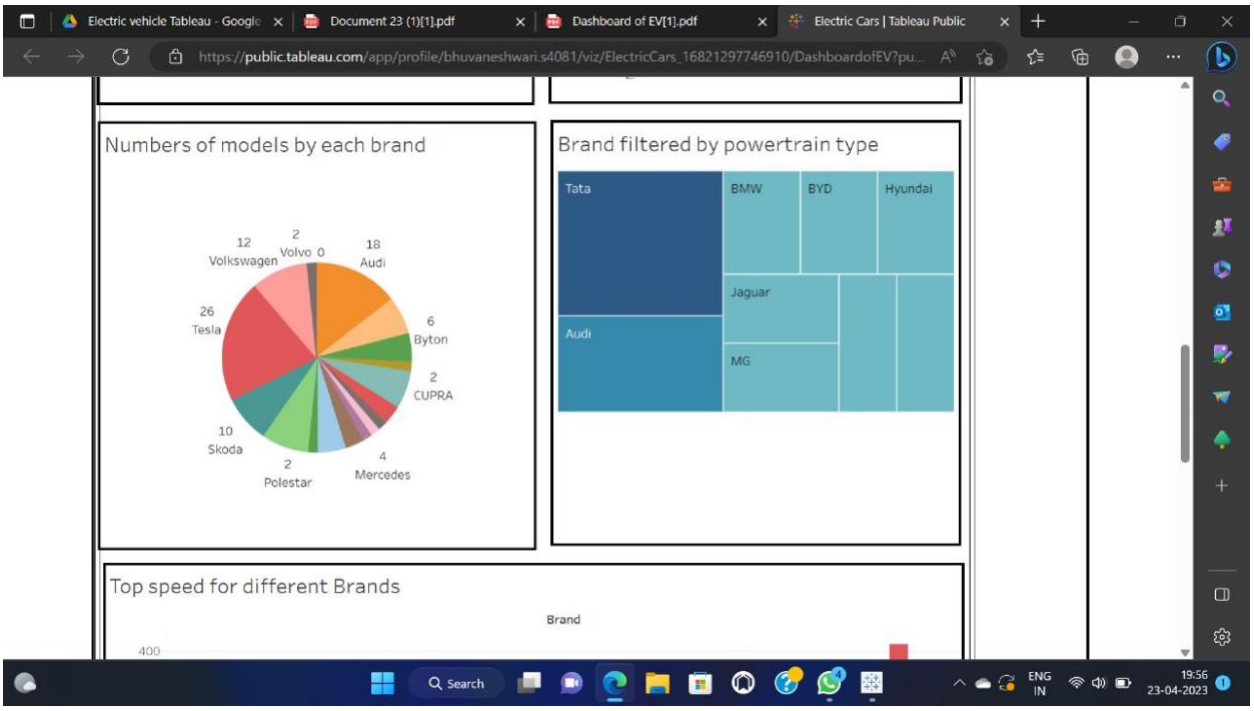
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Numbers of models by each brand
18 Audi
6 Byton
2 CUPRA
4 Mercedes
2 Polestar
10 Skoda
26 Tesla
12 Volkswagen
2 Volvo
0
Brand filtered by powertrain type
Tata
BMW
BYD
Hyundai
Jaguar
Audi
MG
Top speed for different Brands
Brand
400
Search
ENG
IN
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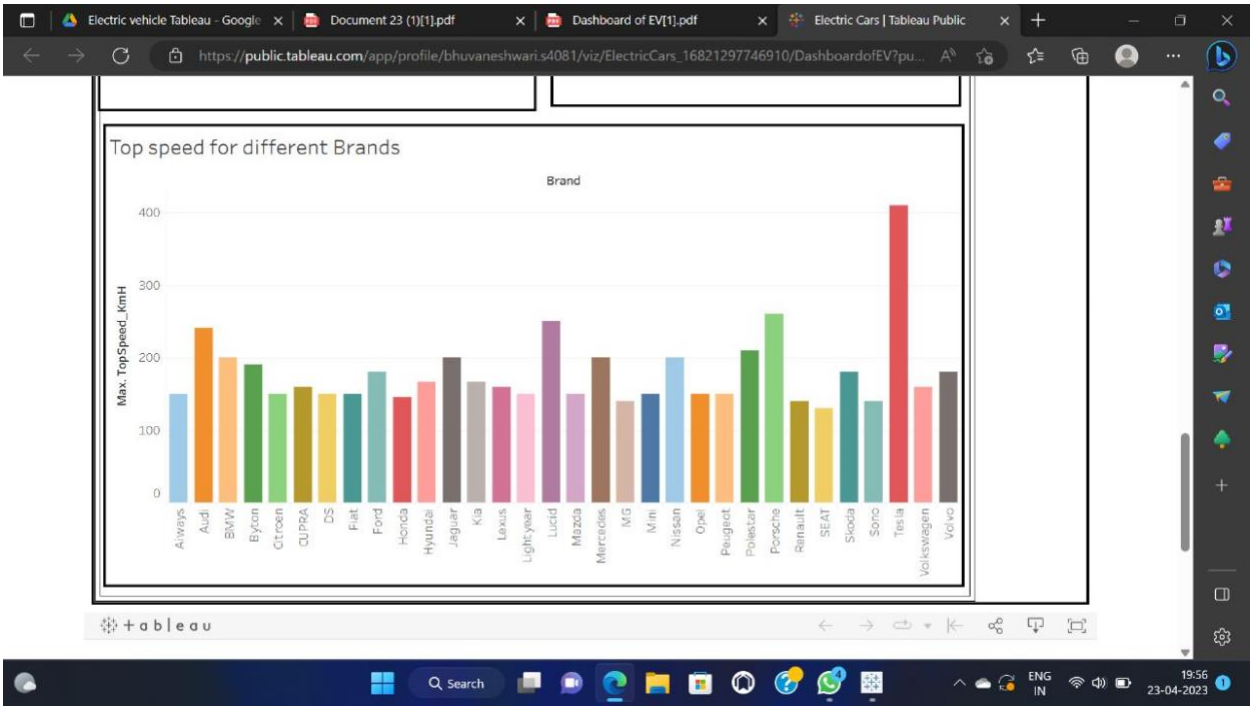
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Top speed for different Brands
Brand
Max. TopSpeed_KmH
400
300
200
100
0
Aiways
Audi
BMW
Byton
Citroen
CUPRA
DS
Fiat
Ford
Honda
Hyundai
Jaguar
Kia
Lexus
Lightyear
Lucid
Mazda
Mercedes
MG
Mini
Nissan
Opel
Peugeot
Polestar
Porsche
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Sono
Tesla
Volkswagen
Volvo
+ableau
Search
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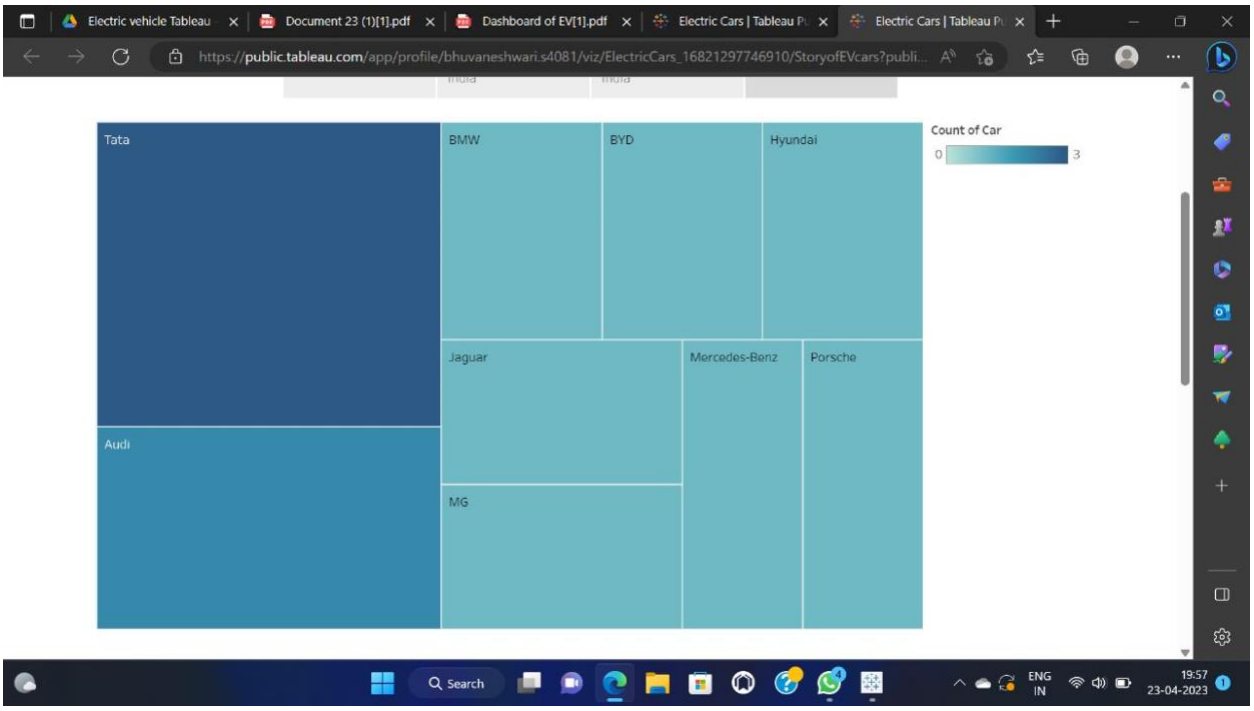
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Tata
BMW
BYD
Hyundai
Jaguar
Mercedes-Benz
Porsche
Audi
MG
Count of Car
0
3
Search
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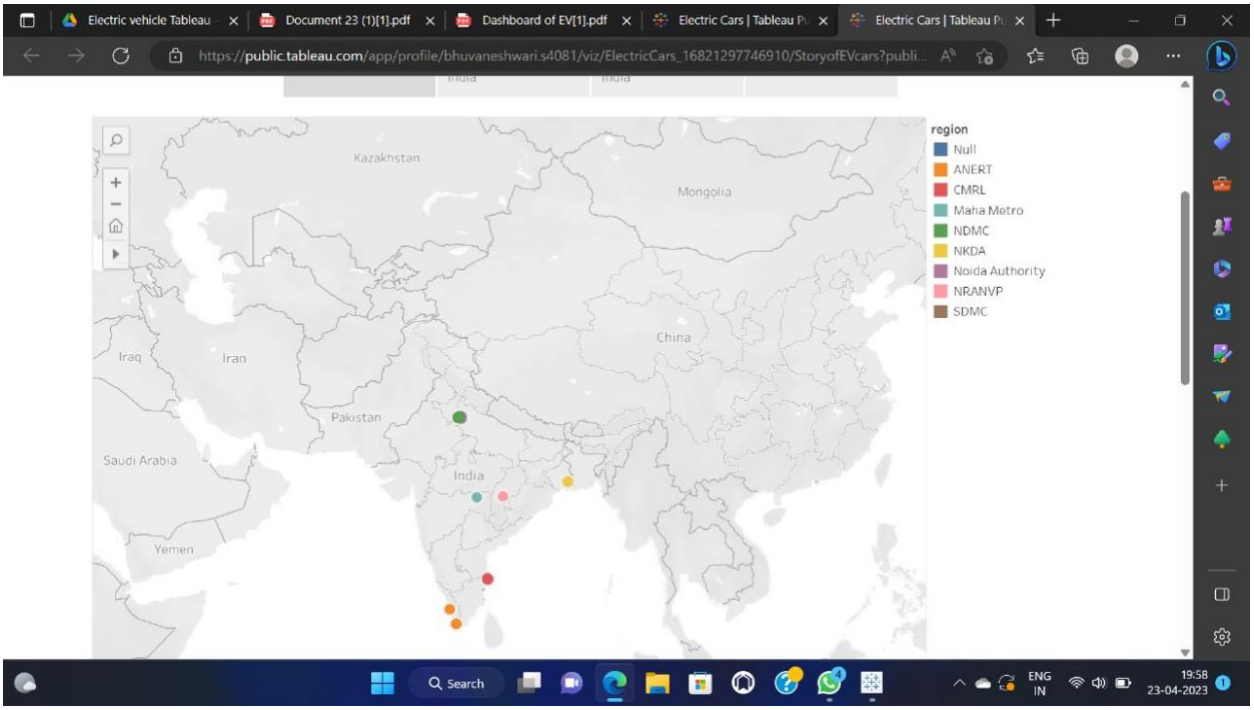
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Kazakhstan
Mongolia
China
Iraq
Iran
Pakistan
Saudi Arabia
India
Yemen
region
Null
ANERT
CMRL
Maha Metro
NDMC
NKDA
Noida Authority
NRANVP
SDMC
Search
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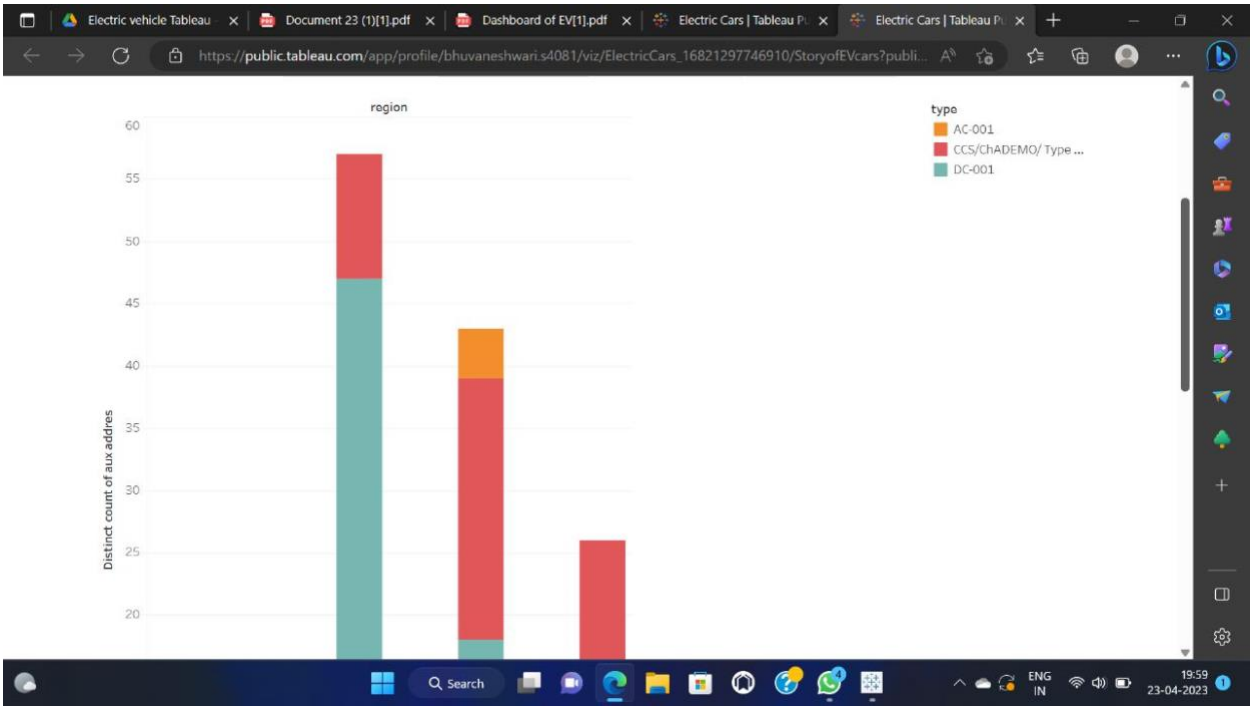
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region
type
AC-001
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Distinct count of aux addres
60
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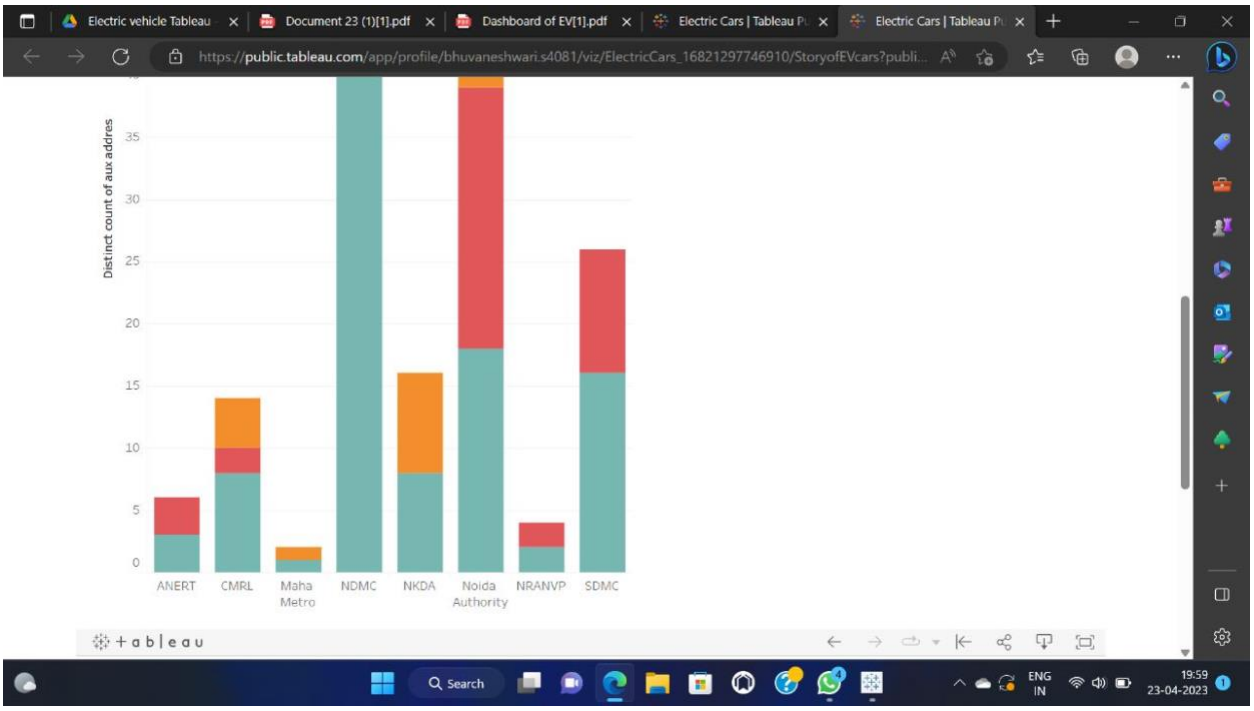
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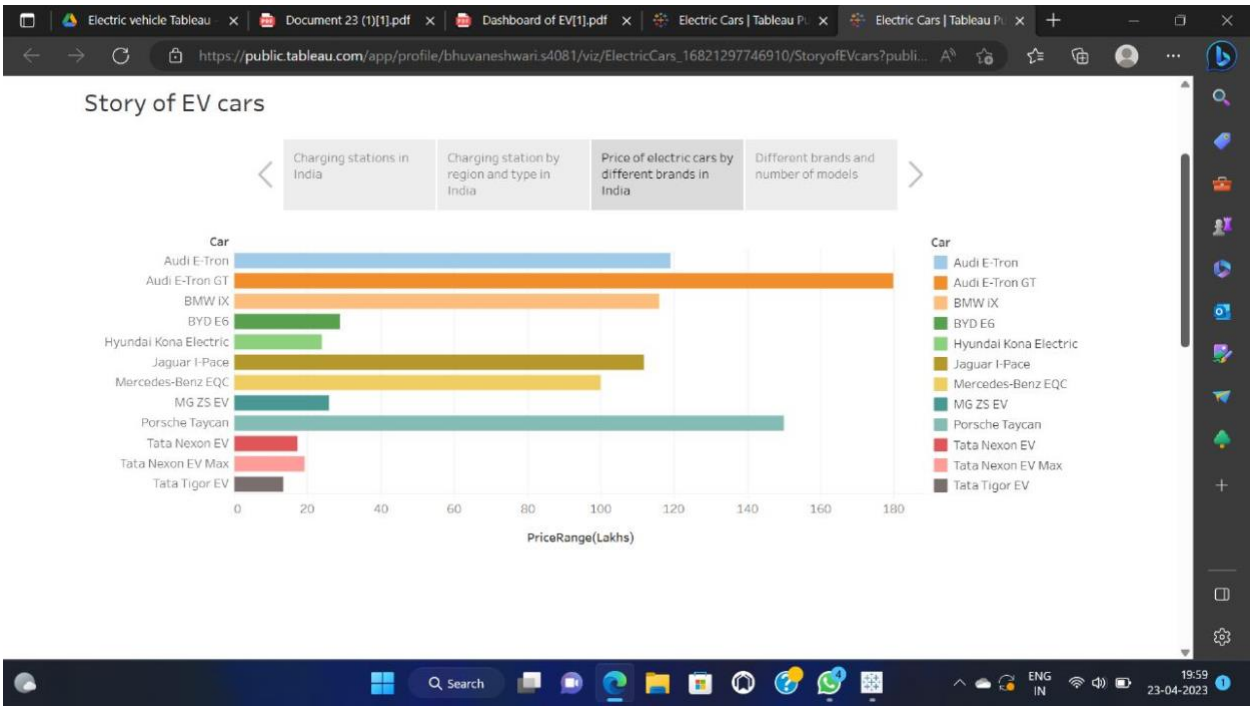
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Story of EV cars
Charging stations in India
Charging station by region and type in India
Price of electric cars by different brands in India
Different brands and number of models
Car
Audi E-Tron
Audi E-Tron GT
BMW iX
BYD E6
Hyundai Kona Electric
Jaguar I-Pace
Mercedes-Benz EQC
MG ZS EV
Porsche Taycan
Tata Nexon EV
Tata Nexon EV Max
Tata Tigor EV
0
20
40
60
80
100
120
140
160
180
PriceRange(Lakhs)
Search
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4.ADVANTAGES AND DISADVANTAGES

Advantages

- Electric vehicles have very low maintenance costs
- They don't have as many moving parts as an internal combustion vehicle.
- The servicing requirements for electric vehicles are lesser than the conventional petrol or diesel vehicles.
- The yearly cost of running an electric vehicle is significantly low.

Disadvantages

- Electric cars can travel less distance. AEVs on average have a shorter range than gas-powered cars.
- Electric cars can take a long time to recharge. Fueling an all-electric car can also be an issue.
- Electric cars can be expensive.

5.Application

Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient, and that combined with the electricity cost means that charging an electric vehicle is cheaper than filling petrol or diesel for your travel requirements.

6.Conclusion

The basic conclusion is that when it comes to climate change and air quality, electric cars are clearly preferable to petrol or diesel cars. Contrary to some public doubts and uncertainties about the environmental benefits of electric cars, the science is increasingly clear.

7.Future Scope of Electric Vehicles

The Government wants India to be a 100%, electric vehicle nation by the year 2030. Under the new plan of the government, every car which will get sold in India from 2030 will be electric. The availability of fossil fuels is limited, and their use is destroying our planet. Toxic emissions from

petrol and diesel vehicles lead to long-term, adverse effects on public health. The emissions impact of electric vehicles is much lower than petrol or diesel vehicles.

India is the world's third-largest EV market. This competitive market which grew by 23% in 2022, is set to transform the Indian automotive sector in 2023. During the union budget for the fiscal year 2023-2024, the finance minister allocated Rs 35,000 crore to achieve net-zero carbon emission by 2070.

The EV charging station market is expected to grow 5 to 7 times in the next 5 years. It was valued at 5 billion dollars in 2020 and optimistic predictions see it reach around 35 billion by 2026, which would make EVs represent 15% of all car sales worldwide within 5 years.

8.Appendix

Story link

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Dashboard link

https://public.tableau.com/views/ElectricCars_16821297746910/DashboardofEV?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

Demonstrations link

https://photos.app.goo.gl/CVkKjnj7xLRCKdde6