# Visualization Tool for Electric Vehicle Charge and Range Analysis

## 1.INTRODUCTION:

Electric vehicles (EVs) produce fewer emissions that contribute to climate change and smog than conventional vehicles and help the United States achieve a greater diversity of fuel choices available for transportation. Proper planning of the EV charging infrastructure and scientific determination of their locations are critical to promoting EV ownership and usage.

### 1.1OVERVIEW:

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.

### 1.2PURPOSE:

- Electric vehicles now include cars, transit buses, trucks of all sizes, and even big-rig tractor trailers that are at least partially powered by electricity.
- Electric vehicles are saving the climate — and our lives.
- Electric vehicles have a smaller carbon footprint than gasoline-powered cars, no matter where your electricity comes from.
- Through their entire lifetime, electric cars are better for the climate.
-  Electric vehicles can charge up at home, at work, while you're at the store.
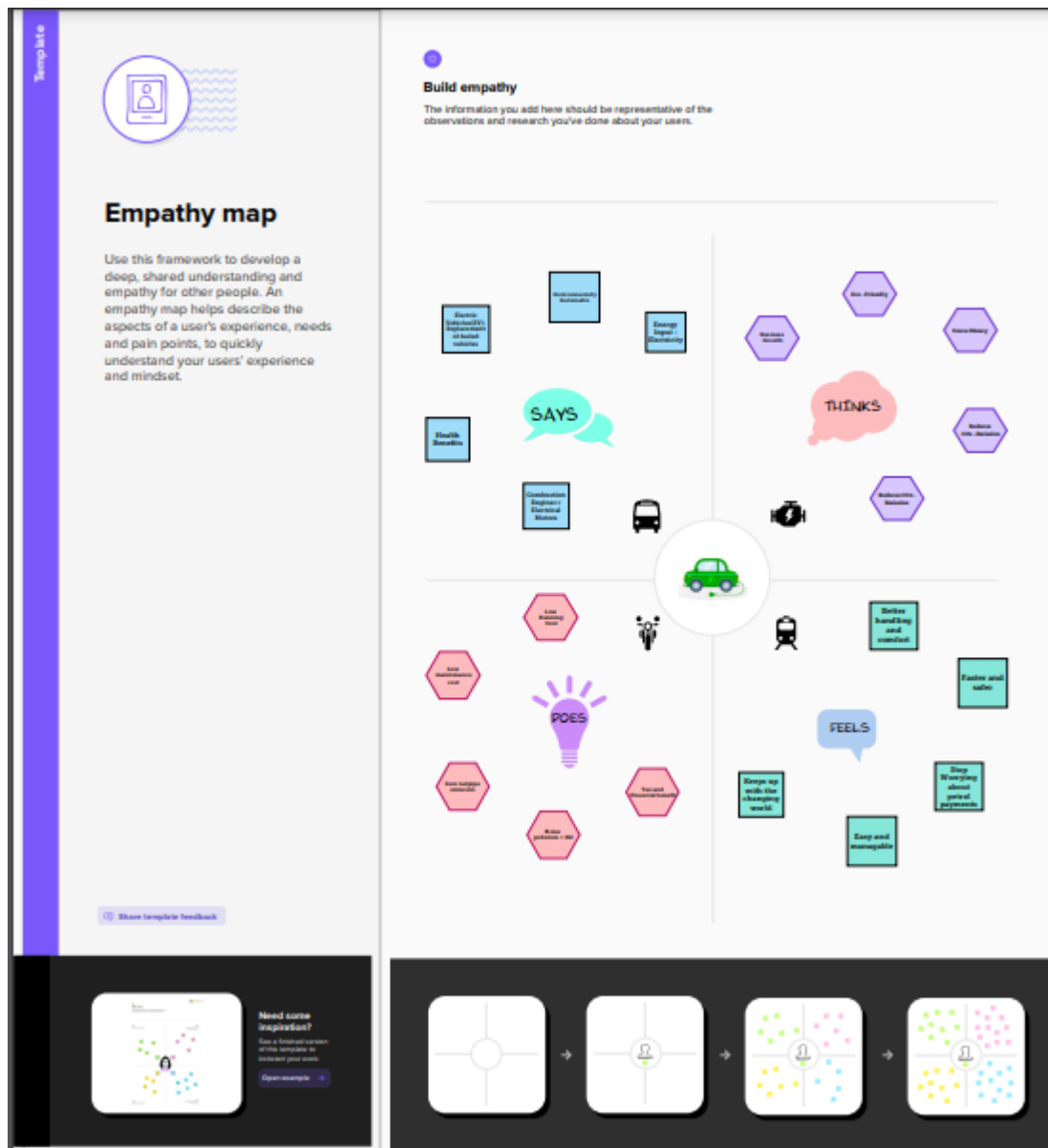
## 2.PROBLEM DEFINITION AND DESIGN THINKING:

**PROBLEM 1:** Electric Vehicles == Sky High Price
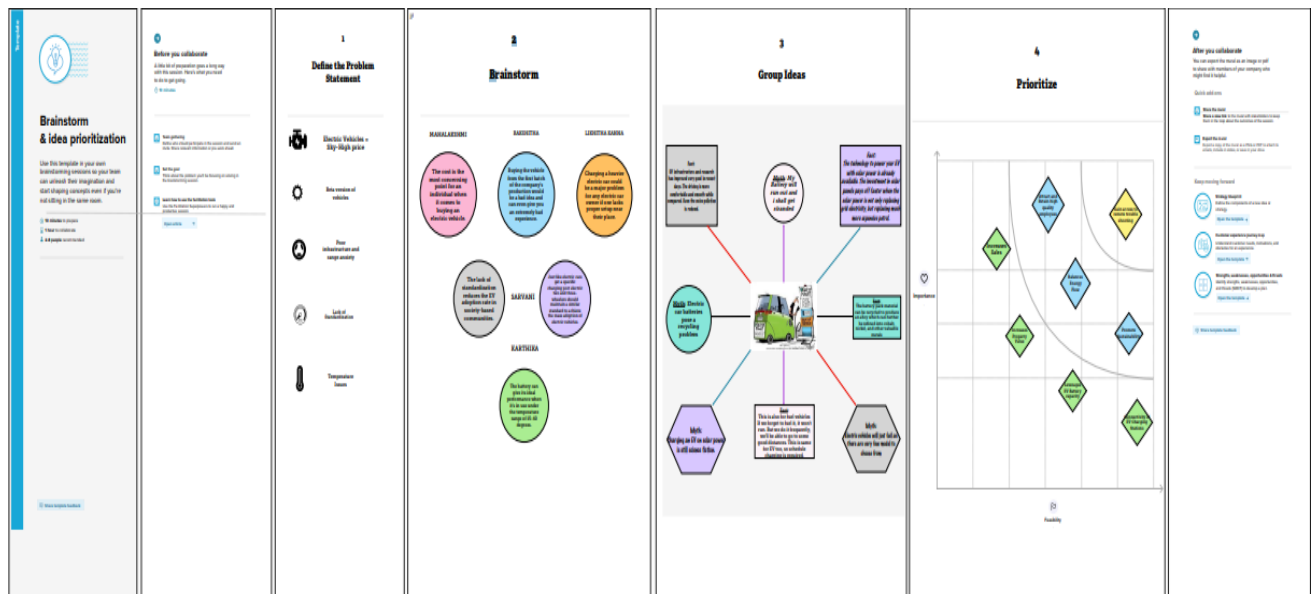
**PROBLEM 2:** Beta version of Vehicles

**PROBLEM 3:** Poor infrastructure and range anxiety
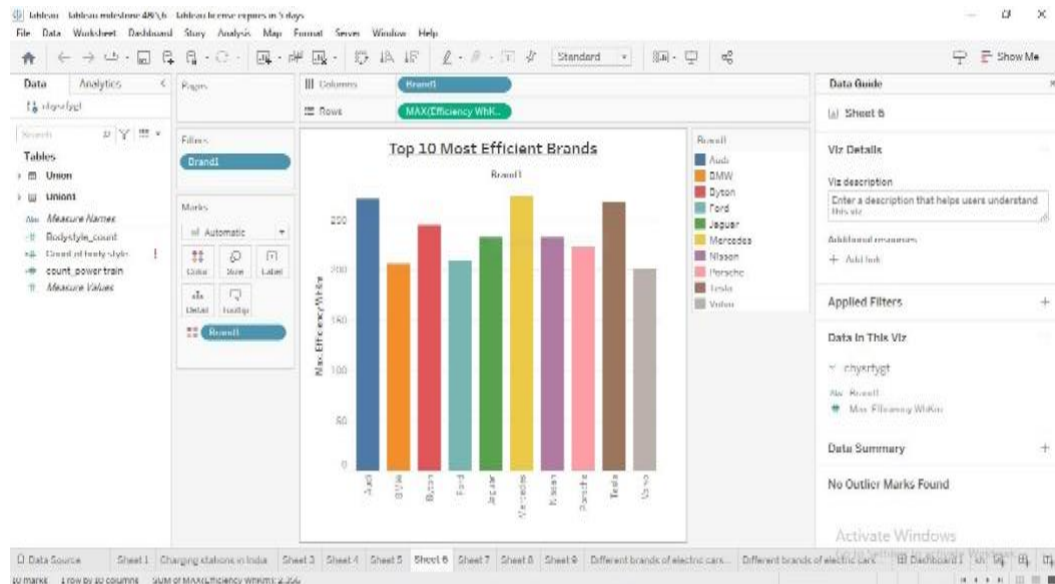
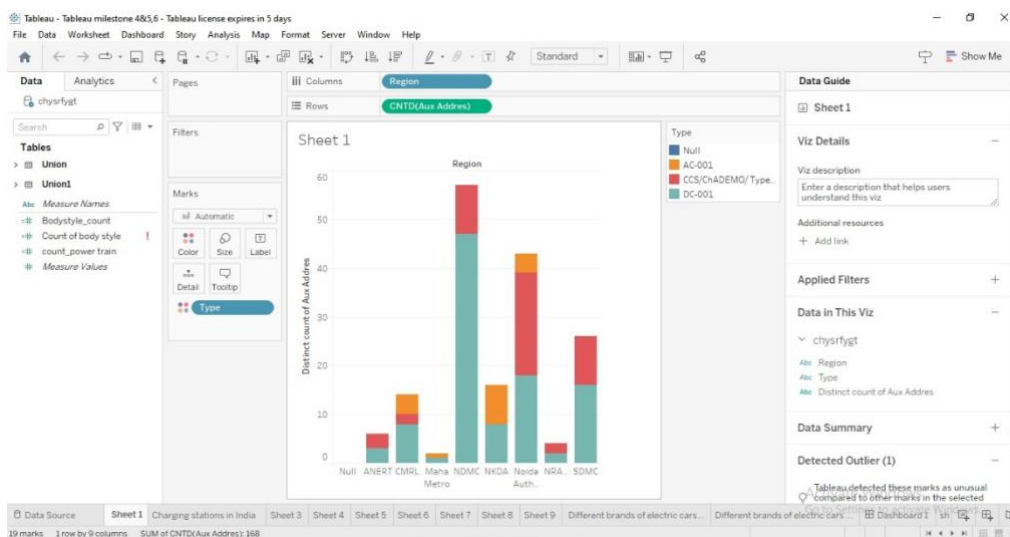**PROBLEM 4:** Lack of standardization
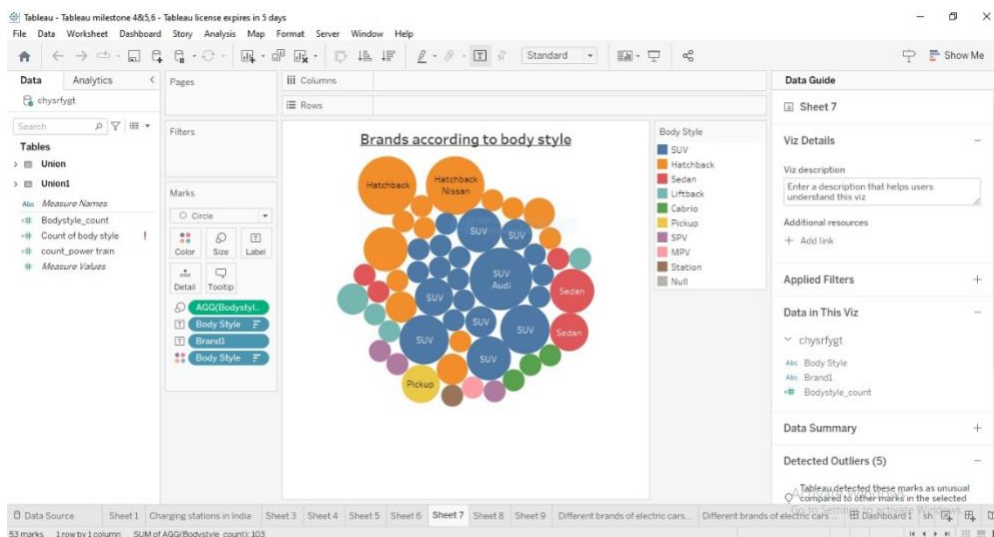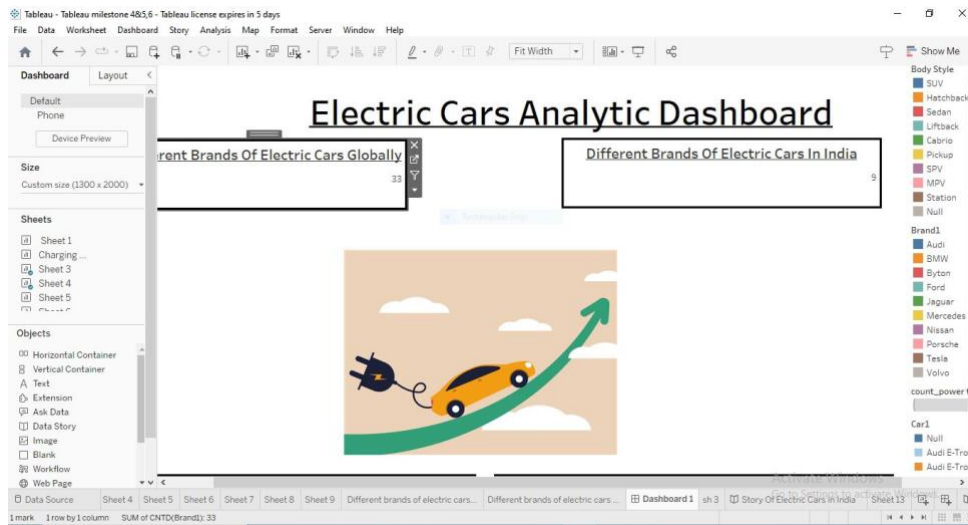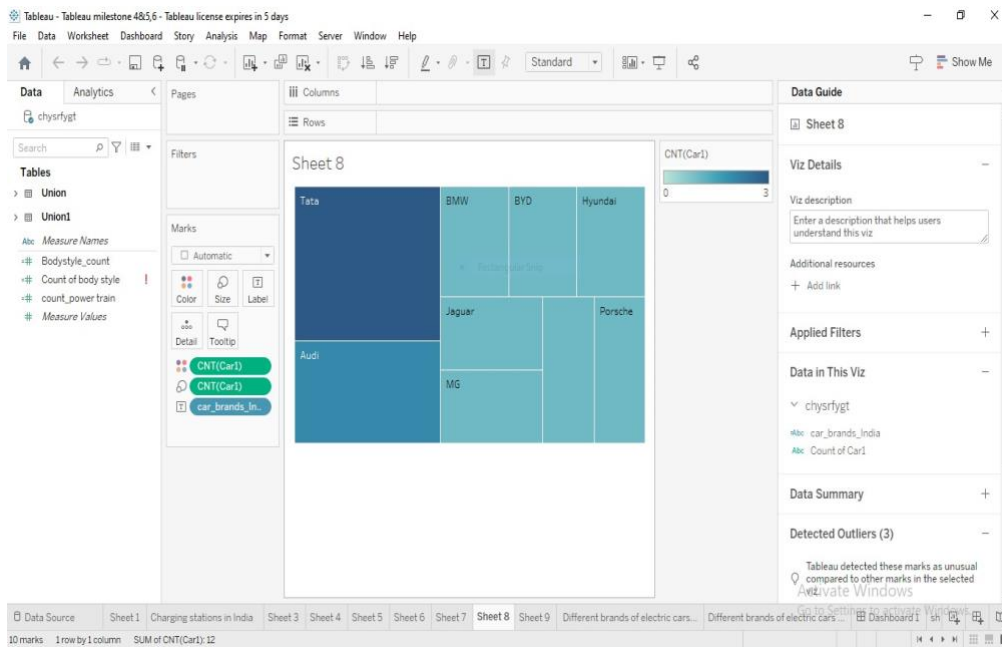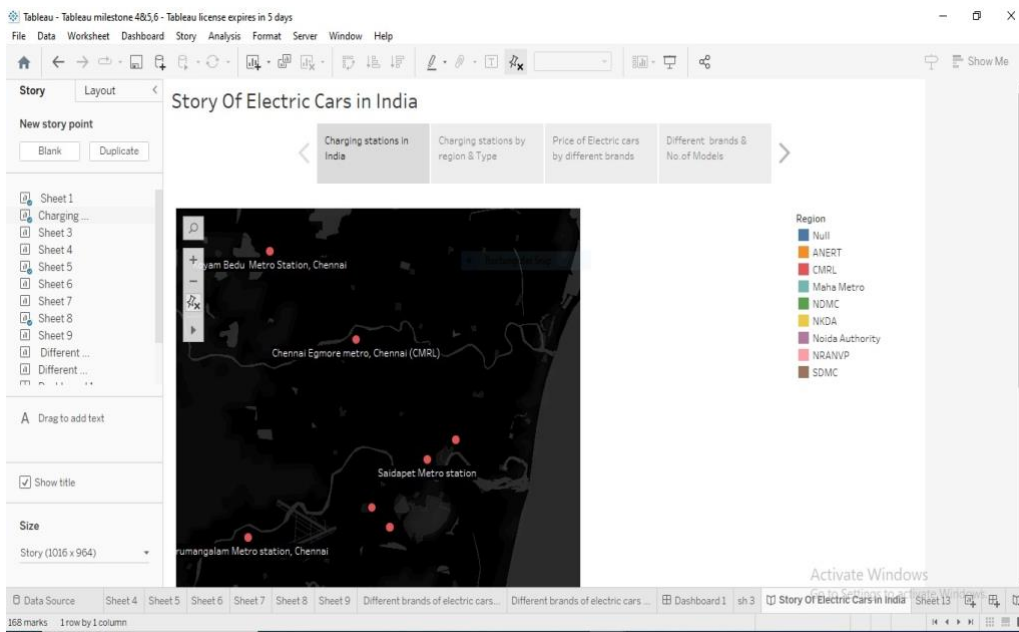
## 2.1.EMPATHY MAP:

## 2.2.BRAINSTROMING:



## 3.RESULT:

# 4.ADVANTAGES AND DISADVANTAGES:

1. **ADVANTAGES:**

   **Eco-friendly:** Because electric vehicles do not utilize fuel for combustion, there are no emissions or gas exhaust.

   **Cost-effective:** Electricity is fat 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.

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

2. **DISADVANTAGE:**

   **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.

   **Less driving range:** When compared to conventional automobiles, electric vehicles have a shorter driving range.  Electric cars can be convenient for shorty-distance travel but are inconvenient for long-distance travel.

   ## 5.APPLICATIONS:
   - The major for emission of fossil fuels will be reduced.
   - Noise pollution is decreased.
   - Easy charging points.
   - Solar energy for charging EV will make the trip more far.
   - We now know that EV can provide us with great flexibility with great potential.
   - No longer need to worry the impact of fuel exporters.
   - These vehicles are plugged into a charging station at a low voltage. There are no emissions released from these vehicles.

   ## 6.FUTURE SCOPE:

- There is no doubt that EVs are the future of driving and mobility. Some believe that we will soon see electric vehicles that can power themselves by harvesting energy from their. ELectric vehicle that gets charged up from home electricity or by solar energy will be the latest technology. But in future many other charging sources can be introduced.
- The future scope of electric vehicles is therefore massive. environment.

**7.CONCLUSION** :

- We first started with the journey about EV with literature survey with Mural's Empathy mapping. The map gives a clear idea about advantages, applications etc. Then the milestone were completed as per the guidelines given in the Visualization Tools and project manual. We learnt many things while doing this project both socially and educative. We learnt about handling tableau, some things like how to import files, making maps which are eye catchy and so on. This made us to think with innovation along with different perspectives. We learnt about managing team work. Over all, this making experience is very useful

"Thank you for Naan Mudhalvan initiative to upgrade us!"