

Visualization Tool for Electric Vehicle Charge and Range Analysis

1. Introduction

1.1 Overview

Electric vehicles have low running costs as they have less moving parts for maintaining and also very environmentally friendly as they use little or no fossil fuels (petrol or diesel). While some EVs used lead acid or nickel metal hydride batteries, the standard for modern battery electric vehicles is now considered to be lithium-ion batteries as they have a greater longevity and are excellent at retaining energy, with a self-discharge rate of just 5% per month. Despite this improved efficiency, there are still challenges with these batteries as they can experience thermal runaway, which have, for example, caused fires or explosions in the Tesla model S, although efforts have been made to improve the safety of these batteries. As the world shifts towards sustainable transportation, electric vehicles (EVs) are becoming increasingly popular. One critical aspect of EVs is their charging infrastructure and range, which can significantly impact their usability and adoption.

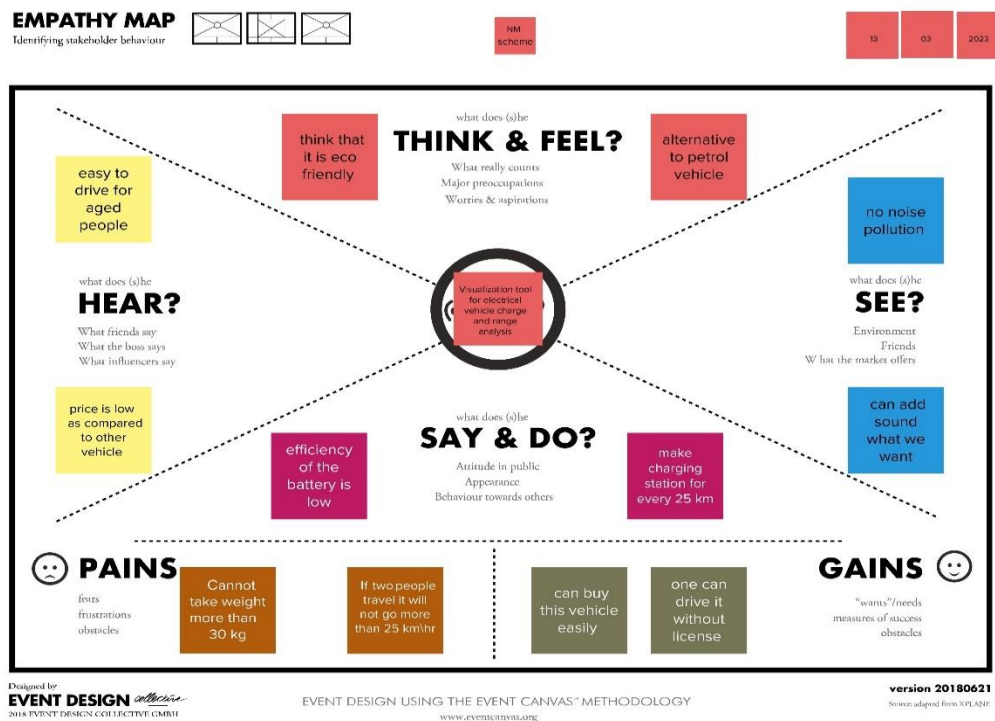
In this project, we will conduct a comprehensive analysis of EV charging patterns and range to better understand their implications on EV performance and usability. We will collect data on EV charging behaviour, including charging locations, charging duration, charging power levels, and user preferences. We will also analyse the range of EVs under different driving conditions, such as weather, terrain, and driving styles.

1.2 Purpose

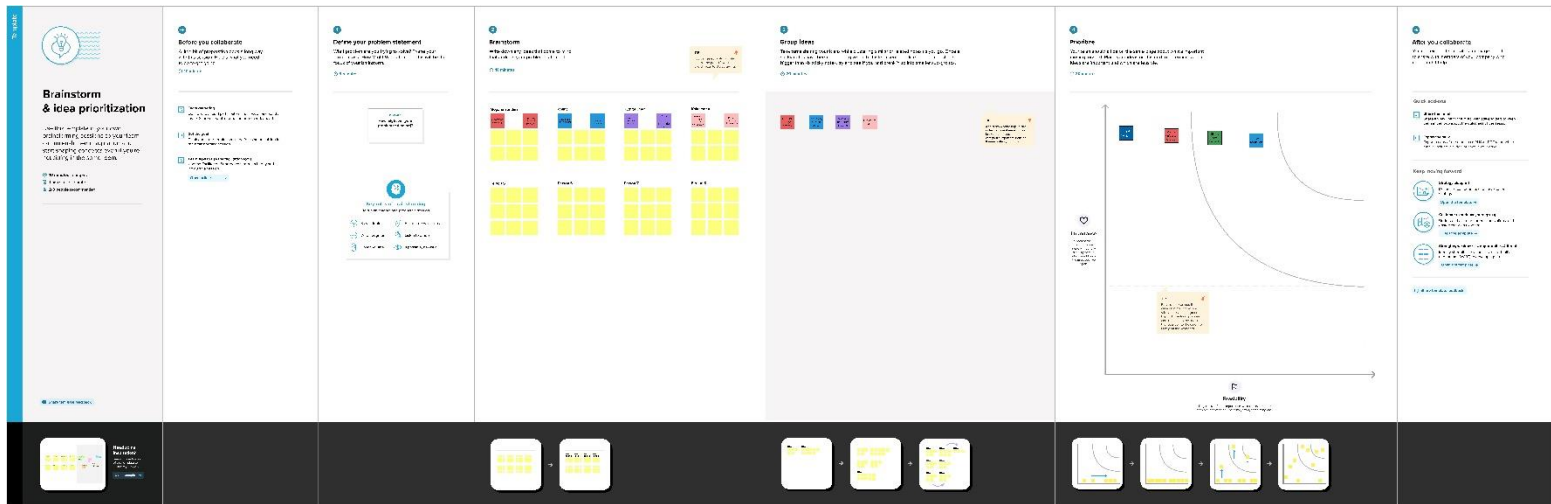
Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient, and that combined with the electricity cost means that charging an electric vehicle is cheaper than filling petrol or diesel for your travel requirements. Transport is a fundamental requirement of modern life, but the traditional combustion engine is quickly becoming outdated. Petrol or diesel vehicles are highly polluting and are being quickly replaced by fully electric vehicles. Fully electric vehicles (EV) have zero tailpipe emissions and are much better for the environment.

2. Problem Definition & Design Thinking

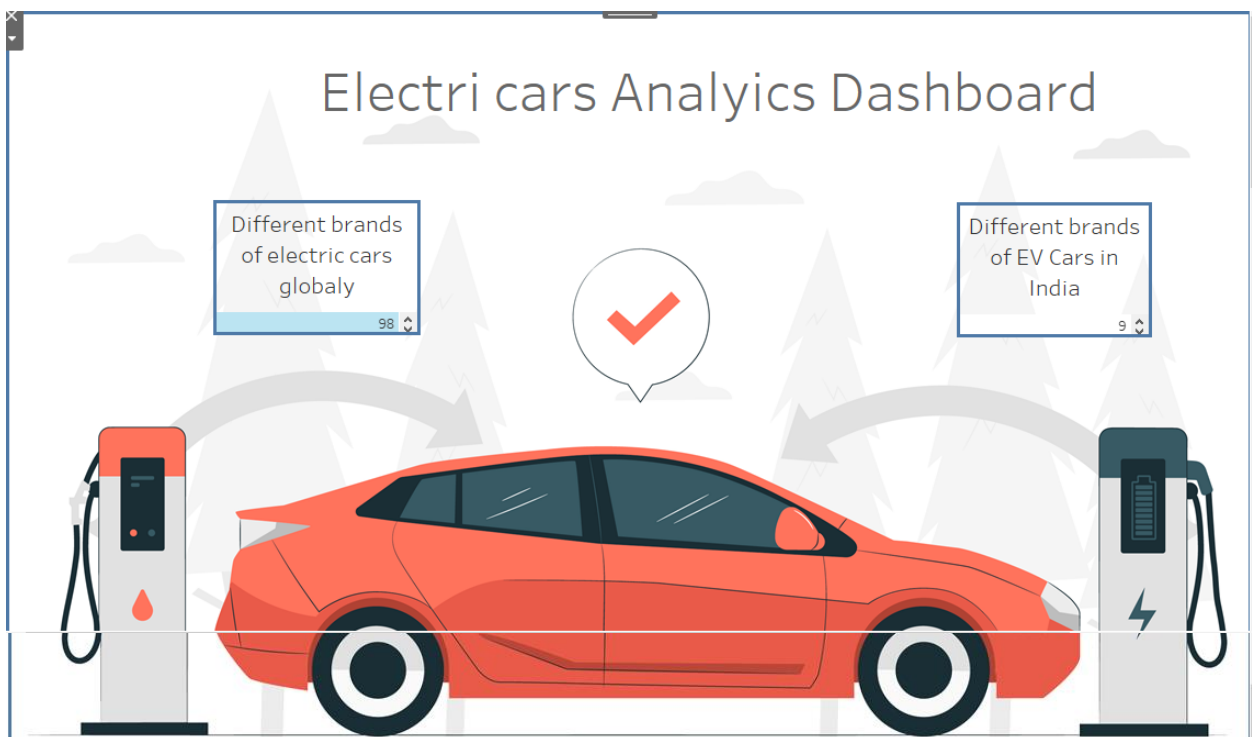
2.1 Empathy Map



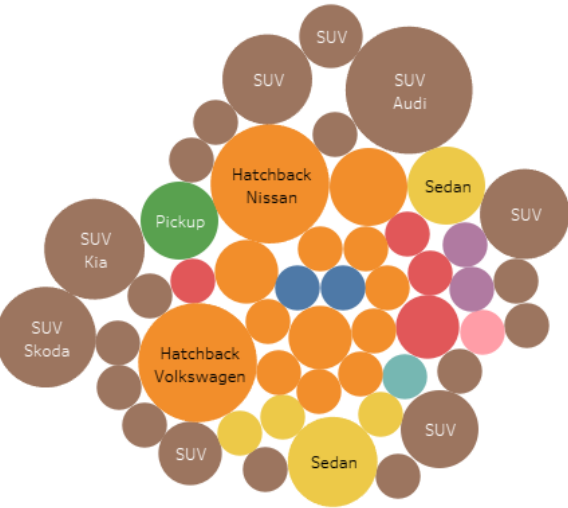
2.2 Ideation & Brainstorming Map



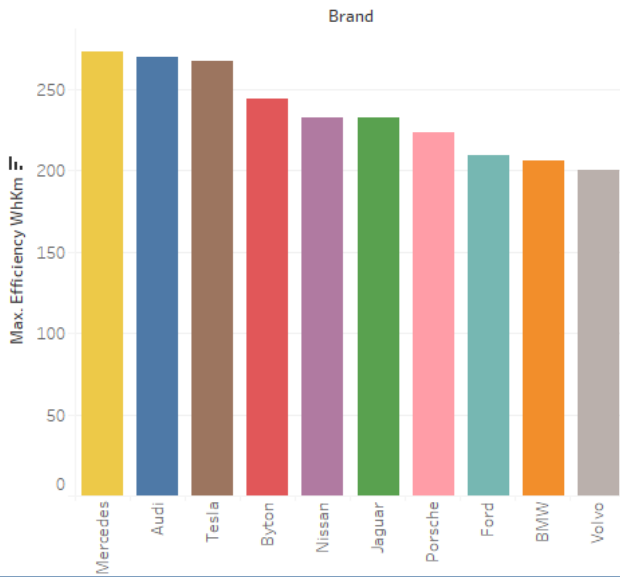
3 RESULT



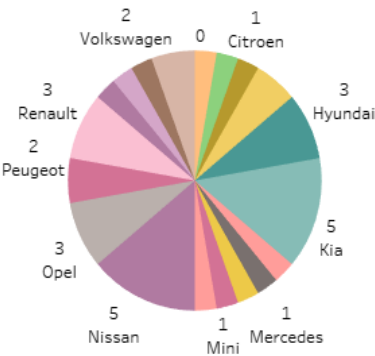
Brands according to Bodystyle



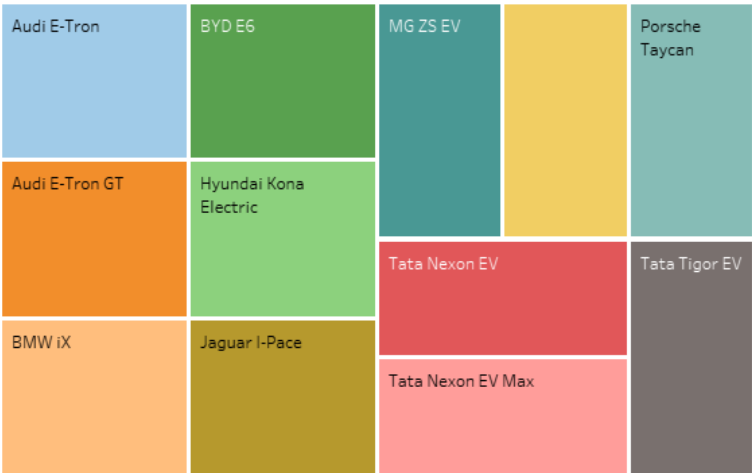
Top 10 most efficient EV Brands



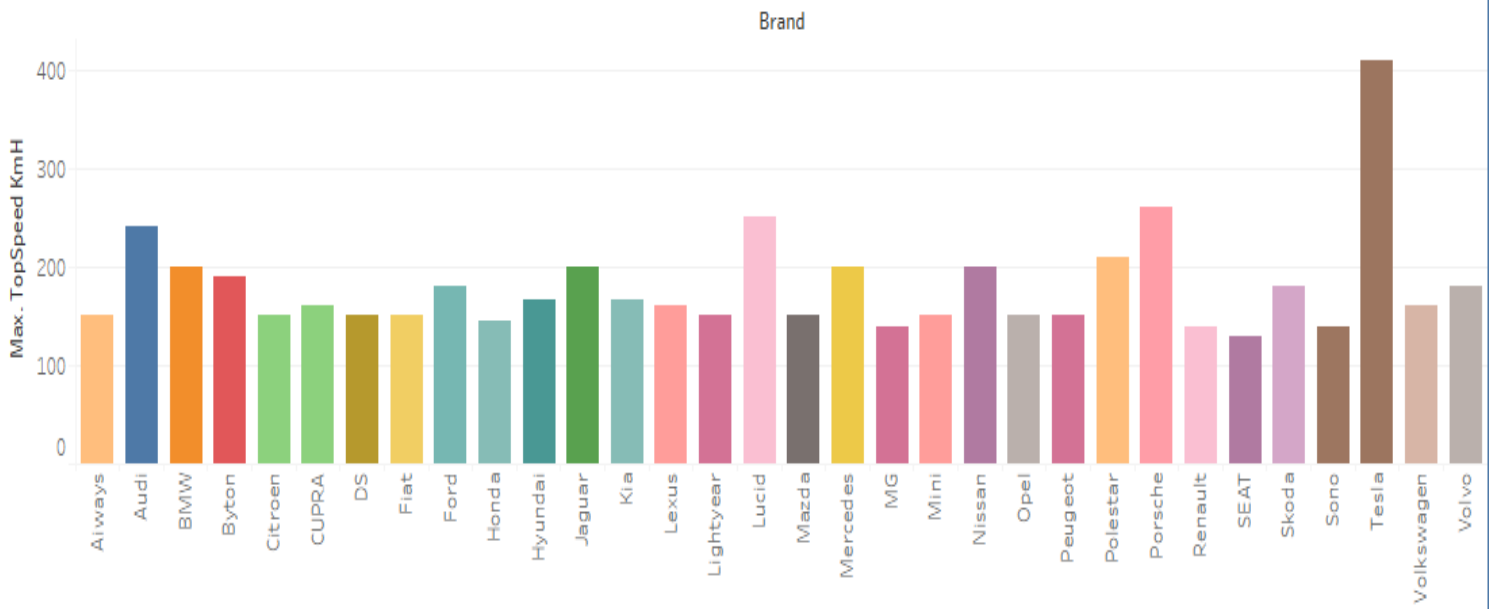
No of models by each brand



Different EV cars in India

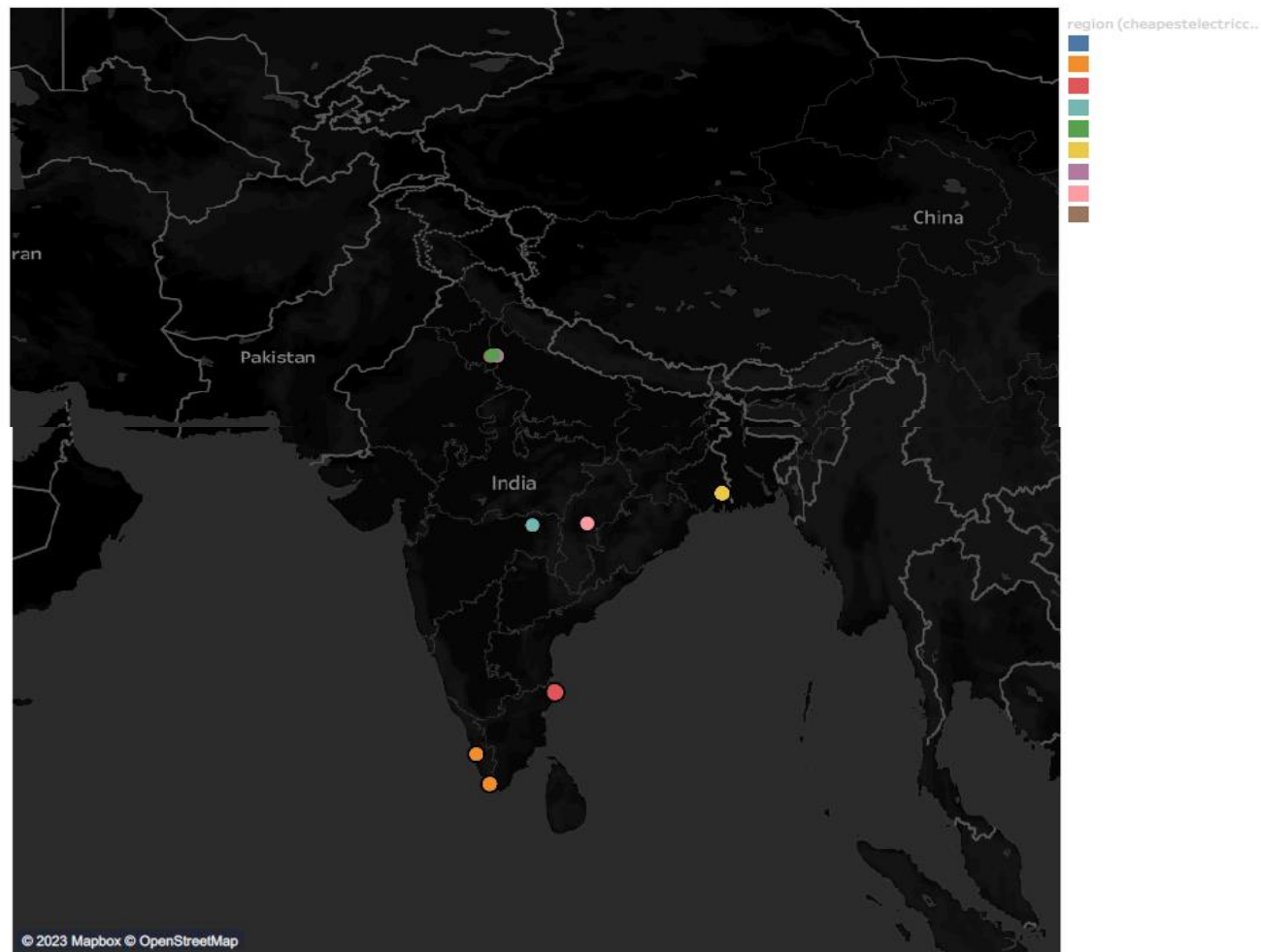


Top speed for different brands

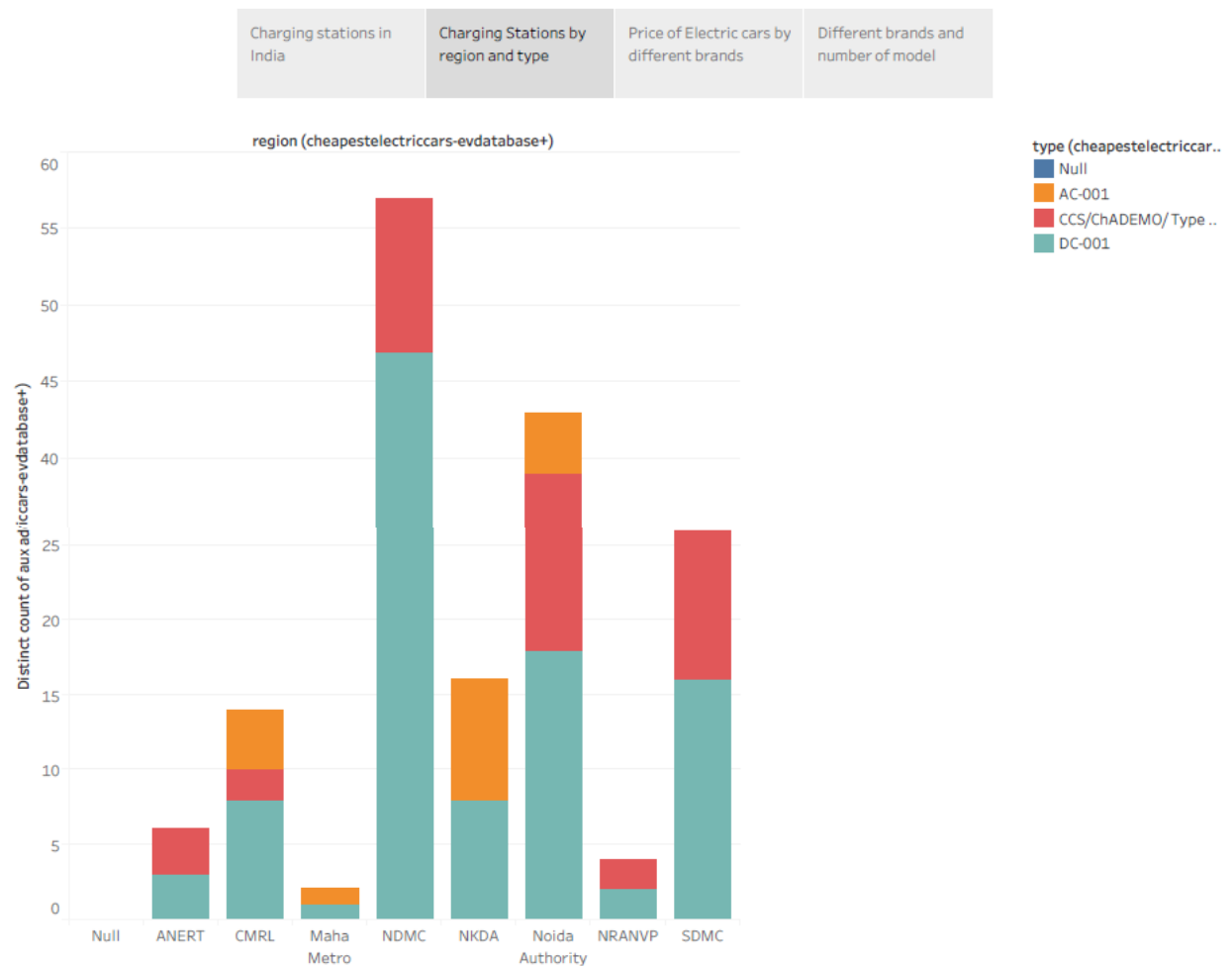


Story of Electric cars in India

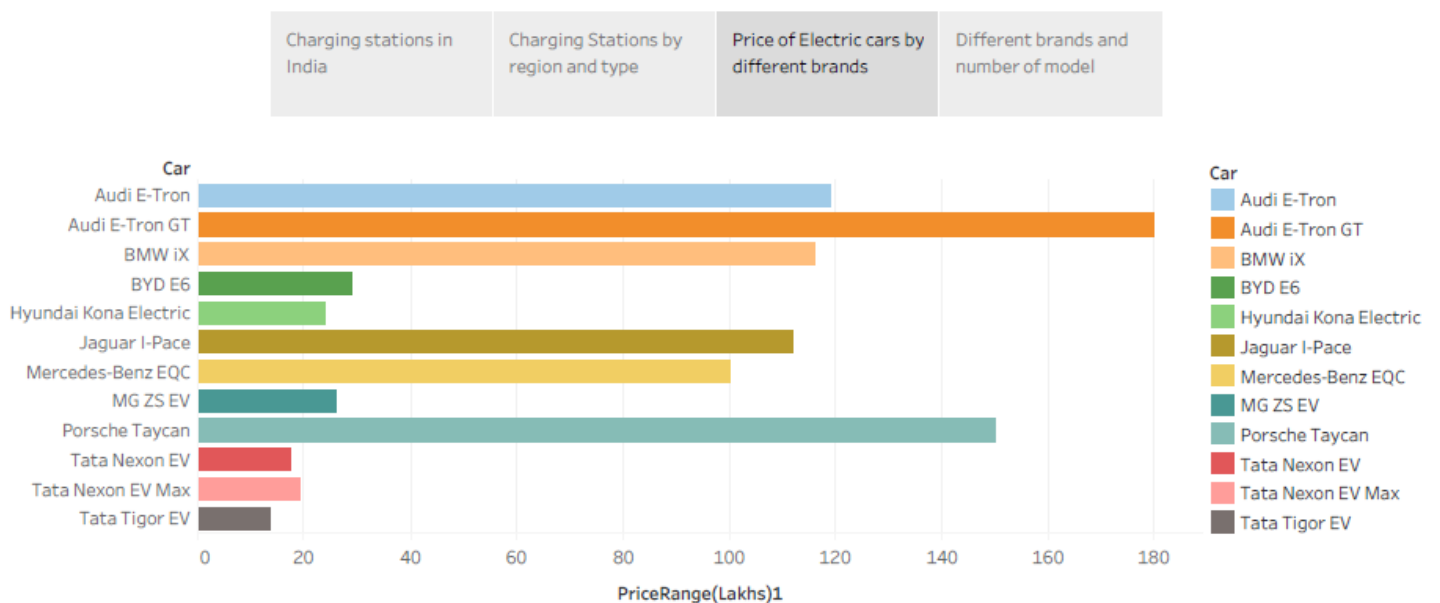
Charging stations in India	Charging Stations by region and type	Price of Electric cars by different brands	Different brands and number of model
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Story of Electric cars in India

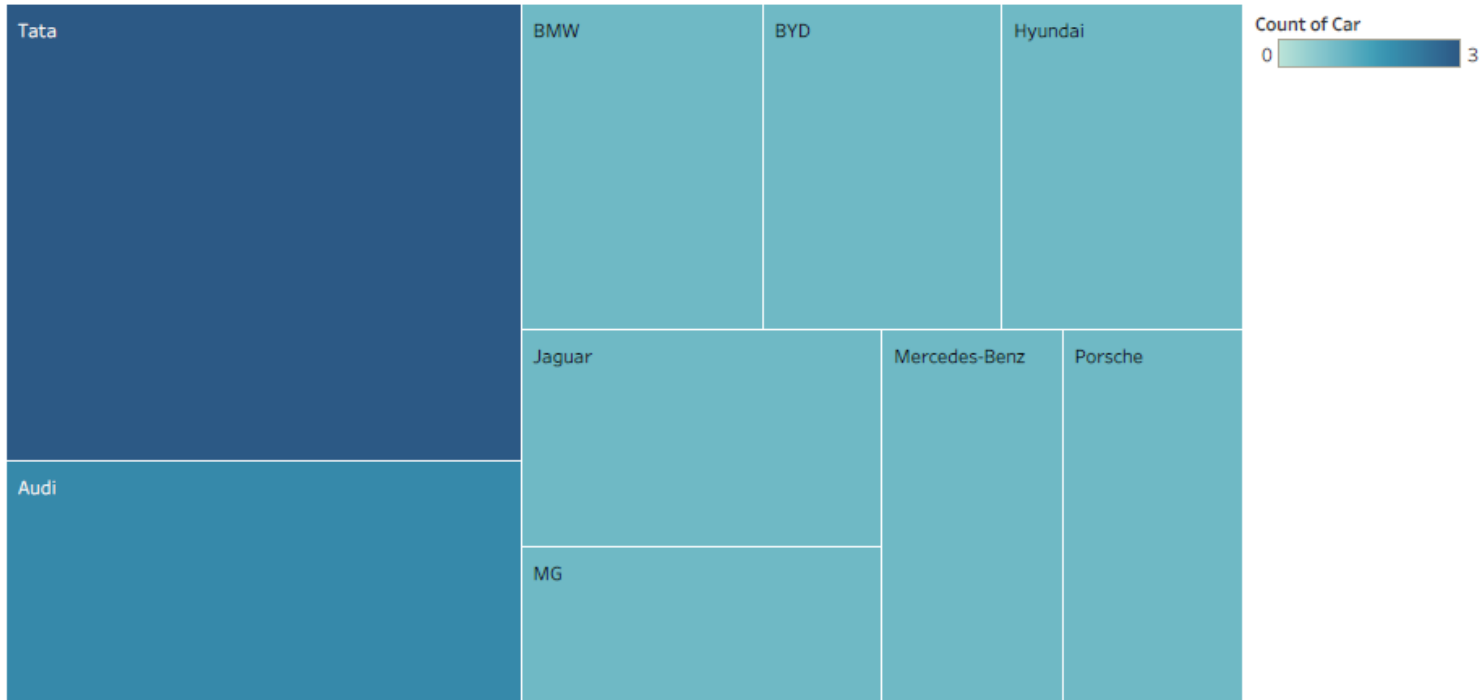


Story of Electric cars in India



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 model
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Electric Cars Analytics

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E-CarStart

Home About Dashboard Story Team Contact Get Started

We offer modern Analytics solutions for Electric Vehicles

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4. ADVANTAGES & DISADVANTAGES

Advantages

Eco-friendly: Because electric vehicles do not utilize fuel for combustion, there are no emissions or gas exhaust. Vehicles that run on fossil fuels contribute significantly to hazardous gas accumulation in the environment, thus driving an electric car can help contribute to a cleaner environment.

Renewable energy source: Electric vehicles run on renewable power, whereas conventional automobiles function on the combustion of fossil fuels, which reduces the world's fossil-fuel stocks.

Less noise and smoother motion: Driving an electric car is significantly smoother. Because they lack fast-moving elements, they are quieter and produce less noise.

Cost-effective: Electricity is far less expensive than fuels such as gasoline and diesel, which are subject to regular price increases. When solar electricity is utilized at home, battery recharging is cost-effective.

Low maintenance: Because electric cars have fewer moving components, wear and tear is reduced when compared to traditional auto parts. Repairs are also simpler and less expensive than combustion engines.

Government support: Governments throughout the world have granted tax breaks to encourage people to drive electric vehicles as part of a green program.

Disadvantages

High initial cost: Electric vehicles continue to be quite expensive, and many buyers believe they are not as inexpensive as traditional automobiles.

Charging station limitations: People who need to travel long distances are concerned about finding adequate charging stations in the middle of their journey, which are not always accessible.

Recharging takes time: Unlike conventional automobiles, which require only a few minutes to replenish their gas tanks, charging an electric vehicle takes many hours.

Limited options: Currently, there aren't many electric car models to pick from in terms of appearance, style, or customized variations.

Less driving range: 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.

5. APPLICATIONS

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. electric cars to become the vehicle of choice and reduce pollution from fossil fuel combustion, manufacturers' only need is a battery that: charges fast, powers cars for 100 miles or more, delivers more power for instant response and is non-flammable.

6. CONCLUSION

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 benefits of electric vehicles far surpass the costs. 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. As is demonstrated in our timeline, we hope that over the course of the next decade technological advancements and policy changes will help ease the transition from traditional fuel-powered vehicles. 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.

7. FUTURE SCOPE

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.