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DEPARTMENT OF MATHEMATICS

PROJECT RECORD

ON

**VISUALIZATION TOOL FOR ELECTRIC CHARGE VEHICLE
AND RANGE ANALYSIS**

- DATA ANALYTICS WITH TABLEAU

**TAMILNADU SKILL DEVELOPMENT CORPORATION,
GOVERNMENT OF TAMILNADU,
NAAN MUDHALVAN PROGRAM**

Submitted

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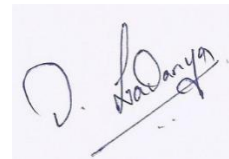
(III B.Sc. MATHEMATICS)

CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT IS TITLED **VISUALIZATION TOOL FOR ELECTRIC CHARGE VEHICLE AND RANGE ANALYSIS – DATA ANALYTICS WITH TABLEAU**. THIS PROJECT IS SUBMITTED BY S.BENAZIR BEE (222006446), V.VEGHA (222006477), S.AKSHAYA (222006445) AND I.VANI (222006476) OF III B.SC MATHEMATICS, Dr.MGR JANAKI COLLEGE OF ARTS AND SCIENCE FOR WOMEN, CHENNAI IN FULFILLMENT OF THE REQUIREMENTS FOR **TAMILNADU SKILL DEVELOPMENT CORPORATION, GOVERNMENT OF TAMILNADU, NAAN MUDHALVAN PROGRAM**. THIS PROJECT WAS AN AUTHENTIC WORK DONE BY HIM UNDER MY SUPERVISION AND GUIDANCE.



PROJECT GUIDE



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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 (EV) 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.

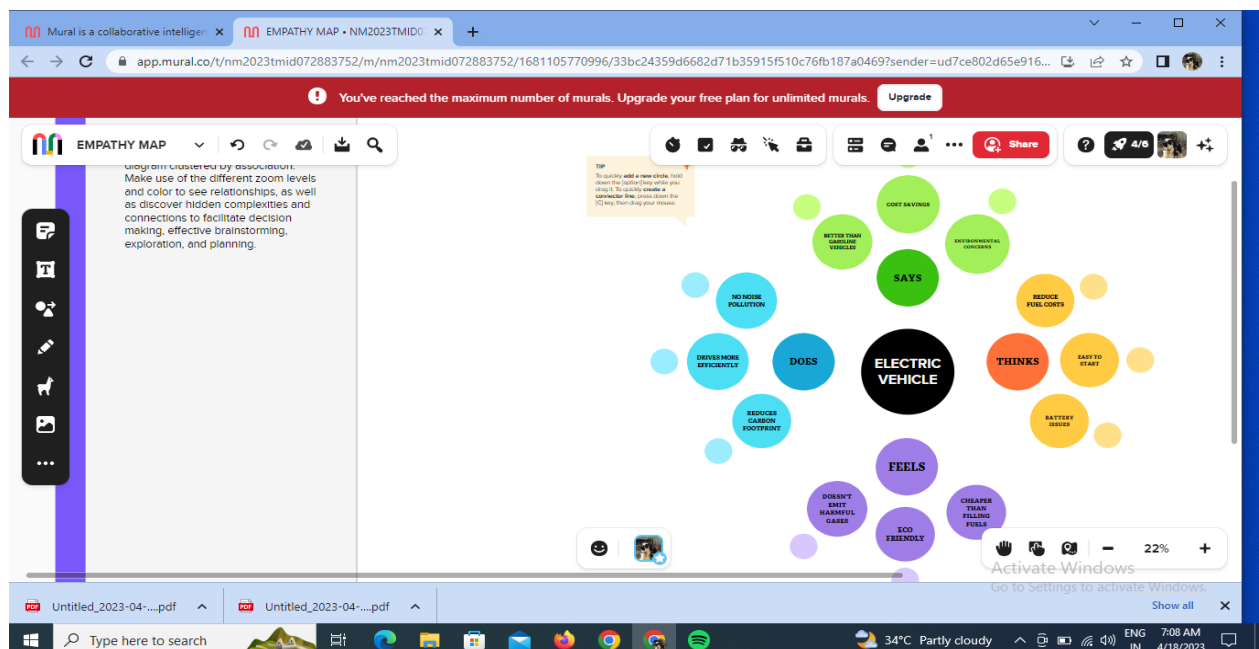
1.2 PURPOSE

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**.

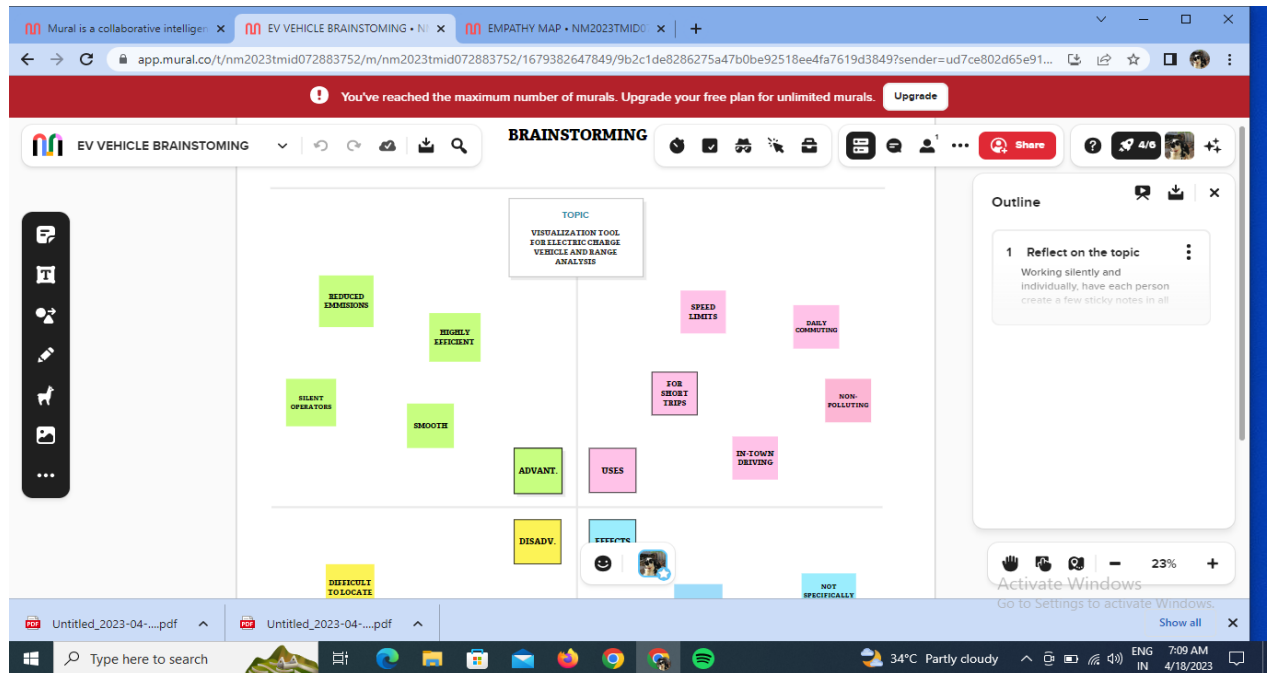
The new EV's are combined Electrical storage and propulsion systems with electronic sensors, controls, and actuators, integrated closely with software, secure data transfer to form a comprehensive transportation solution.

PROBLEM DEFINITION AND DESIGN THINKING

2.1 EMPATHY MAP



2.2 IDEATION AND BRAINSTORMING MAP



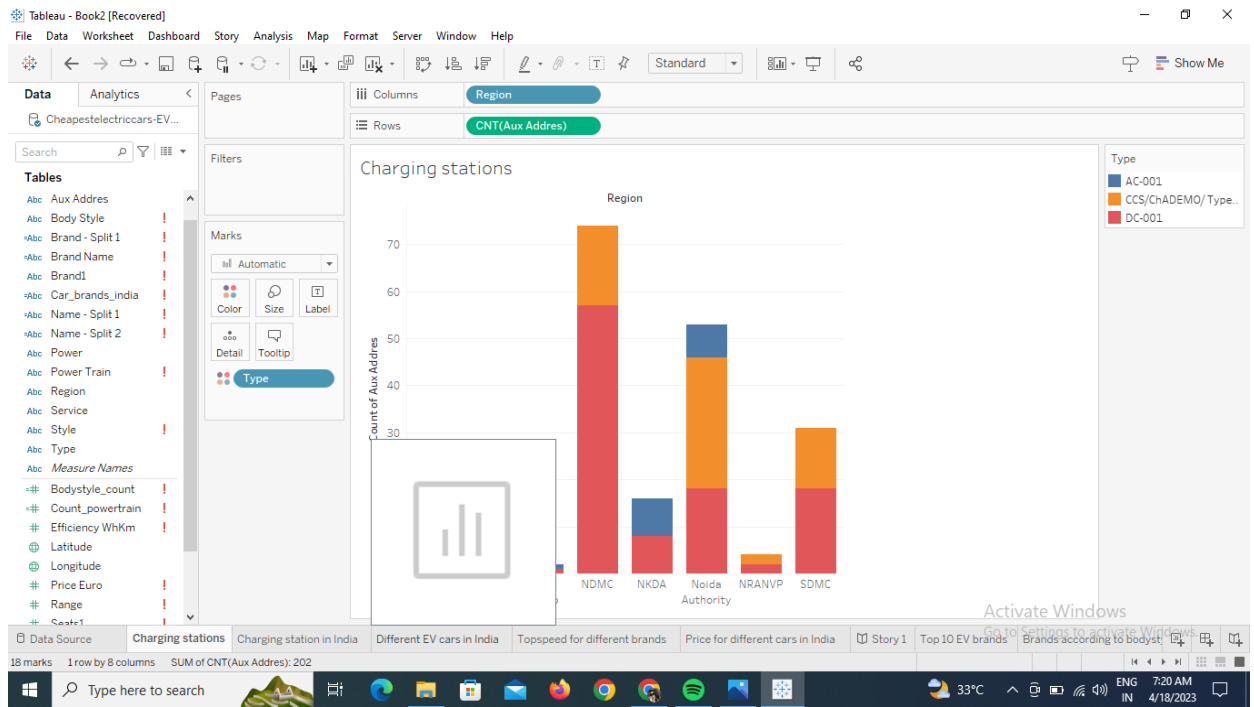
RESULTS

3.1 DATA SOURCE

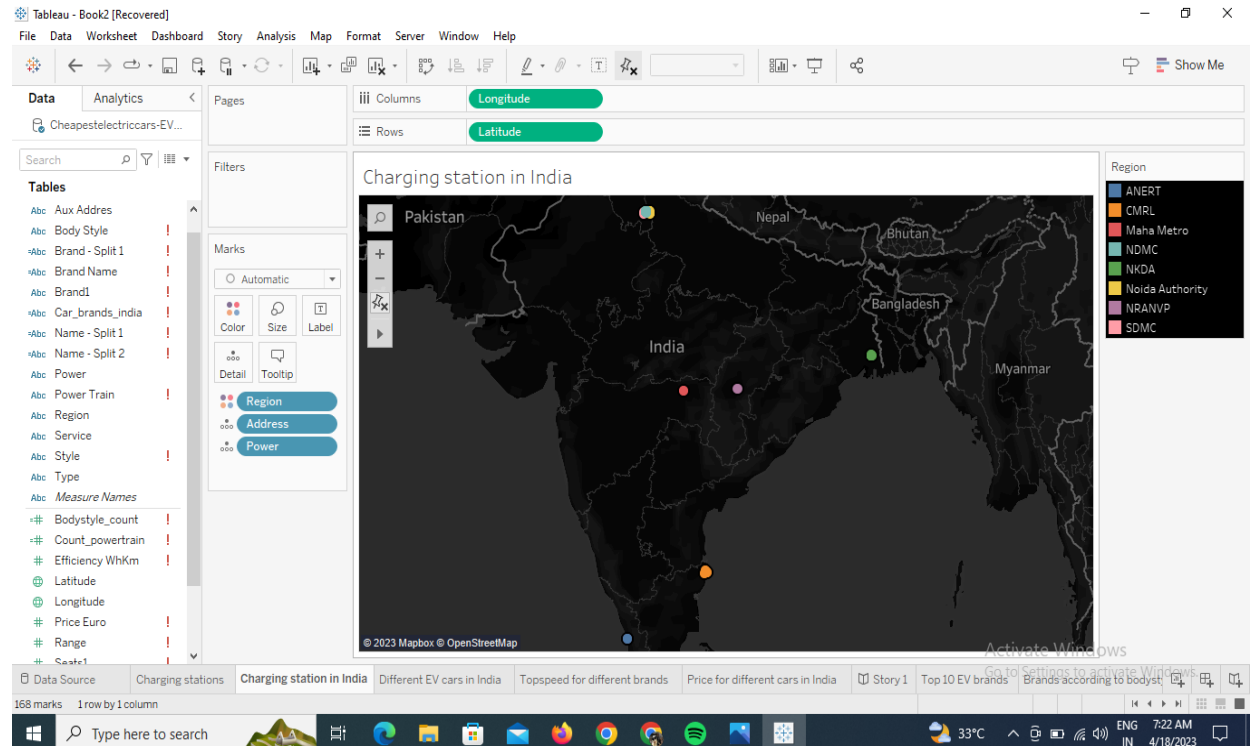
The screenshot shows the Tableau Desktop interface with a data source named "Cheapestelectriccars-EVDatabase". The data source is connected to a file named "ElectricCarData_Clean.csv". The interface displays a list of files, including "Cheapestelec...s-EVDatabase", "electric_vehic...ation_list.csv", "ElectricCarData_Clean.csv", and "EVIndia.csv". The "ElectricCarData_Clean.csv" file is selected, and its details are shown in the "Table Details" pane. The table has 25 fields and 103 rows. The columns are: Brand, Style, Acceleration, Range, Efficiency, and Fast Charge. The data is filtered by "Brands according to bodystyle".

Brand	Style	Acceleration	Range	Efficiency	Fast Charge
Tesla	Model 3 Long Range Dual Mo...	4.6000	233	450	161
Volkswagen	ID.3 Pure	10.0000	160	270	167
Polestar	2	4.7000	210	400	181
BMW	iX3	6.8000	180	360	206
Honda	e	9.5000	145	176	168

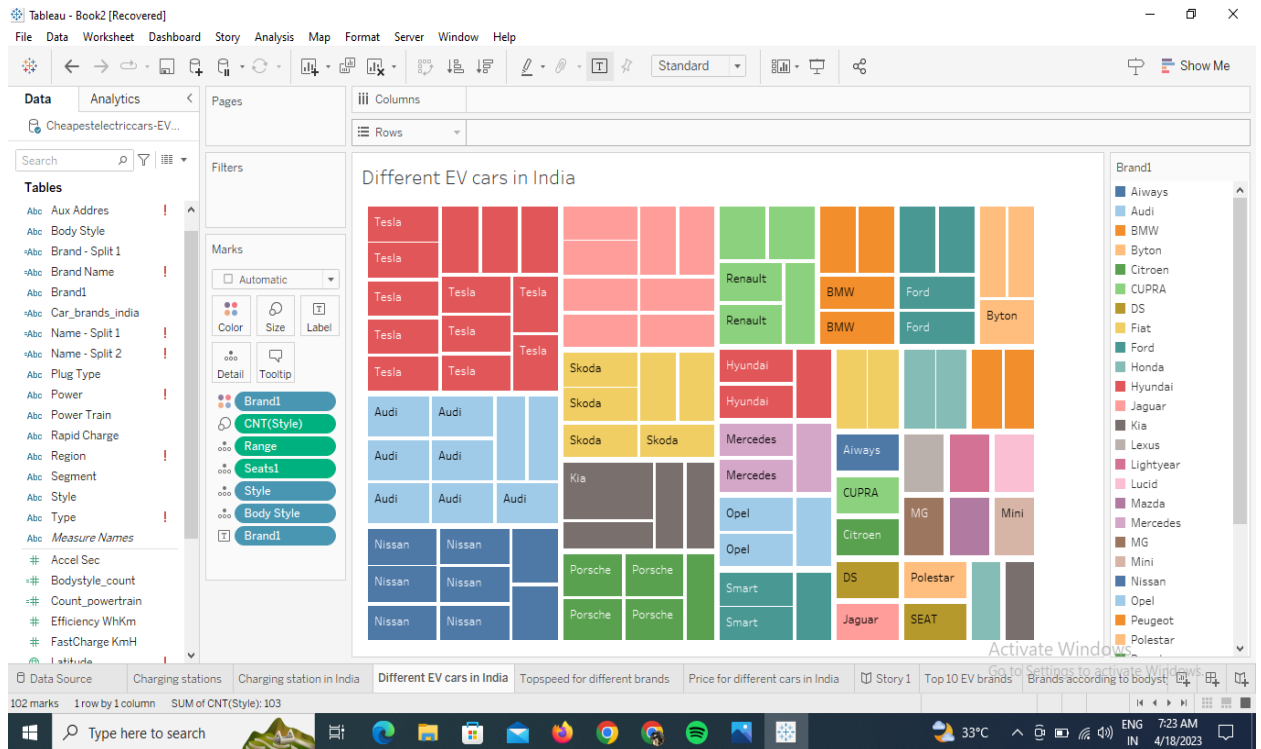
3.2 CHARGING STATIONS



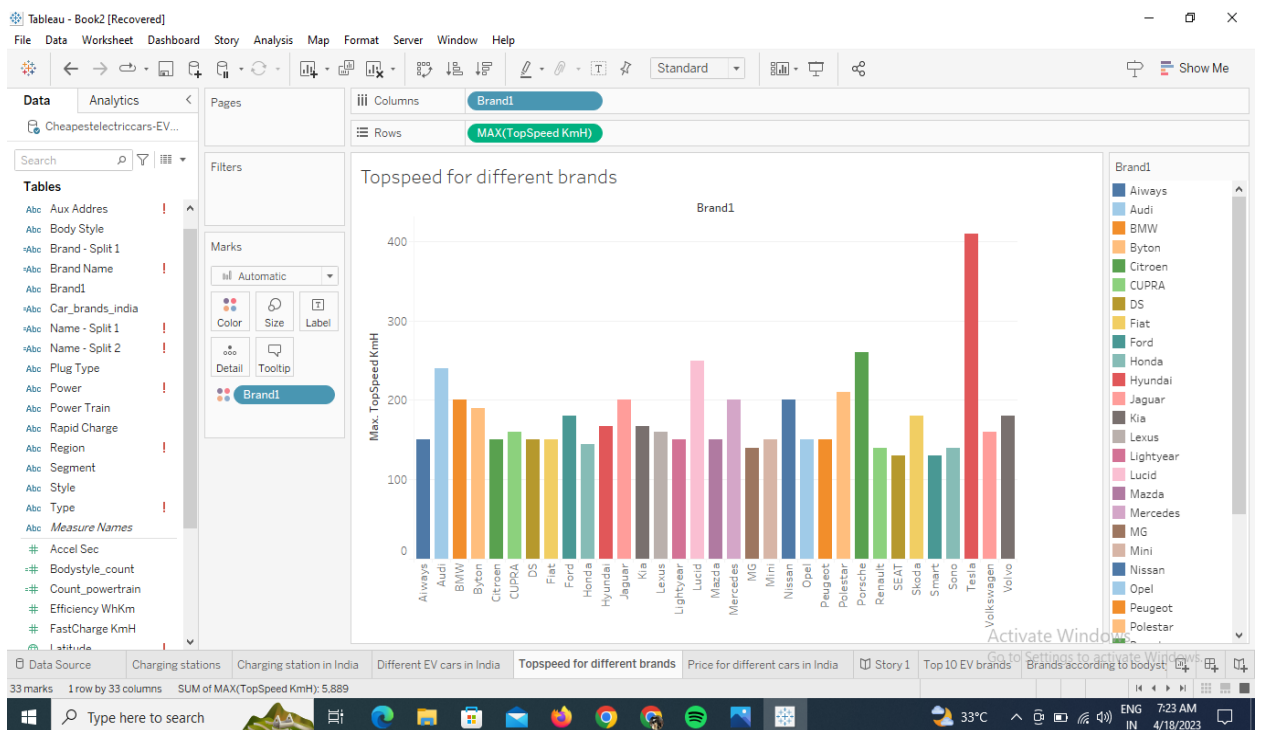
3.3 CHARGING STATIONS IN INDIA



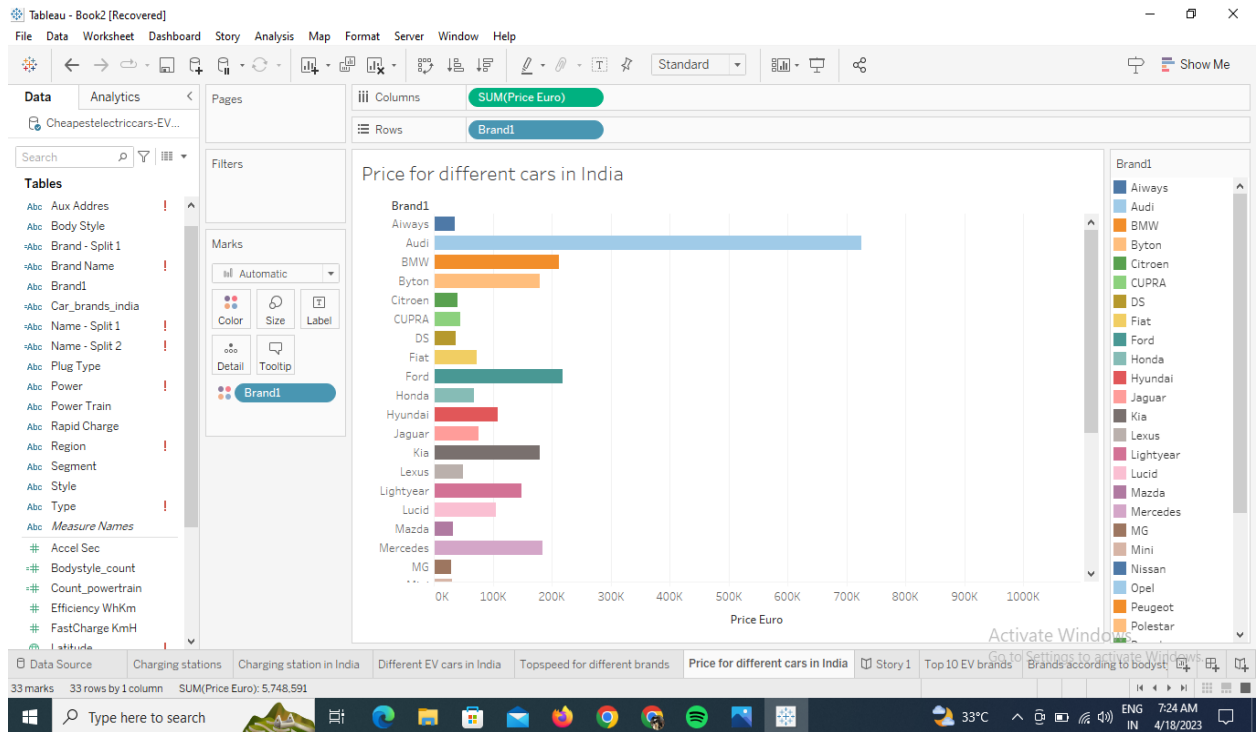
3.4 DIFFERENT EV CARS IN INDIA



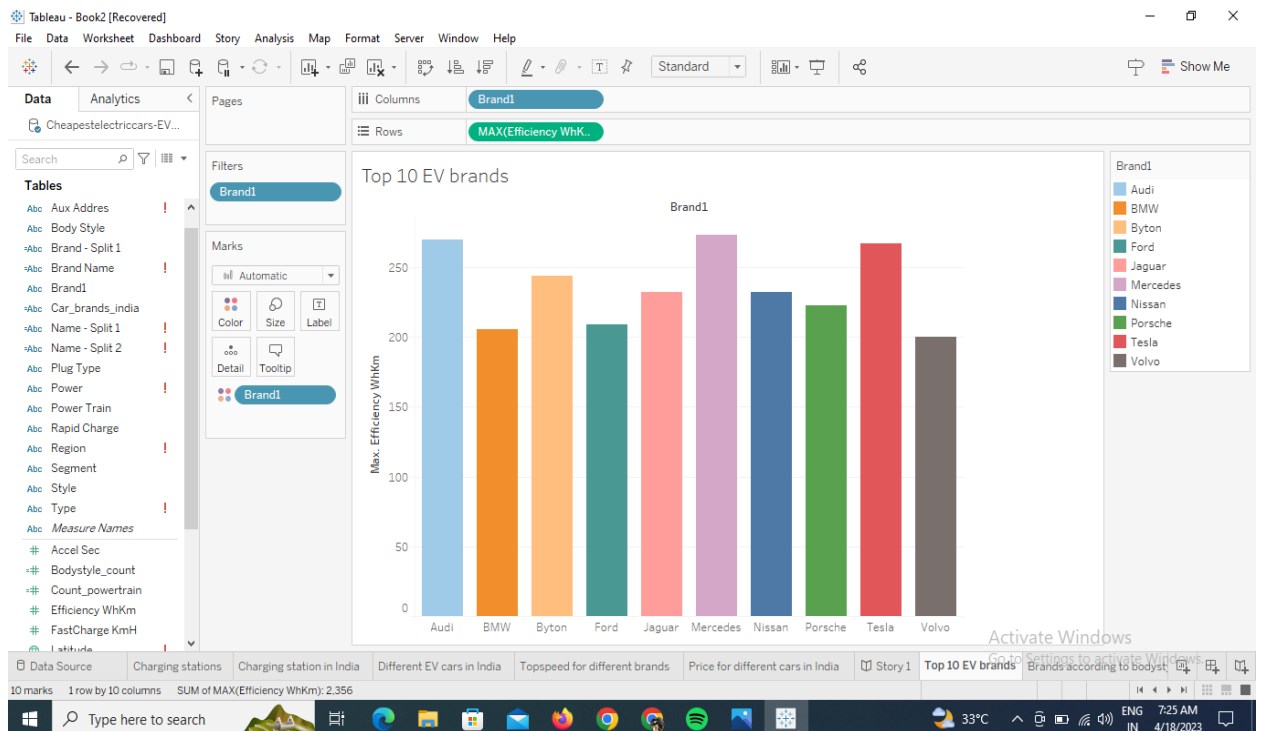
3.5 TOPSPEED FOR DIFFERENT BRANDS



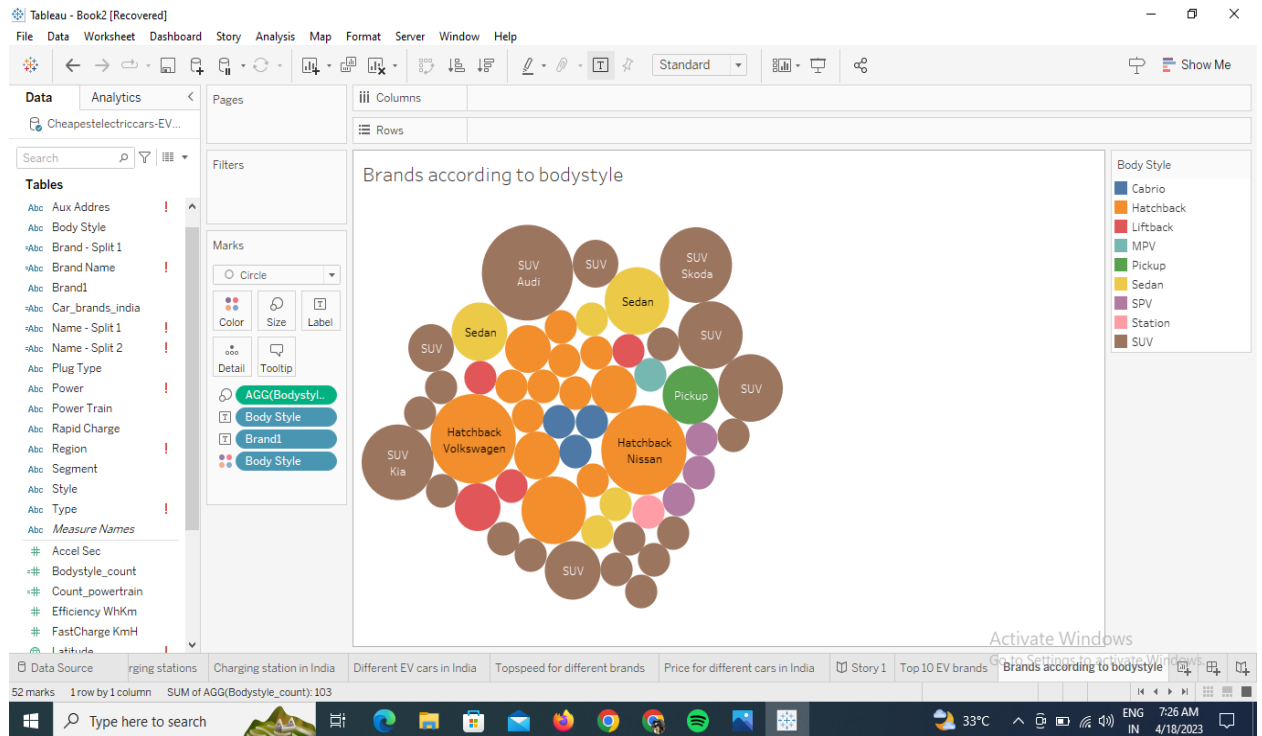
3.6 PRICE FOR DIFFERENT CARS IN INDIA



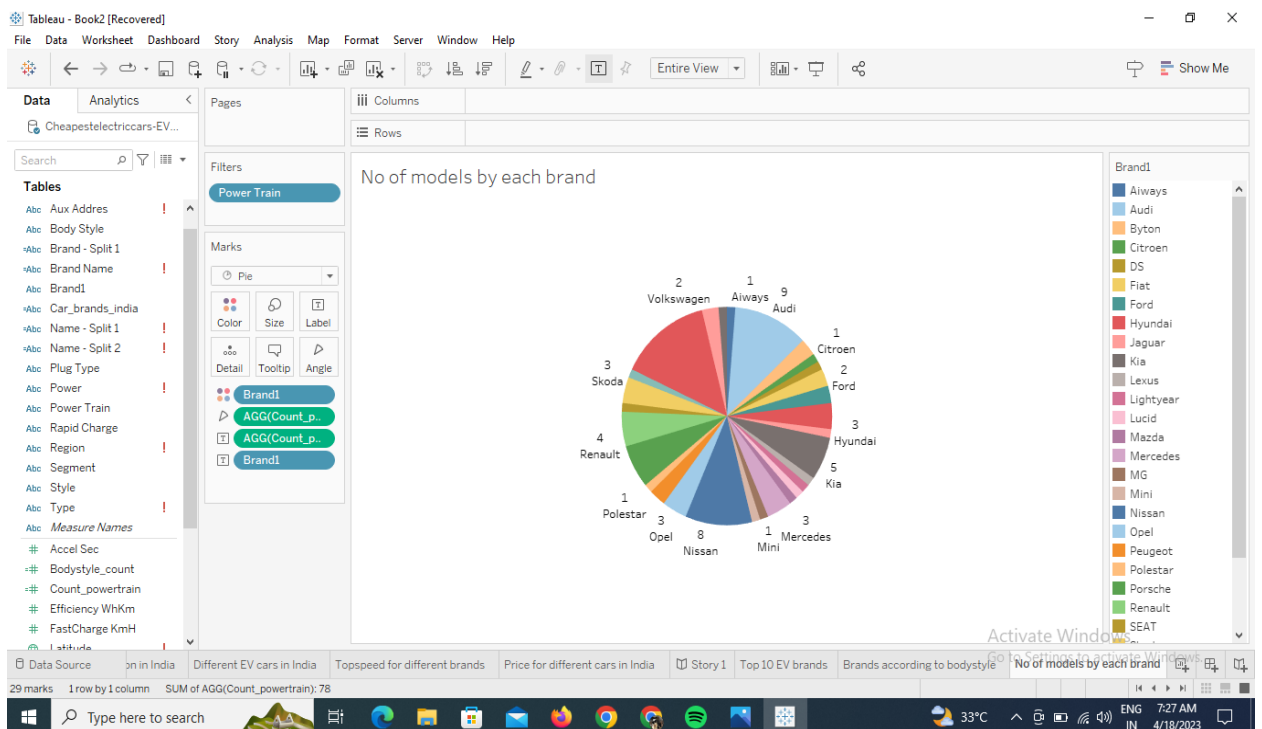
3.7 TOP 10 EV BRANDS



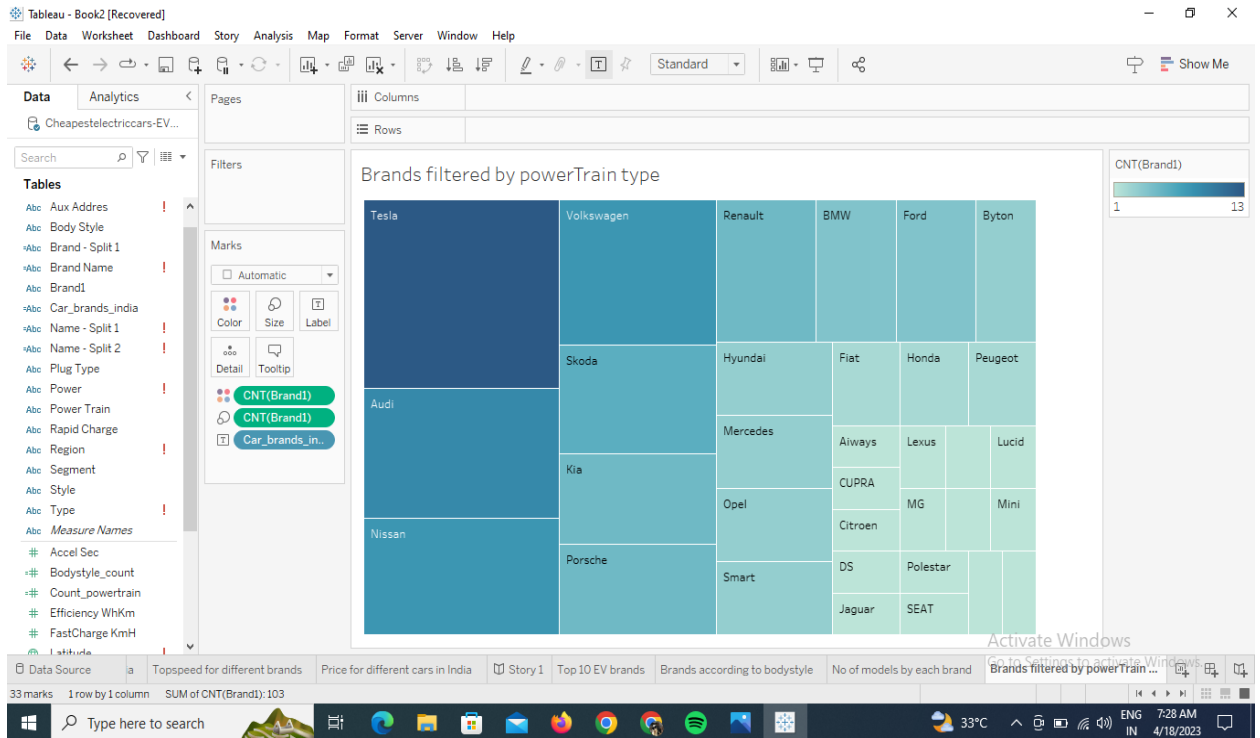
3.8 BRANDS ACCORDING TO BODYSTYLE



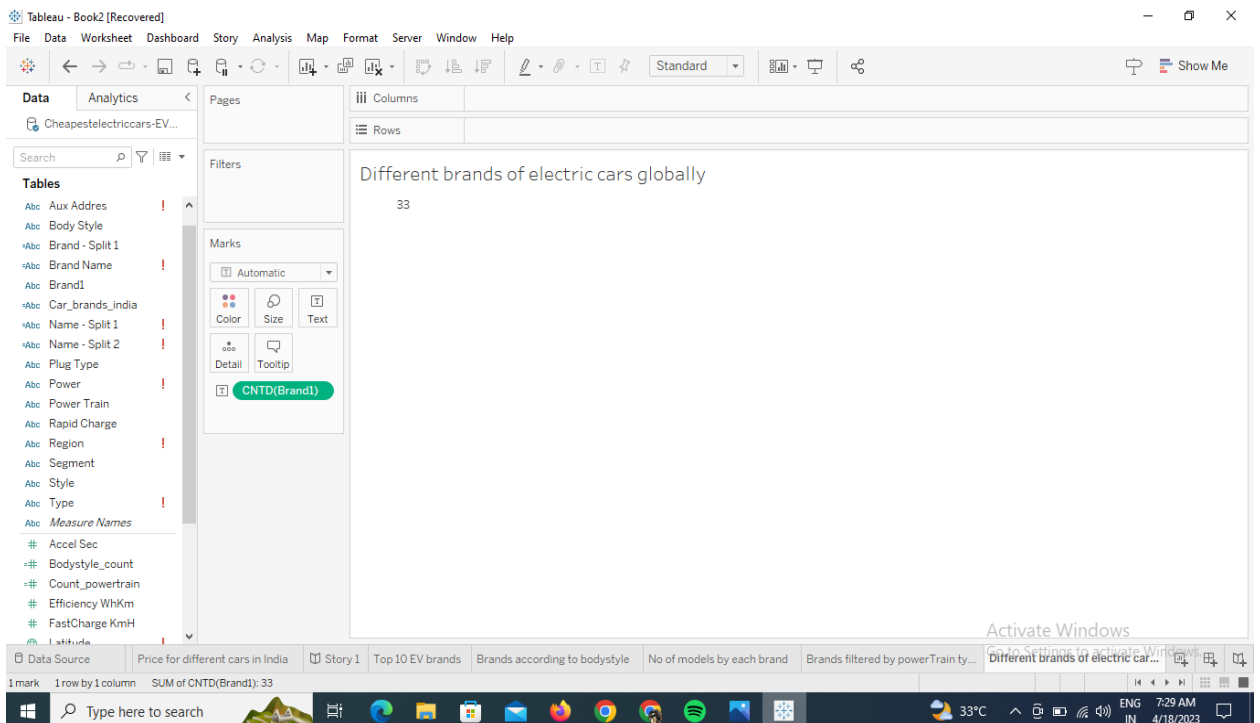
3.9 NO. OF MODELS BY EACH BRANDS



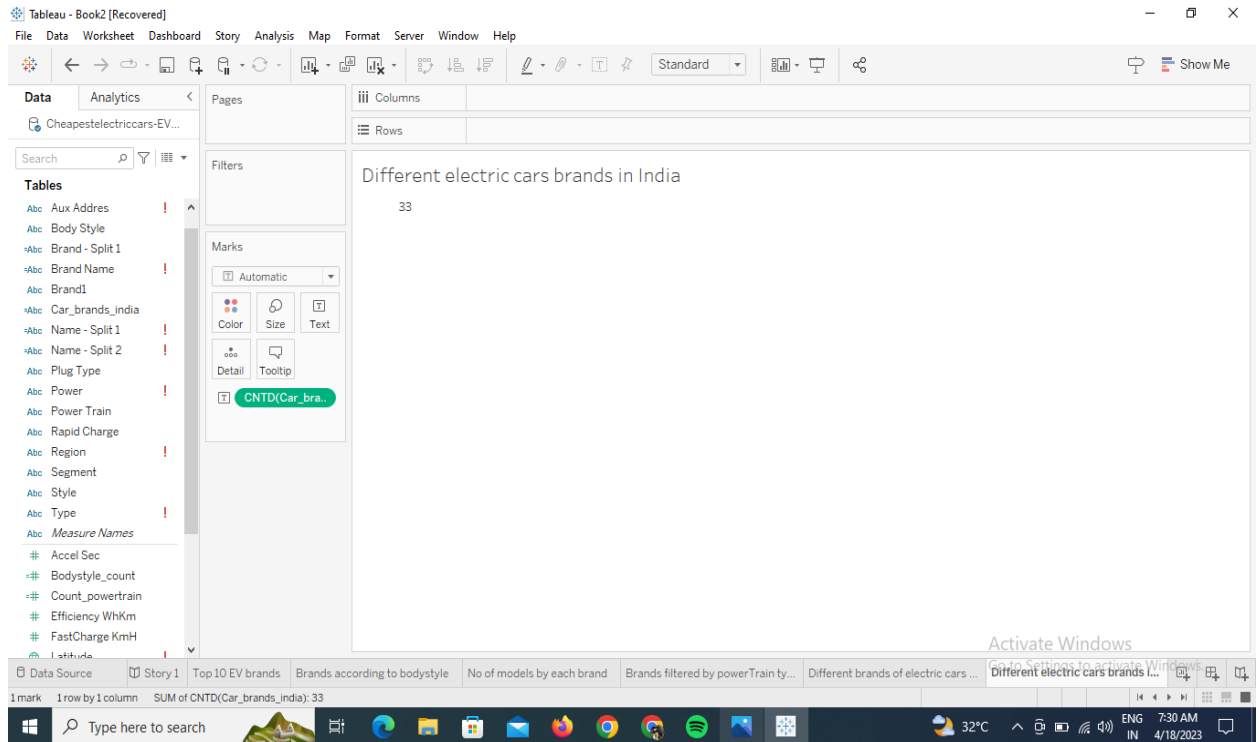
3.10 BRANDS FILTERED BY POWERTRAIN TYPE



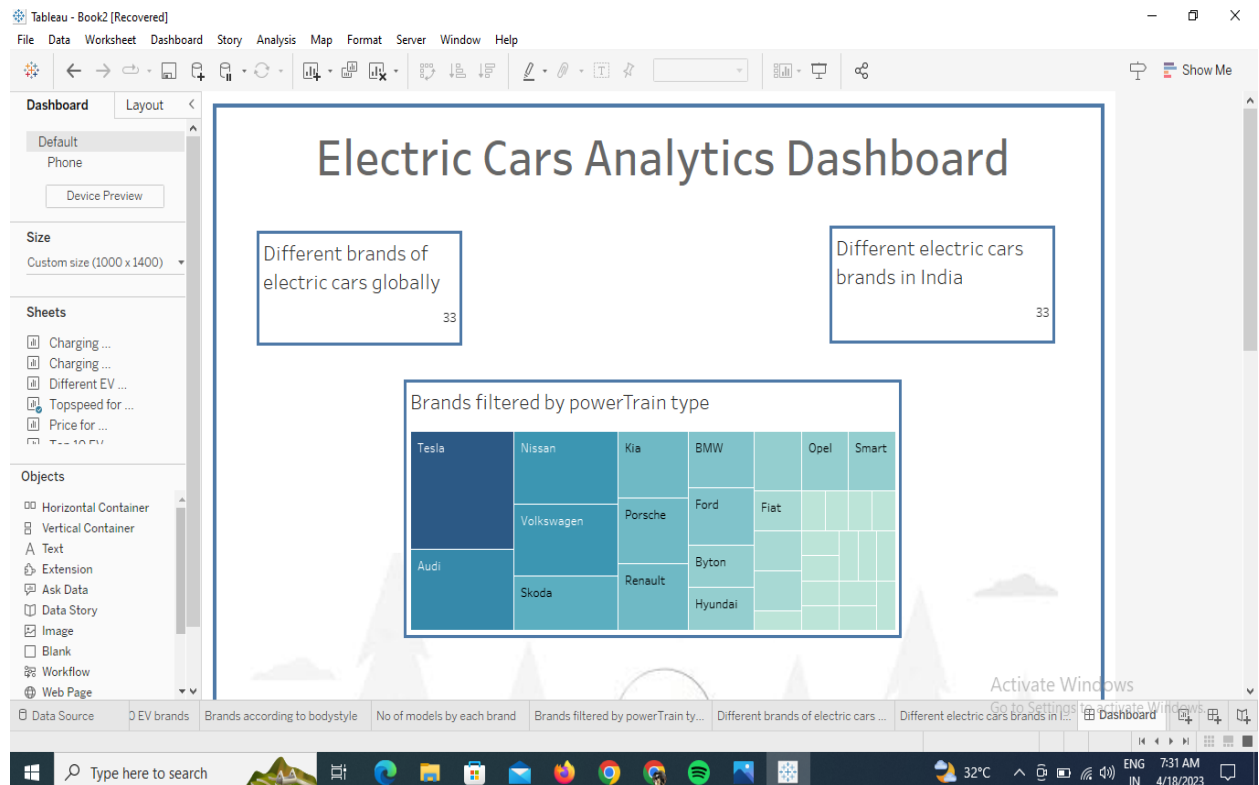
3.11 DIFFERENT BRANDS OF ELECTRIC CARS GLOBALLY



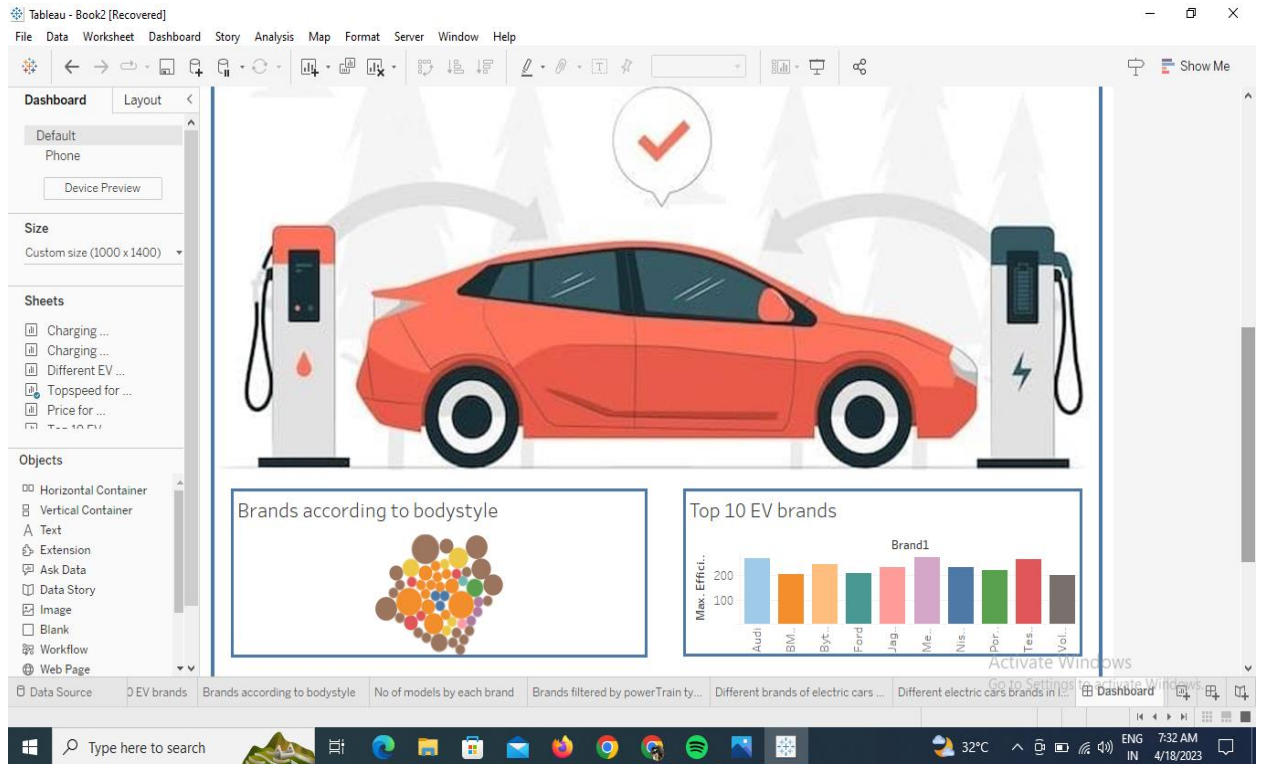
3.12 DIFFERENT ELECTRIC CAR BRANDS IN INDIA



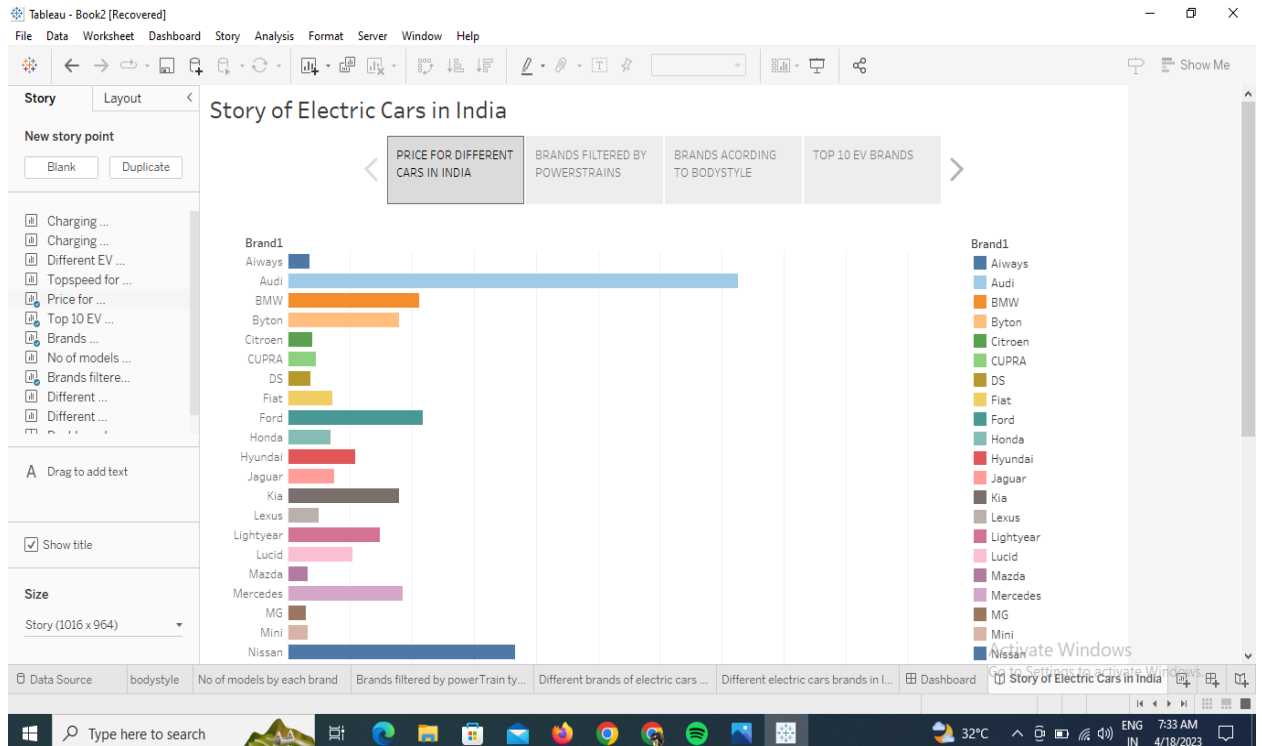
3.13 DASHBOARD 1



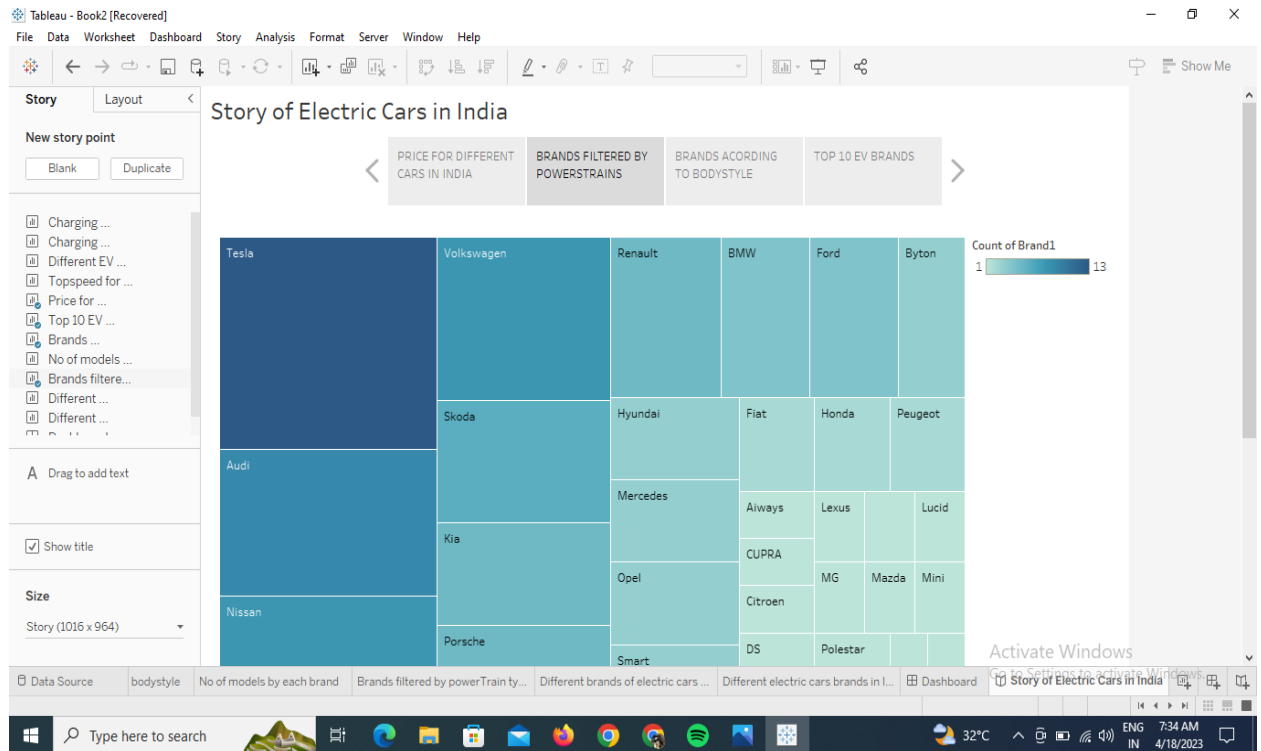
3.14 DASHBOARD 2



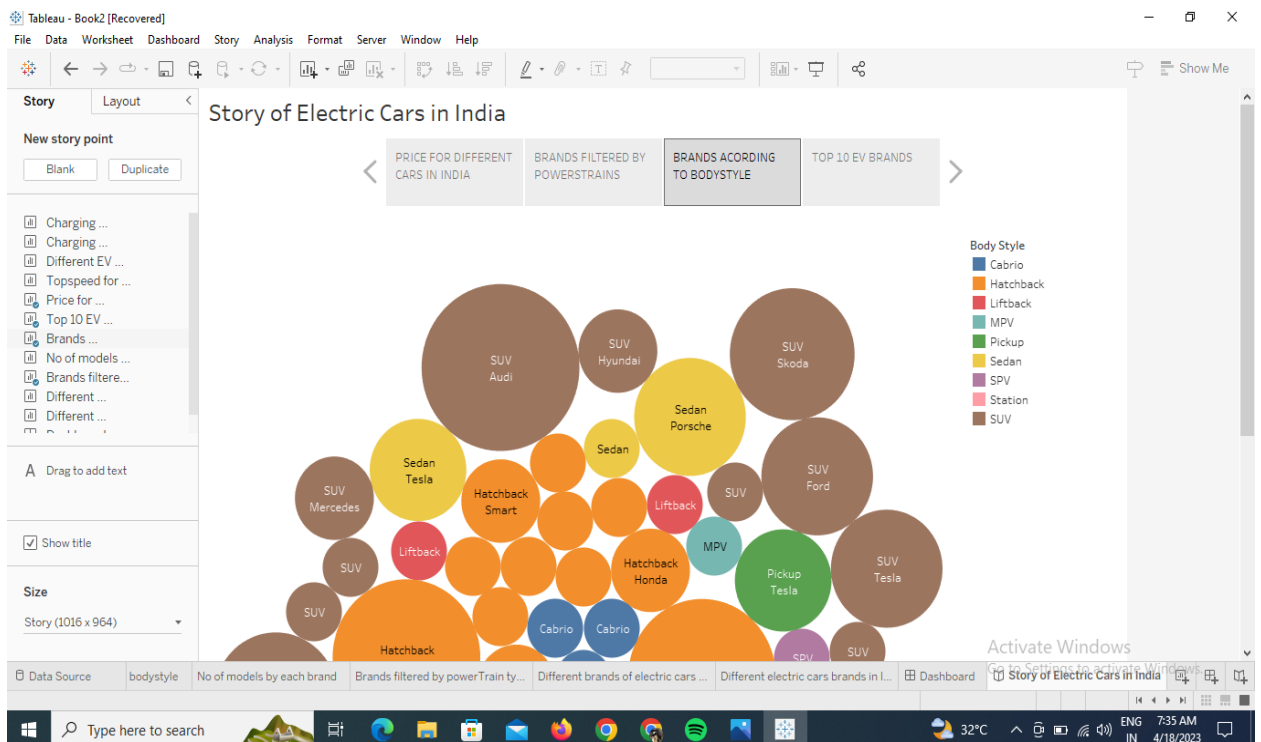
3.15 STORY 1



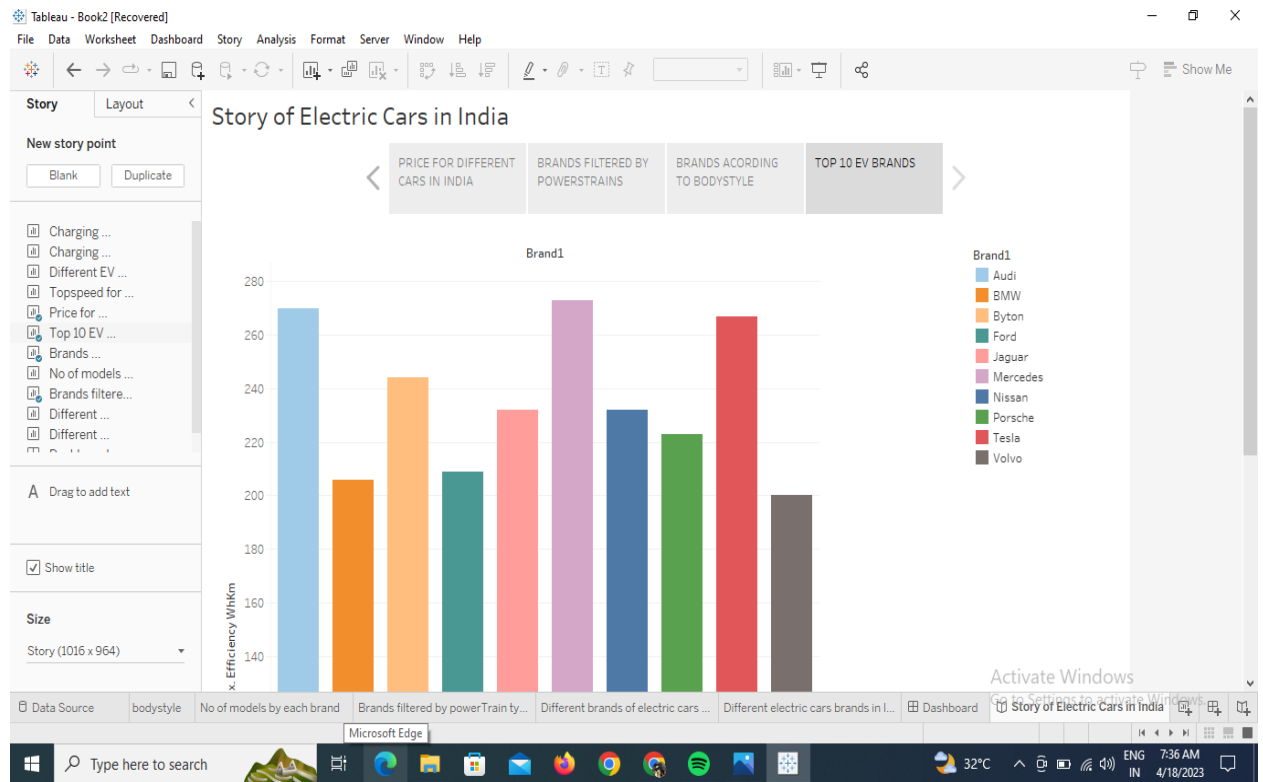
3.16 STORY 2



3.17 STORY 3



3.18 STORY 4



ADVANTAGES AND DISADVANTAGES

4.1 ADVANTAGES

- No fuel required so you save money on gas
- Environmental friendly as they do not emit pollutants
- Lower maintenance due to an efficient electric motor
- Better Performance

4.2 DISADVANTAGES

- High initial cost
- Charging station limitations

- Recharging takes time
- Limited options
- Less driving range

APPLICATIONS

- Consumer Electronics
- Public Transportation
- Aviation
- Electricity Grid
- Military
- Spaceflight
- Wearable Technology
- Renewable Energy Storage

CONCLUSION

Electric vehicles are made for the future and will be a big innovation. They are good for the environment and they do not emit any greenhouse gases.

They are definitely more environmentally friendly than internal-combustion vehicles. Batteries are being engineered to have a long life.

When the Electric Vehicles become more widespread, battery recycling will become economically possible. Research into other energy sources such as fuel cells and renewable fuels make the future look brighter for hybrid cars.

The progress that the electric vehicle industry has seen in recent years is not only extremely welcomed, but highly necessary in light of the increasing global greenhouse gas levels.

The biggest obstacle to the widespread adoption of electric-powered transportation is cost related, as gasoline and the vehicles that run on it are readily available, convenient, and less costly. Additionally, the realization and success of this industry relies heavily on the global population, and it is our hope that through mass marketing and environmental education

programs people will feel incentivized and empowered to drive an electric-powered vehicle. Each person can make a difference, so go electric and help make a difference!

FUTURE SCOPE

Electric vehicles have enormous future potential. The charging station is the obvious starting point for these vehicles.

However, this is only the first step in a potentially long journey that will include charging banks and other industrial areas, as well as homes and cities

At a critical moment, as many nations are working to free Mother Earth from the clutches of carbon emissions and CO2 India should take the lead by transitioning to EV mobility, making the country a greener and cleaner ecosystem.

Electric car manufacturing is getting increasingly popular, and its market share is likely to grow significantly. By 2022, India's GDP is predicted to increase by a staggering 25%.

The best aspect is that, in addition to decreasing pollution, EVs can reduce oil imports by \$60 billion by 2030. Currently, imports account for 82 per cent of India's oil requirement. As a result, it is clear how helpful it will be for the Indian economy if the import cost is decreased

While the price of an EV may be close to that of most comparable petrol or diesel automobiles, the cost of ownership is much lower, especially over the vehicle's lifetime.

You may spend significantly less on an electric vehicle than you do on your present automobile, thanks to tax benefits and special government grants, as well as improved fuel efficiency, lower electricity costs, and fewer maintenance requirements

VIDEO LINK

https://drive.google.com/drive/folders/1ENQRxx06qp_WhKlezE-l-XamtwZUtGKf?usp=share_link