

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

***Visualization Tool
For Electric Vehicle
Charge And Range
Analysis***



VISUALIZATION TOOL FOR ELECTRIC VEHICLE CHARGE AND RANGE ANALYSIS

Project by :

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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 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.

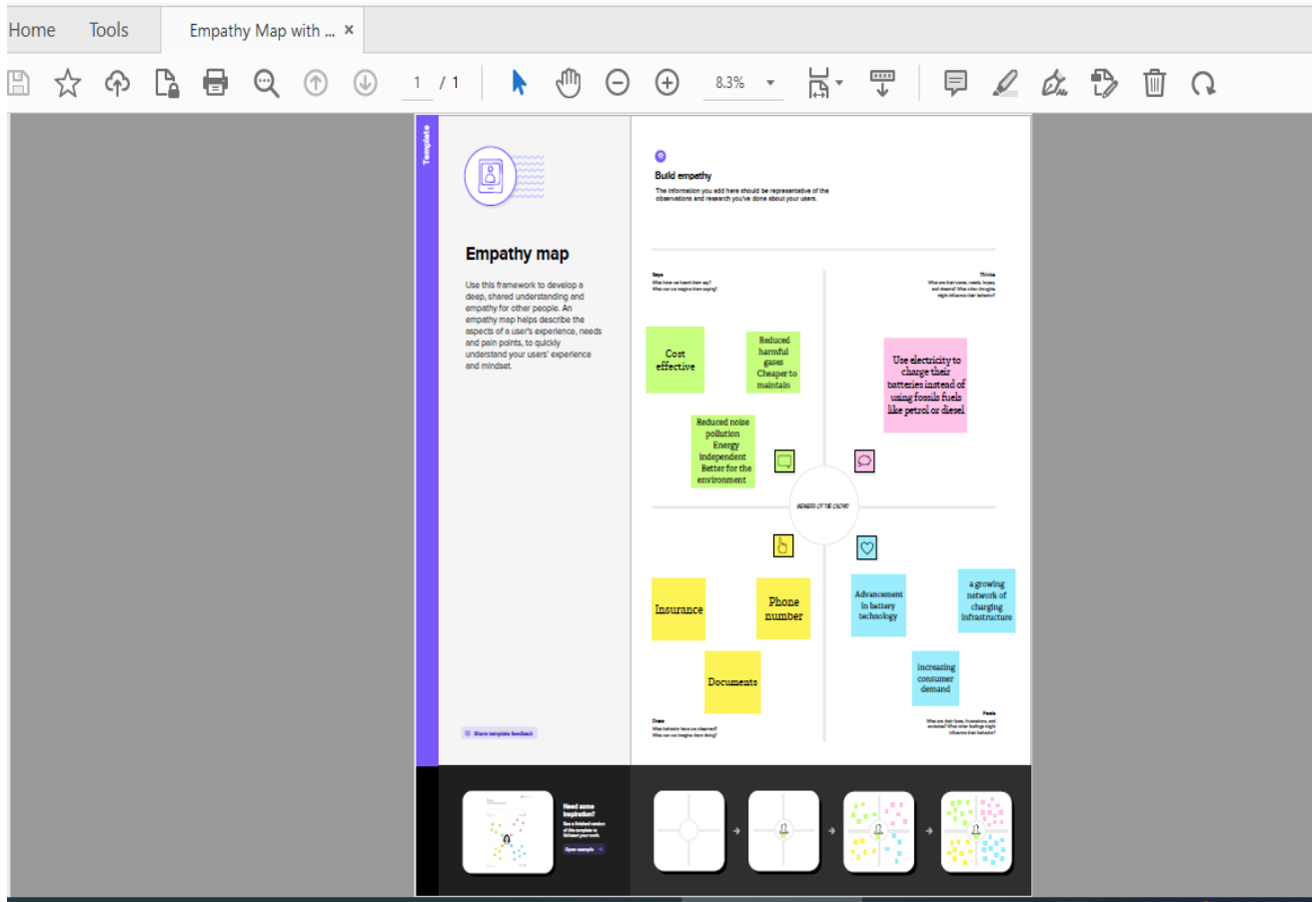
1.2 Purpose

As part of our contribution to sustainable transport, these vehicles reduce air pollution and greenhouse gas emissions, and contribute to energy independence by reducing oil imports.

A green vehicle, clean vehicle, eco-friendly vehicle or environmentally friendly vehicle is a road motor vehicle that produces less harmful impacts to the environment than comparable conventional internal combustion engine vehicles running on gasoline or diesel, or one that uses certain alternative fuels.

PROBLEM DEFINITION & DESIGN THINKING:

2.1 Empathy Map



2.2 Ideation & Brainstorming Map

1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

Charging capacity is not enough!
Basically all electric vehicle needs to charge by using charger but that's not enough because if we charge the vehicle we consume / need more time to drive but it cannot happened so improve charging capacity



Key rules of brainstorming

To run an smooth and productive session



Stay in topic.



Encourage wild ideas.



Defer judgment.



Listen to others.



Go for volume.



If possible, be visual.

2

Brainstorm

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

🕒 10 minutes

SRIVAISHNAVI R

Reduce carbon footprint.

Electric vehicles should be exempted from registration fee and road tax.

It should be easy for all people to buy

MRIDULA M

Electric vehicles are more efficient

Electric cars can be expensive.

No fuel no emission

SANDHIYA S

Electric Vehicles are easy to drive and quiet

Access to Electric Vehicles Is an Environmental Justice Issue

Electric vehicles for goods transportation

SORNASRI S

environmental concerns

greater vehicle choice

improved battery capacity

TIP

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

DHATCHAYENI S

Quantitative analysis of pollution in a city if we replace all the vehicles with EV

The use of electric vehicles are more eco-friendly

Electric vehicles don't have gears and are very convenient to drive.

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 can break it up into smaller sub-groups.

⌚ 20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

1. Very few academic and local skill awareness.
 2. Using renewable energy sources can make the use of electric vehicles more eco-friendly.
 3. Pure electric cars do not require petrol or diesel
 4. The charging time of an electric car is around four to six hours.
 5. Driving an electric car is significantly smoother and quieter since there are no fast-moving pistons.
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Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes

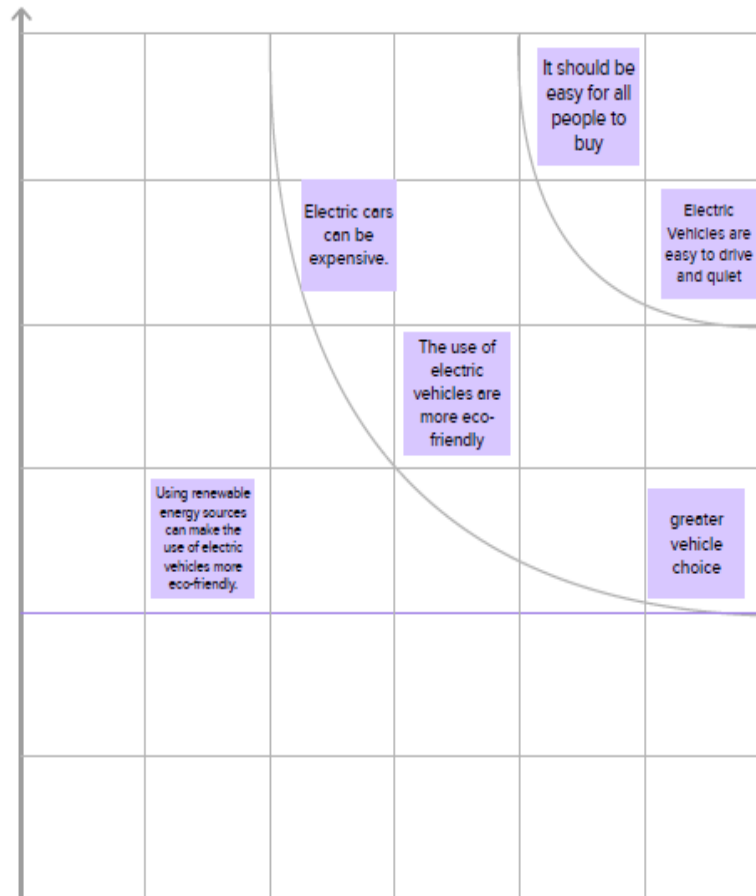
TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the H key on the keyboard.



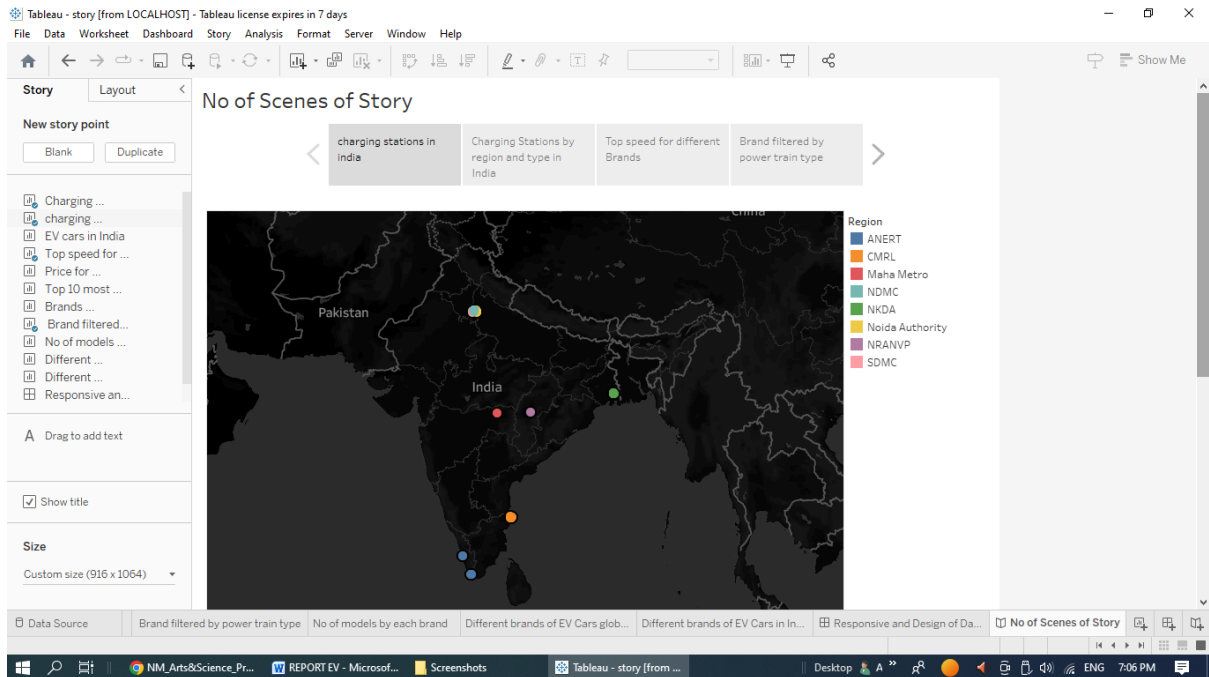
Importance

If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

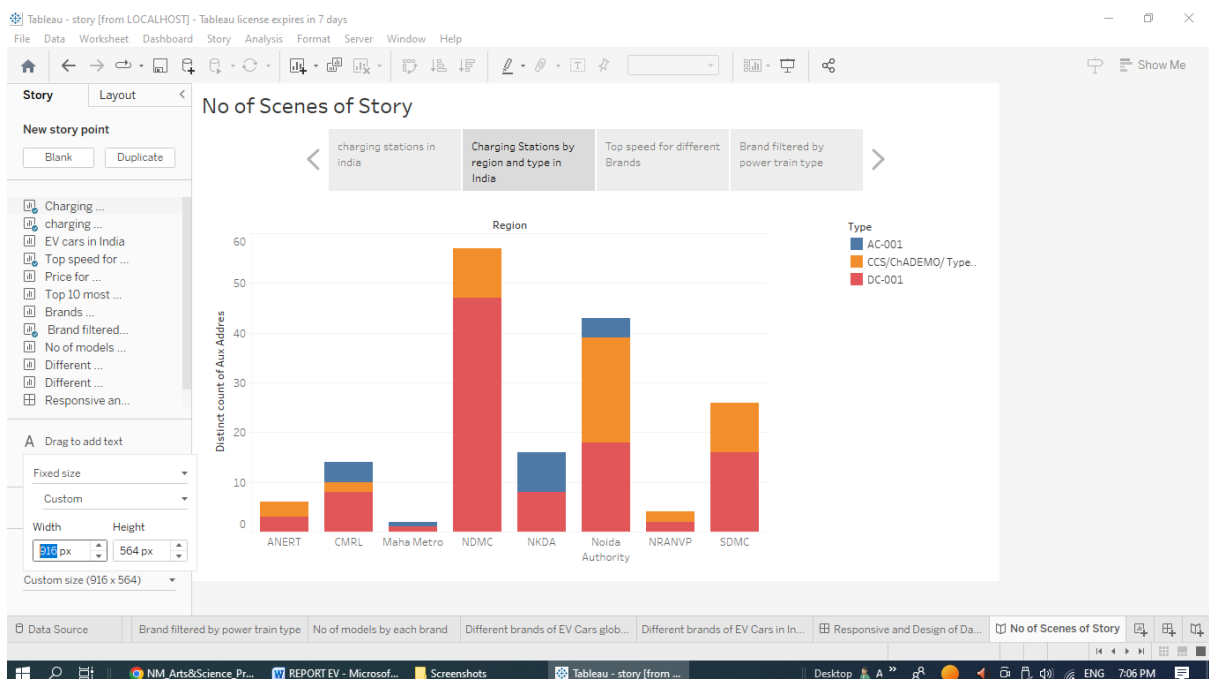


RESULT:

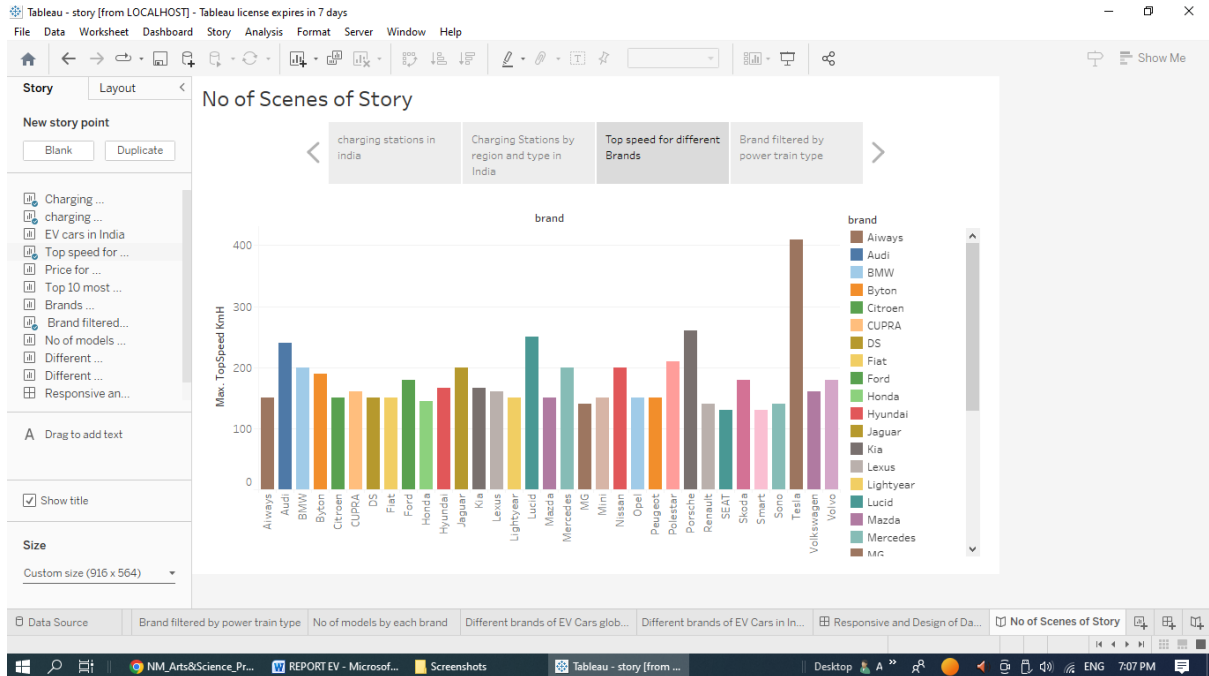
Charging stations in india



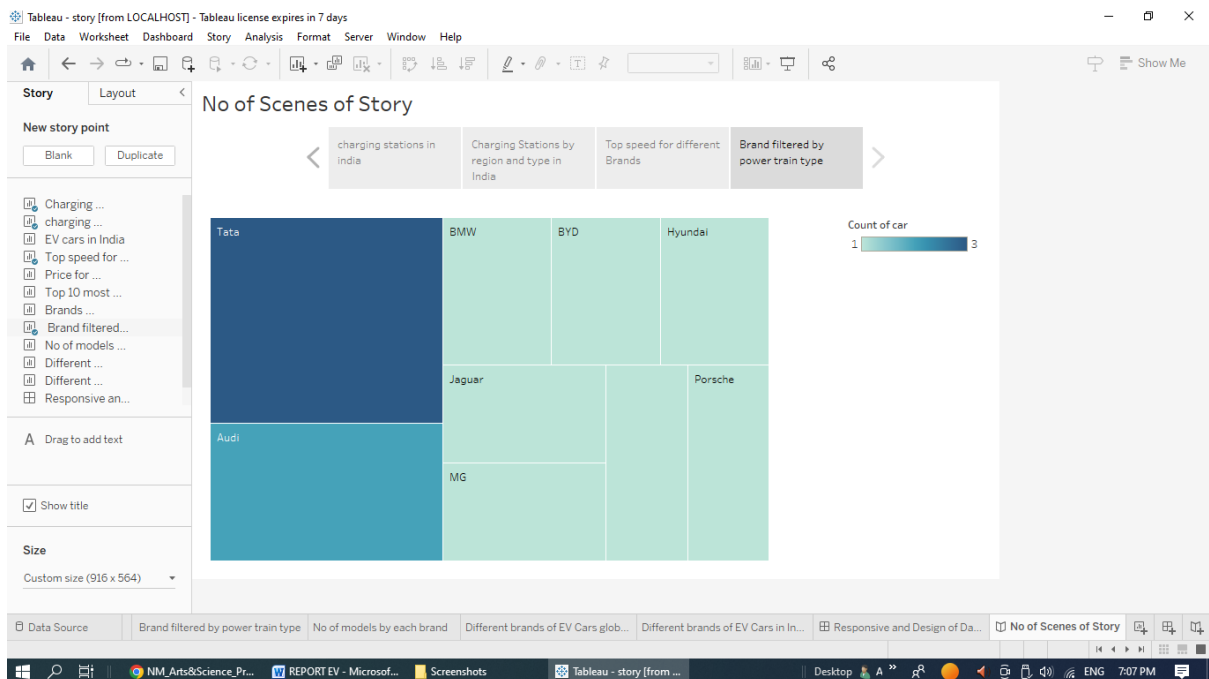
Charging Stations by region and type in India



Top speed for different Brands



Brand filtered by power train type



ADVANTAGES :

Ecofriendly:

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.

Governmentsupport:

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.

APPLICATION:

Low maintenance cost

Lower running costs

Zero Tailpipe Emissions

Tax and financial benefits

Petrol and diesel use is destroying our planet

Electric Vehicles are easy to drive and quiet

No noise pollution

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.

As demonstrated within the economic, social, and environmental analysis sections of this webpage, 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. 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. Electric vehicle technology has existed in labs such as NASA since the 1970s. In a few years, current technology will undoubtedly be far more advanced. EVs are even expected to power themselves by harvesting energy from their surroundings.

Such vehicles will require little maintenance and may even be powered by renewable energy sources such as wind. It will also be interesting to see the impact of EU and US regulations that will go into effect. These regulations are intended to reduce the use of gasoline-powered vehicles. As the popularity of electric vehicles grows, so will the need to reduce their use. It is obvious that new zero-emission technologies will be required.

One of the most important aspects is the power source, and the global market segmentation is thoroughly examined. Electric vehicles today use a variety of power sources, including wind power, solar power, and hydroelectric power. The majority of these technologies have emerged in Africa. Morocco, South Africa, Tanzania, Namibia, Zimbabwe, and Brazil are among the countries that have developed these technologies. It should be noted that all of these countries have very low fuel costs, which means that installing a charging system on cars is very affordable. All over the world, batteries have been the primary concern.

Lithium-ion batteries are replacing traditional alkaline batteries as technology advances. This has presented a significant challenge to the manufacturers. The market research report provides information on the major key players in this industry as well as the various strategies they are employing to overcome the challenges.

APPENDIX:

Source Code

Electric Vehicle Charge and Range Analysis Dashboard:

https://public.tableau.com/app/profile/srivaishnavi.r/viz/dashboard_16825195630170/ResponsiveandDesignofDashboard?publish=yes

Electric Vehicle Charge and Range Analysis story:

https://public.tableau.com/app/profile/srivaishnavi.r/viz/story_16825211526340/NoofScenesofStory?publish=yes

Dashboard and story with Web bootstrap:

<file:///C:/Users/ADMIN/Downloads/Arsha/Arsha/index.html>