VISUALIZATION TOOL FOR ELECTRIC VEHICLE CHARGE AND RANGE ANALYSIS.

Project based experimental learning program

1.INTRODUCTION:-

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 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.

2. PROBLEM DEFINITION AND DESIGN THINKING

EMPATHY MAP

BRAINSTORMING

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

D. Apsara

Abitha. K. Josh

C. Ajisha

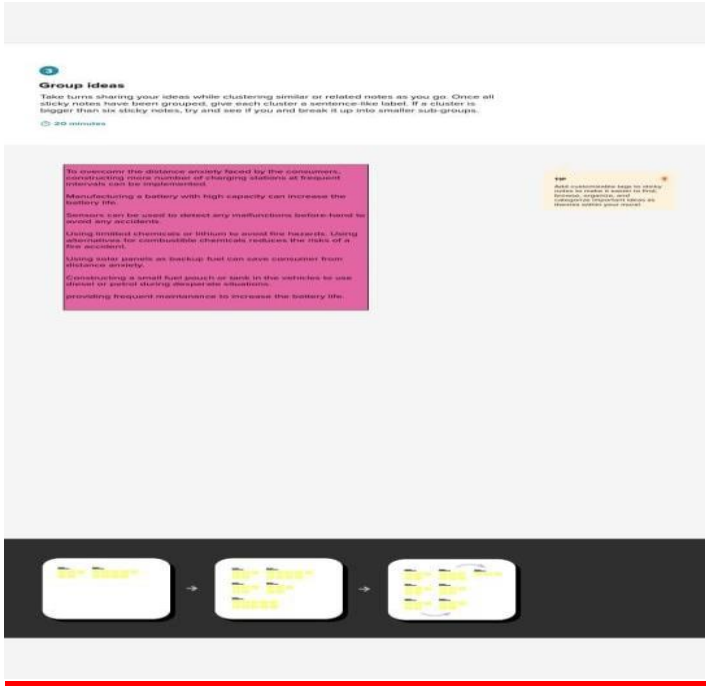
A. Amutha

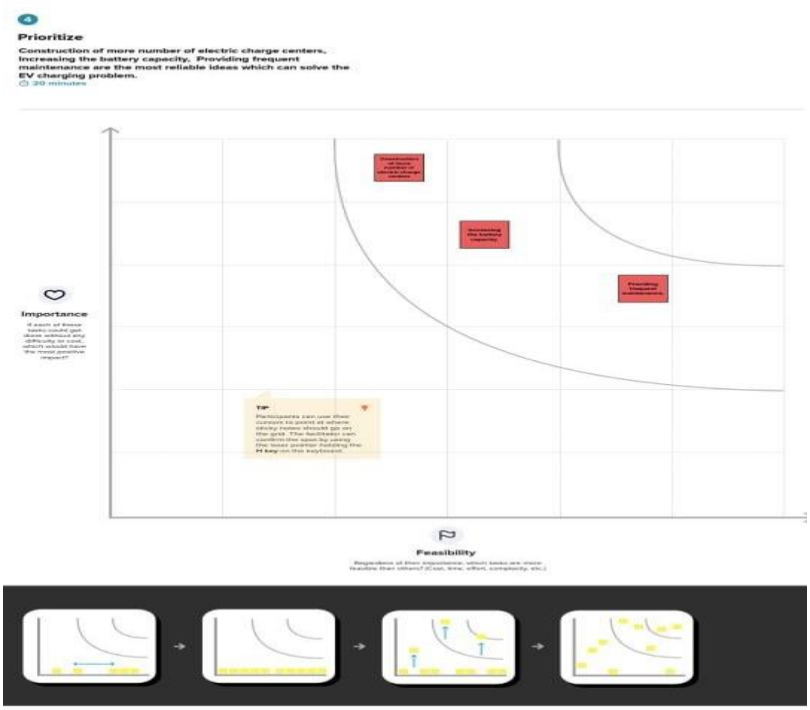
J. Abisha

Person 6

Person 7

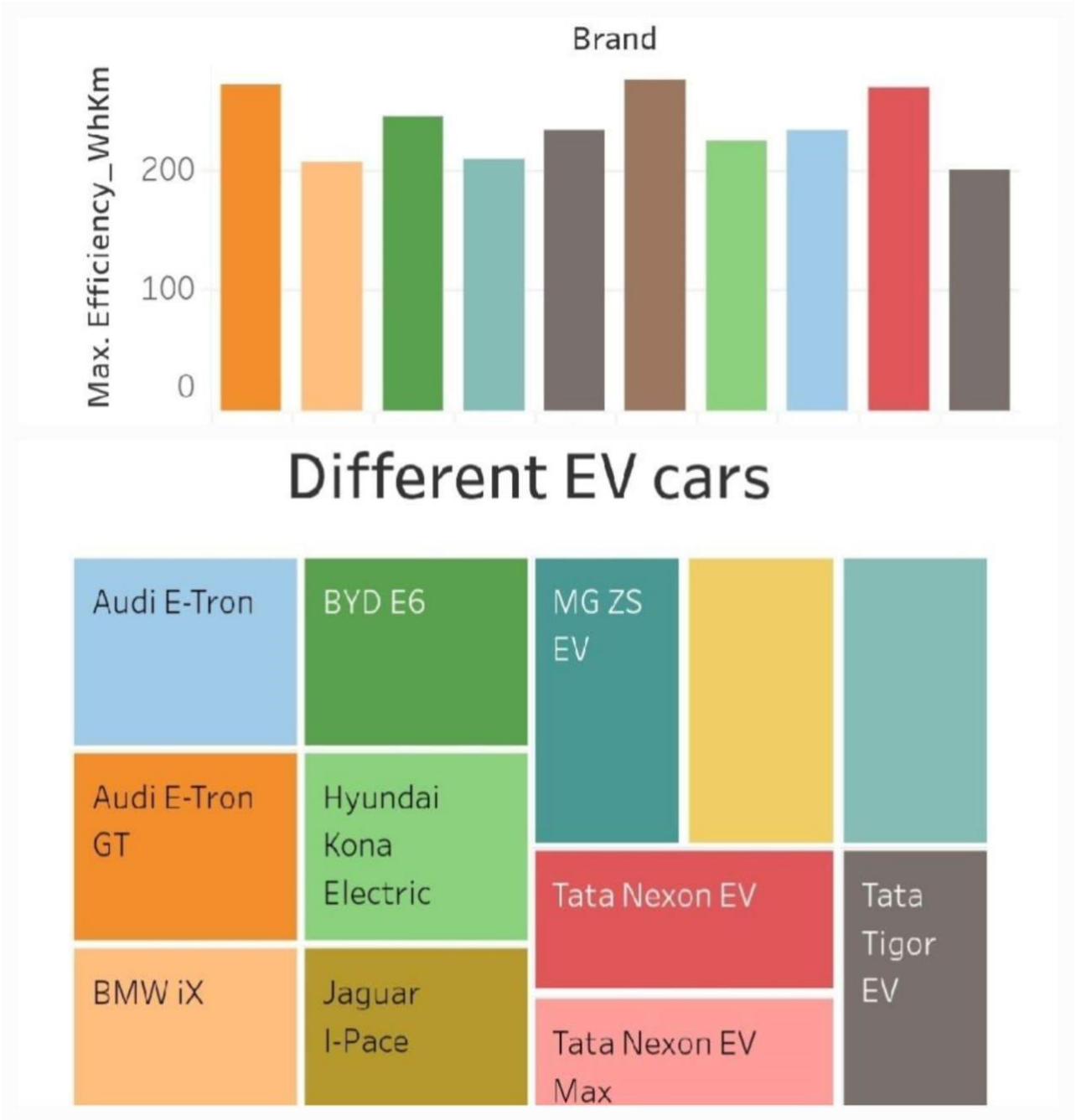
Person 8

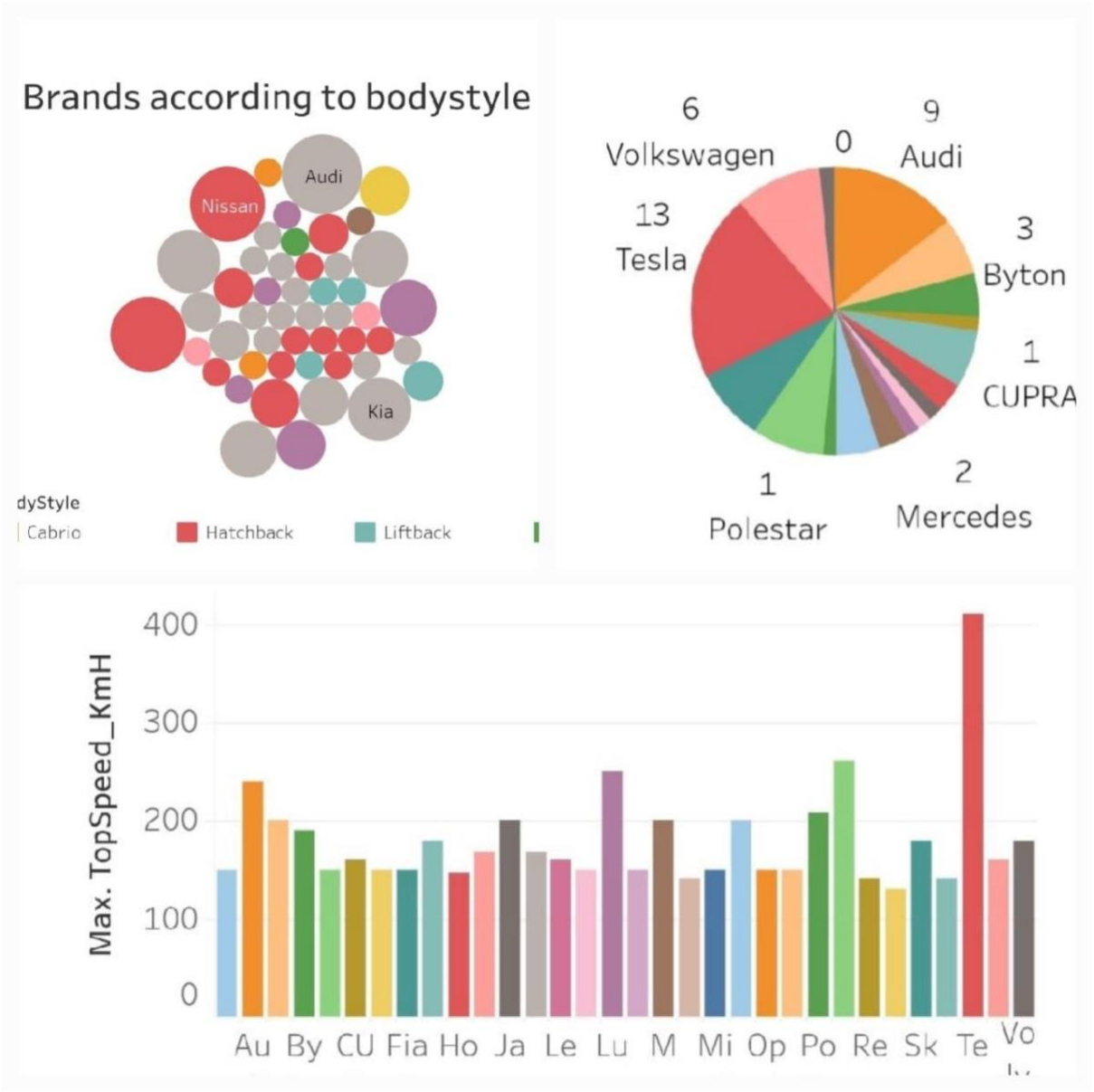

3
Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.
20 minutes
To overcome the distance anxiety faced by the consumers, constructing more number of charging stations at frequent intervals can be implemented.
Manufacturing a battery with high capacity can increase the battery life.
Sensors can be used to detect any malfunctions before-hand to avoid any accidents.
Using limited chemicals or lithium to avoid fire hazards. Using alternatives for combustible chemicals reduces the risks of a fire accident.
Using solar panels as backup fuel can save consumer from distance anxiety.
Constructing a small fuel pouch or tank in the vehicles to use diesel or petrol during desperate situations.
providing frequent maintanance to increase the battery life.
TIP


4
Prioritize
Construction of more number of electric charge centers, Increasing the battery capacity, Providing frequent maintenance are the most reliable ideas which can solve the EV charging problem.
20 minutes
Importance
Feasibility
TIP

3. RESULT

DASHBOARD



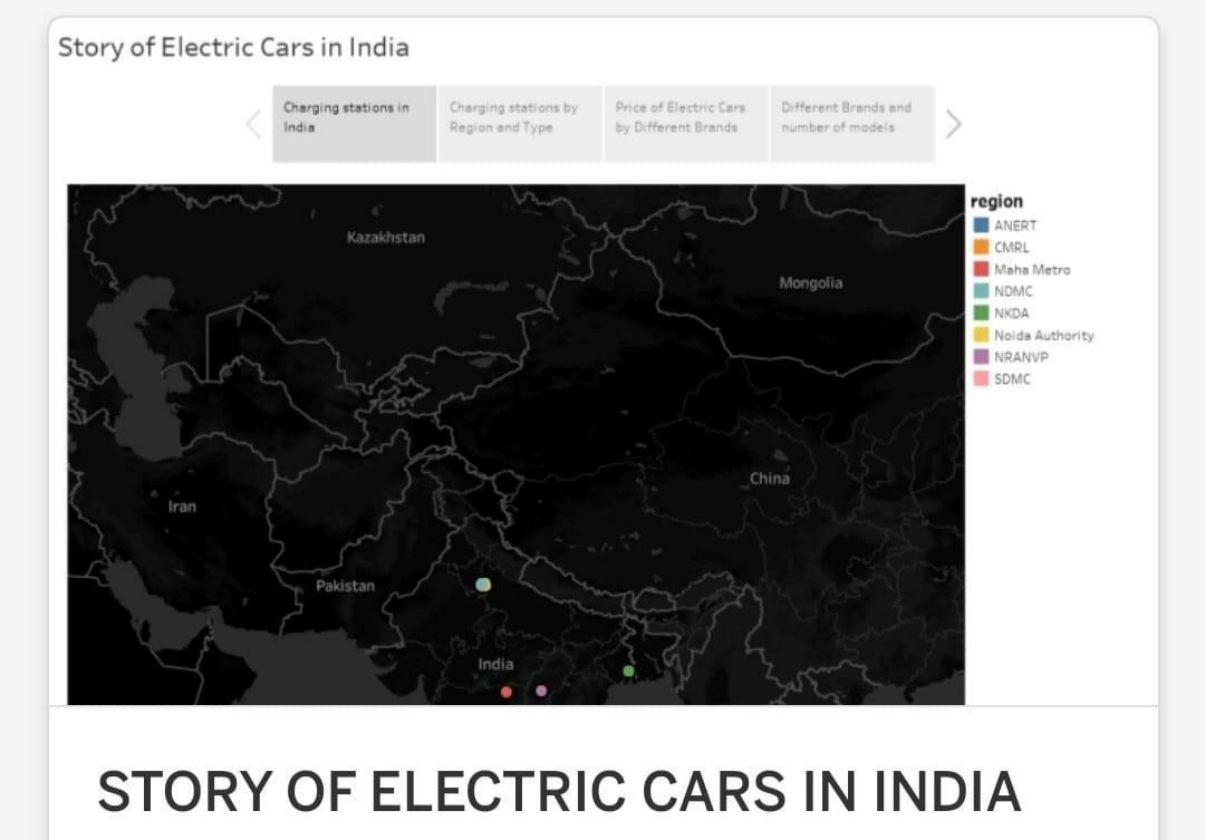


A dashboard is a collection of several views, letting you compare a variety of data simultaneously. For example, if you have a set of views that you review every day, you can create a dashboard that displays all the views at once, rather than navigate to separate worksheets.

STORY

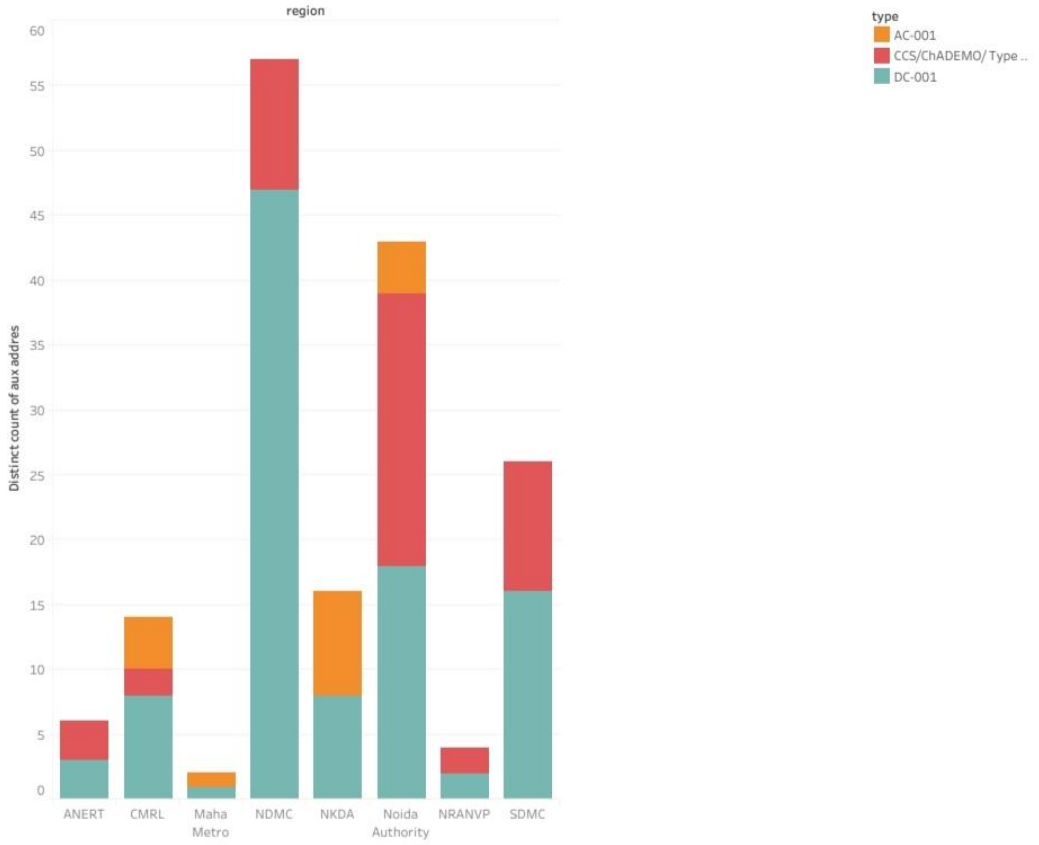
In Tableau, a **story** is a sequence of visualizations that work together to convey information. You can create stories to tell a data narrative, provide context, demonstrate how decisions relate to outcomes, or to simply make a compelling case.

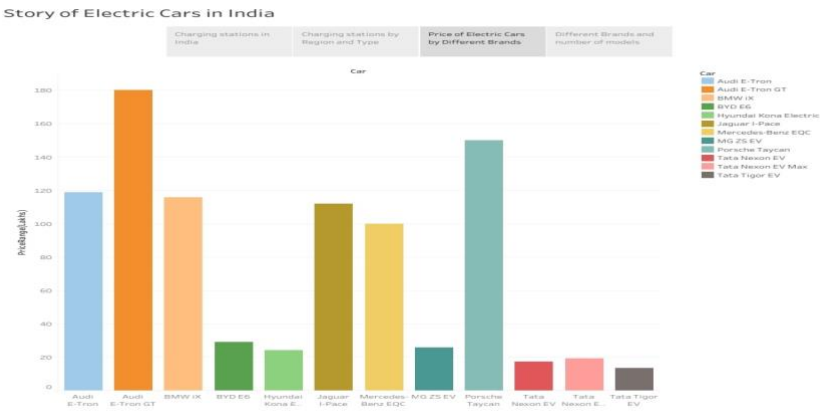
A story is a sheet, so the methods you use to create, name, and manage worksheets and dashboards also apply to stories . At the same time, a story is also a collection of sheets, arranged in a sequence. Each individual sheet in a story is called a **story point**.

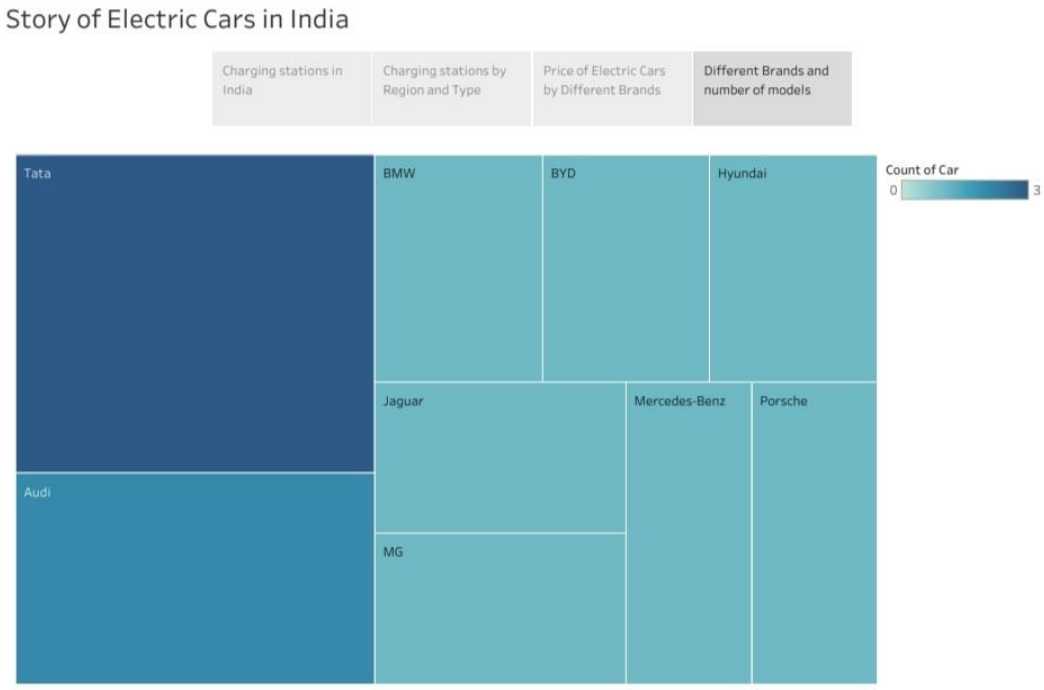


Story of Electric Cars in India

Charging stations in India | **Charging stations by Region and Type** | Price of Electric Cars by Different Brands | Different Brands and number of models







4. ADVANTAGES OF EV CAR RANGE ANALYSIS

An electric vehicle is either partially or entirely powered by electricity. Electric cars have fewer moving components and are simple to maintain. They are also incredibly ecologically beneficial because they do not utilize any fossil fuels such as petrol, diesel, or even gasoline.

Electric cars utilize a rechargeable battery pack to power the electric motor rather than a combustion engine. The rechargeable batteries installed within the automobile must be recharged regularly.

These batteries are not only utilized to power the automobile, but they also power the lights and wipers. The most significant advantage of this sort of vehicle is that it does not generate any polluting exhaust.

It lacks the normal liquid fuel components seen in conventional gasoline-driven cars, and maintenance, and is more cost-effective. Some automobile manufacturers have created hybrid versions that can run on both electric and gas power.

Because this notion is new, individuals have little information and awareness of it. As more people begin to use electric vehicles, they will reap the benefits, and demand for EVs is Predicated to rise in the coming months.

With the data analysis, one can make fact-based business decisions more quickly and with greater knowledge. They can identify performance problems that need to be fixed. Gain a deeper comprehension of client needs to improve business partnerships. To take preventive action, raise risk awareness. Visualize the data's various dimensions. Obtain a competitive edge. Improved comprehension of the company's financial performance and find strategies to lower expenses and boost profitability.

DISADVANTAGES

Electric vehicles can travel less distance. AEVs on average have a shorter range than gas powered cars. Electric cars can take long time to recharge. Fueling an all electric car can also be an issue. As from our analysis before, electric vehicles can be too expensive.

Another main disadvantage is lack of adequate charging stations. Customers are having distance anxiety due to this.

5. APPLICATIONS OF VISUALIZATION OF EV RANGE ANALYSIS

The main purpose of EV range analysis is to determine which brand under electric vehicle category is the most efficient both nationally and globally.

When it comes to electric vehicles, range is the all-important stat. Whether or not you make it to the next public-charging spot, are able to complete your daily commute, or are instead stranded on the side of the road depends on it.

When compared to conventional automobiles, electric vehicles have a shorter driving range. Electric cars can be convenient for short-distance travel but are inconvenient for long-distance travel. These problems can be fixed by analysing the problems properly.

In today's world, data rules the most modern companies. Numerous packets of data are circulating all around the world due to increasing access to the internet. Businesses are aware that this data translates to information which they can use to improve their customer service, understand trends, or even find market loopholes.

To gain such important insight into data as a whole, it is important to analyze data and draw specific information that can be used to improve certain aspects of a market or the business as a whole.

6.CONCLUSION

Electric cars are predicted to be the next disruptive market force for transportation and technology. They have the potential to revolutionize how energy is used, created and redirected.

Electric cars are one solution to the negative environmental impact of conventional cars. However, they have also proven to have many more benefits to society.

The advent of electric cars has called for an improvement in overall energy usage and generation. They have shown how important it is to find alternate sources of fuel and they can positively affect the environment and society as a whole.

Electric vehicles (EV) are 75 percent efficient at turning input energy into moving energy (kinetic energy). On the other hand, gas-powered vehicles with internal combustion engines (ICE) are only 25 percent efficient.

With current technical developments in the energy sources for electric vehicles, coupled to the desire for less environmentally damaging transport, the future for electric vehicles looks extremely promising.

7.FUTURE SCOPE

Data analytics aids companies and government organisations to collect data and identify patterns in the data. This helps to generate better insights for the organisation with regards to decision-making, and sometimes, automates the decision-making process itself. Data analytics can help to transform business and reduce the cost and time to take make quick decisions. The data analytics industry has made a significant impact on Indian companies, especially in their day-to-day operations. Data analytics has enabled the industry to completely automate some aspects of business. Data is considered to be the new oil, and industries and the government are focusing on data analysis to build better products and provide higher quality services. Indian enterprises were estimated to spend US$ 2 billion in FY2021, recording an 11.5% growth in the year.

By 2025, the scope of electric vehicles (EVs) is expected to expand significantly. Many automakers have already pledged to invest heavily in EV production, and governments around the world are offering incentives to promote their use.

In the US, electric vehicles sales have climbed by more than 40 percent a year since 2016. By 2035, the largest automotive markets will be fully electric—providing both a glimpse of a green future and significant economic opportunity.

On the basis of survey, vehicles occupy 30% of the global total energy consumptions and 27% of total greenhouse gas emissions. The commissioning of electric vehicles in the mere future saves the usage of conventional fuels by $60 billion, thereby reducing 1 gigatonne (GT) of carbon emissions by 2030.