VISUALIZATION TOOLS FOR ELECTRIC VEHICLE CHARGE AND RANGE ANALYSIS

1. 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.

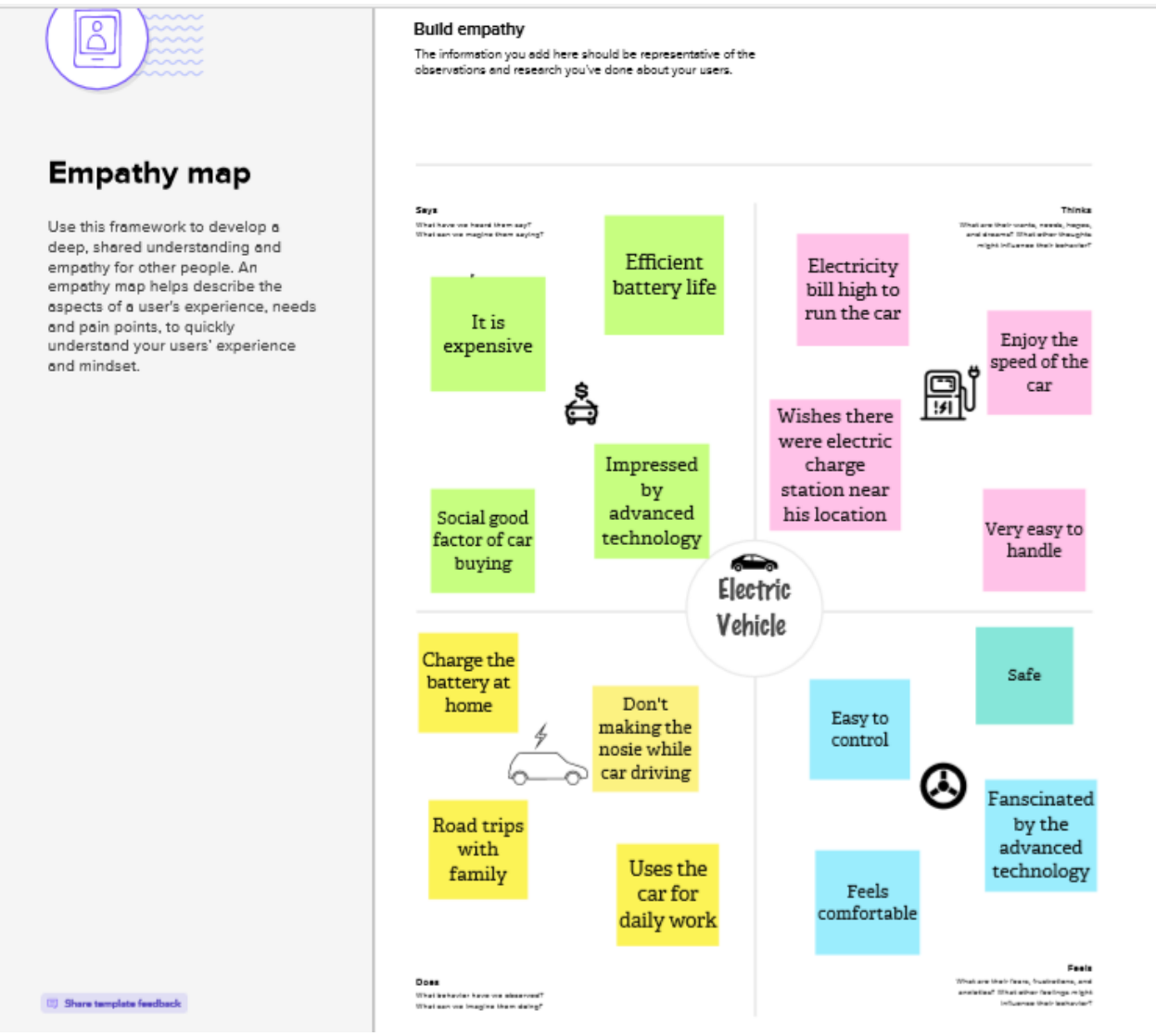
The new EV's are combined Electrical storage and propulsion systems with electronic sensors, controls, and actuators, integrated closely with software, secure data transfer to form a comprehensive transportation solution.

1.2 Purpose

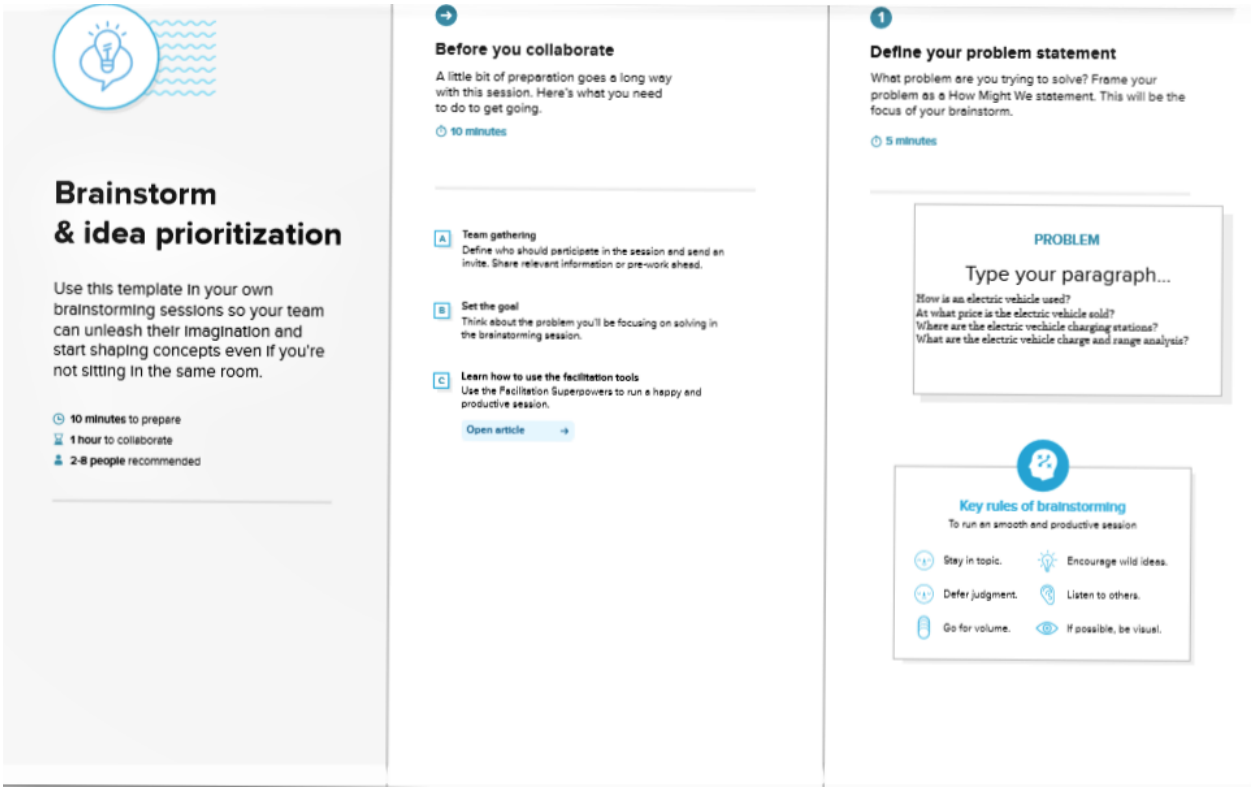
We can achieve Define Problem / Problem Understanding, Data Collection & Extraction from Database, Data Preparation, Data Visualizations, Dashboard, Story, Performance Testing, Web Integration and Project Demonstration & Documentation related to project.

2. PROBLEM DEFINITION & DESIGN THINKING

2.1 Empathy Map



2.2 Ideation & Brainstorming Map



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 [on/on by double?] icon to start drawing!

CHARUMATHI.K.S

- Using an electric vehicle can prevent pollution
- Impressed by advanced technology of the electric vehicle
- We are loves the speed of the car
- Its feels apart of something big
- In India, more are usesTata brand

KOTEESWARI.E

- which is the best and efficient for EV
- Charging at home because the lack of chargers on the countryside
- It is expensive but worth it
- It is safe and does not burn fossil fuels

ABINAYA.M

- Electric vehicle are easily to handle
- The social good factor of the car purchase
- Electric vehicle body style are fantastic
- Uses the car for work, road trips with family

SHIFFRA.K

- Electricity bills to run the car are expensive
- Electric vehicle needs to assured with the quality
- Wishes there were more electric charger near his location
- Which brand and model best for electric vehicle

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.

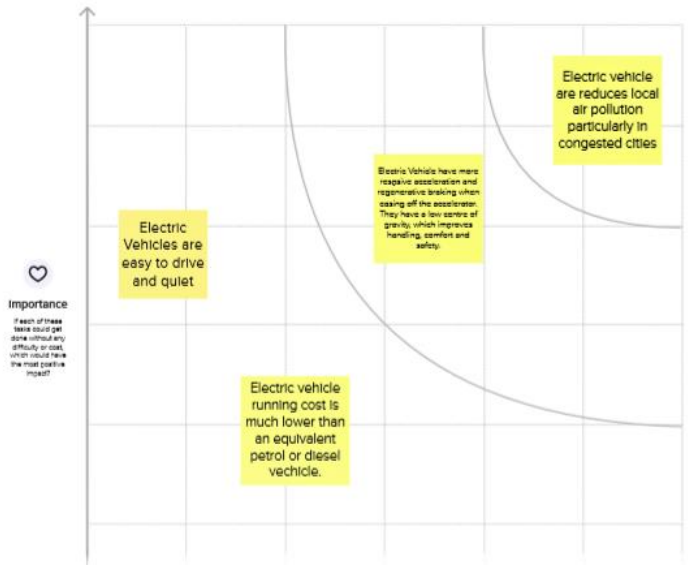
20 minutes

- It is low Noise pollution
  It is secure environment
  It is low maintenance cost
  It is more convenient
- It do not require gasoline
  It is natural resource saving
  It is increasing Popularity
  It obtain a big discount if you buy an EV in cash
- It is higher purchase cost
  It is low price on selling
  It is low speed and range
- It is low energy
  It is the inconvenience of Service Station
  It is slow charging

4 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



After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

- **Share the mural**
  Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- **Export the mural**
  Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

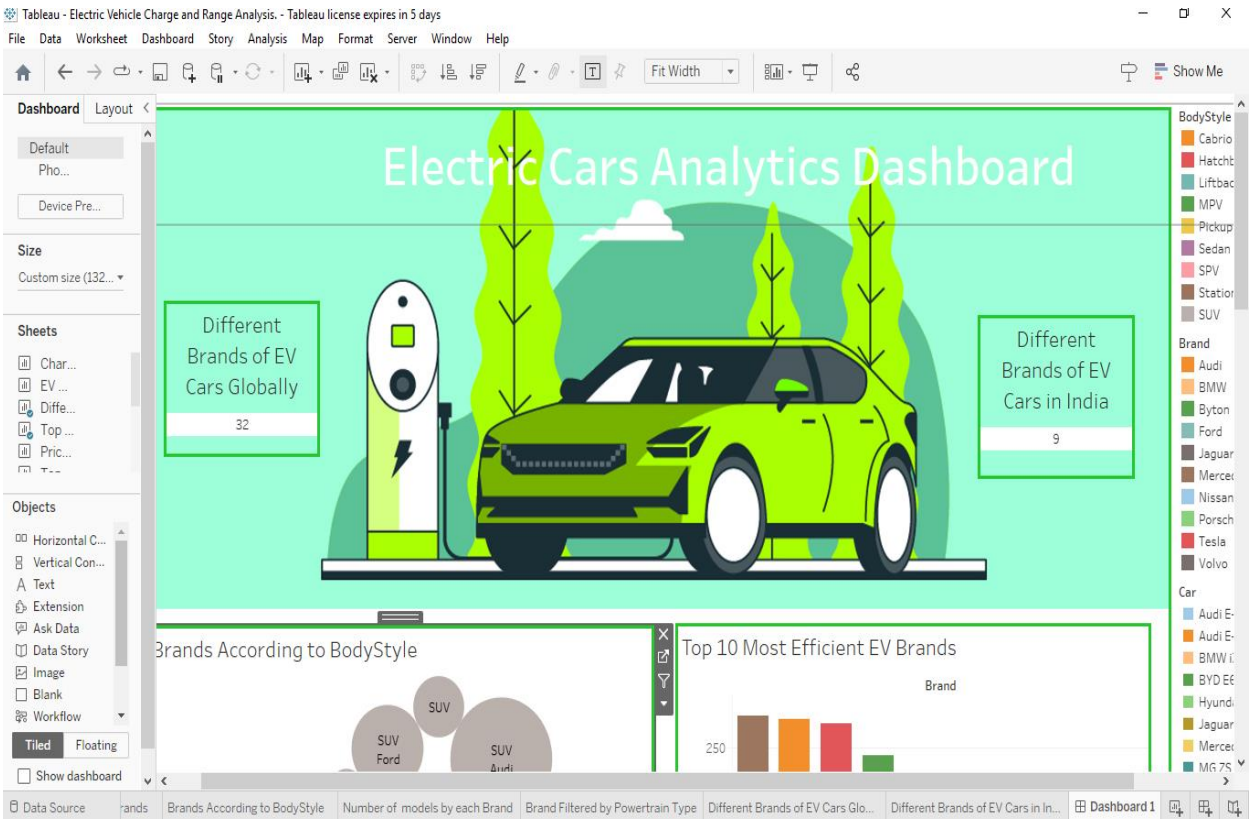
Keep moving forward

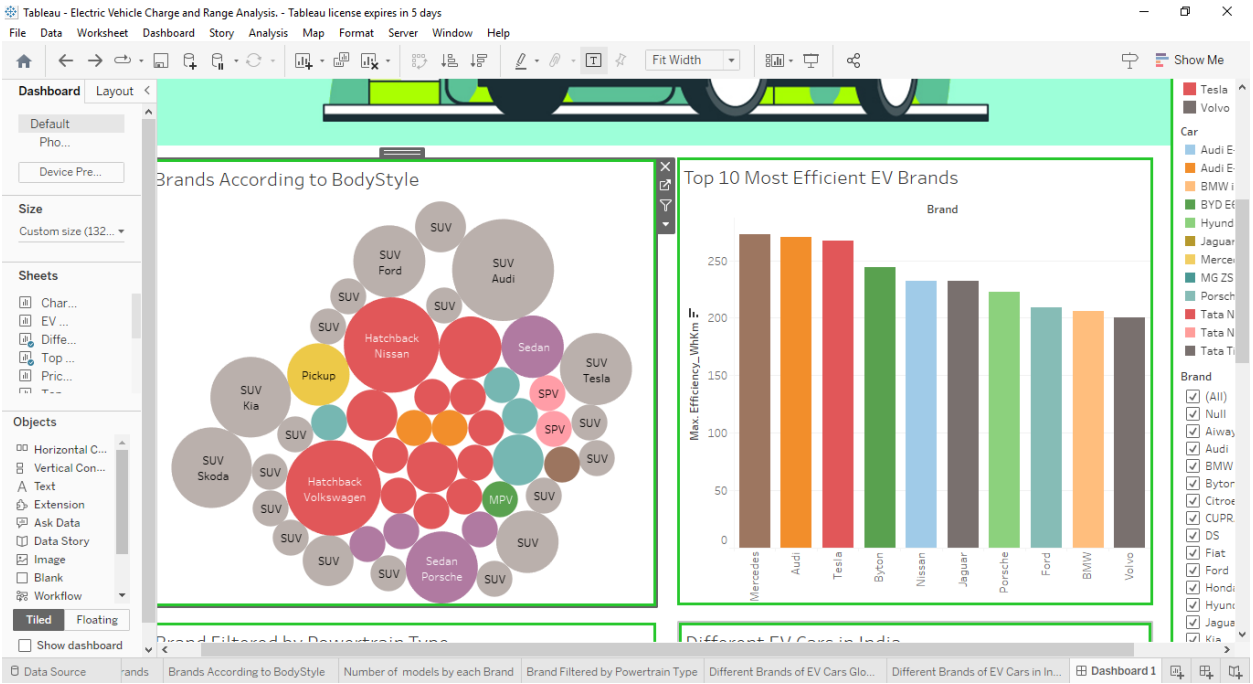
- **Strategy blueprint**
  Define the components of a new idea or strategy.
  Open the template →
- **Customer experience journey map**
  Understand customer needs, motivations, and obstacles for an experience.
  Open the template →
- **Strengths, weaknesses, opportunities & threats**
  Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
  Open the template →

Share template feedback

3. RESULT

Dashboard





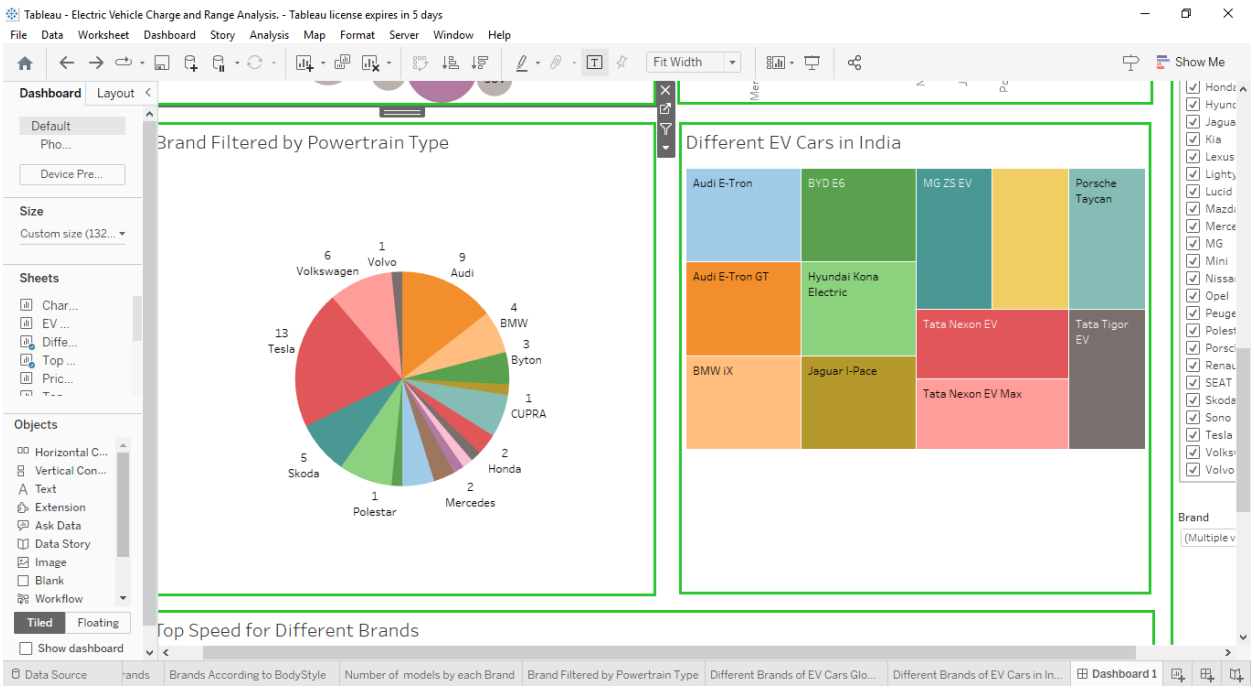


Tableau - Electric Vehicle Charge and Range Analysis. - Tableau license expires in 5 days
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Fit Width
Show Me
Dashboard Layout
Brand Filtered by Powertrain Type
1 Volvo
6 Volkswagen
9 Audi
4 BMW
3 Byton
13 Tesla
1 CUPRA
5 Skoda
2 Honda
2 Mercedes
1 Polestar
Different EV Cars in India
Audi E-Tron
BYD E6
MG ZS EV
Porsche Taycan
Audi E-Tron GT
Hyundai Kona Electric
Tata Nexon EV
Tata Tigor EV
BMW iX
Jaguar I-Pace
Tata Nexon EV Max
Top Speed for Different Brands
Brand
Objects
Horizontal C...
Vertical Con...
Text
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Ask Data
Data Story
Image
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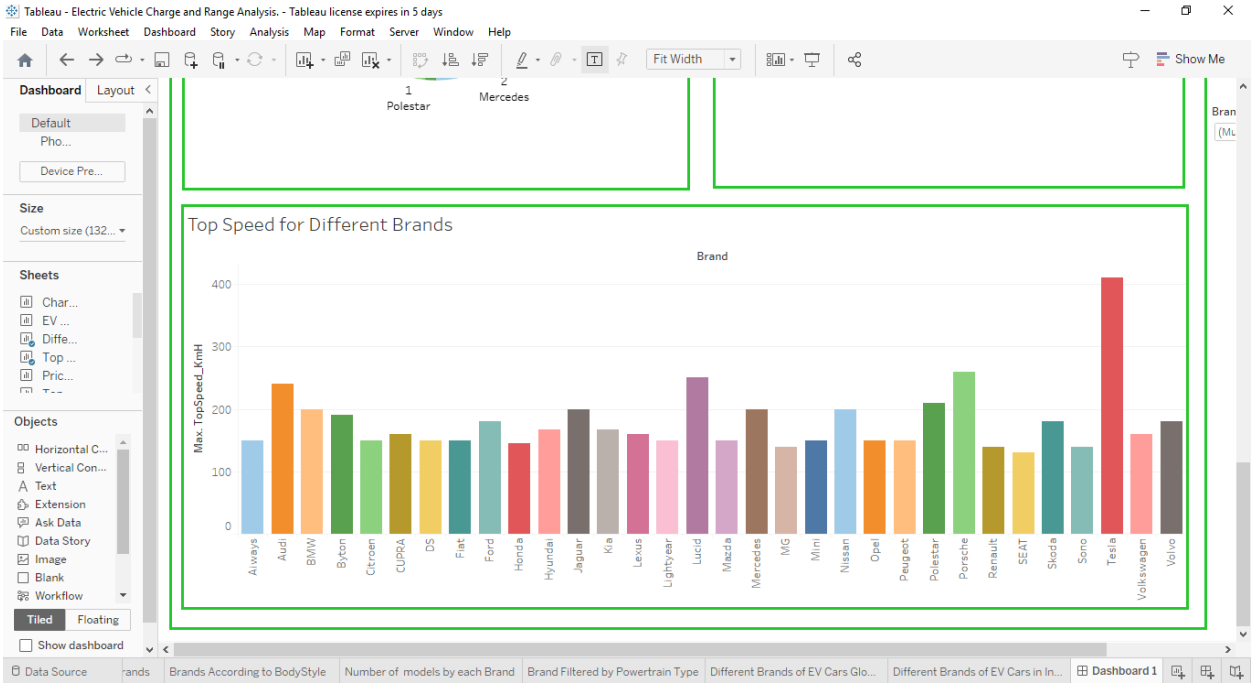
Data Source
Brands According to BodyStyle
Number of models by each Brand
Brand Filtered by Powertrain Type
Different Brands of EV Cars Glo...
Different Brands of EV Cars in In...
Dashboard 1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1 Polestar
2 Mercedes
Top Speed for Different Brands
Brand
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BMW
Byton
Citroen
CUPRA
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Fiat
Ford
Honda
Hyundai
Jaguar
Kia
Lexus
Lightyear
Lucid
Mazda
Mercedes
MG
Mini
Nissan
Opel
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SEAT
Skoda
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Volkswagen
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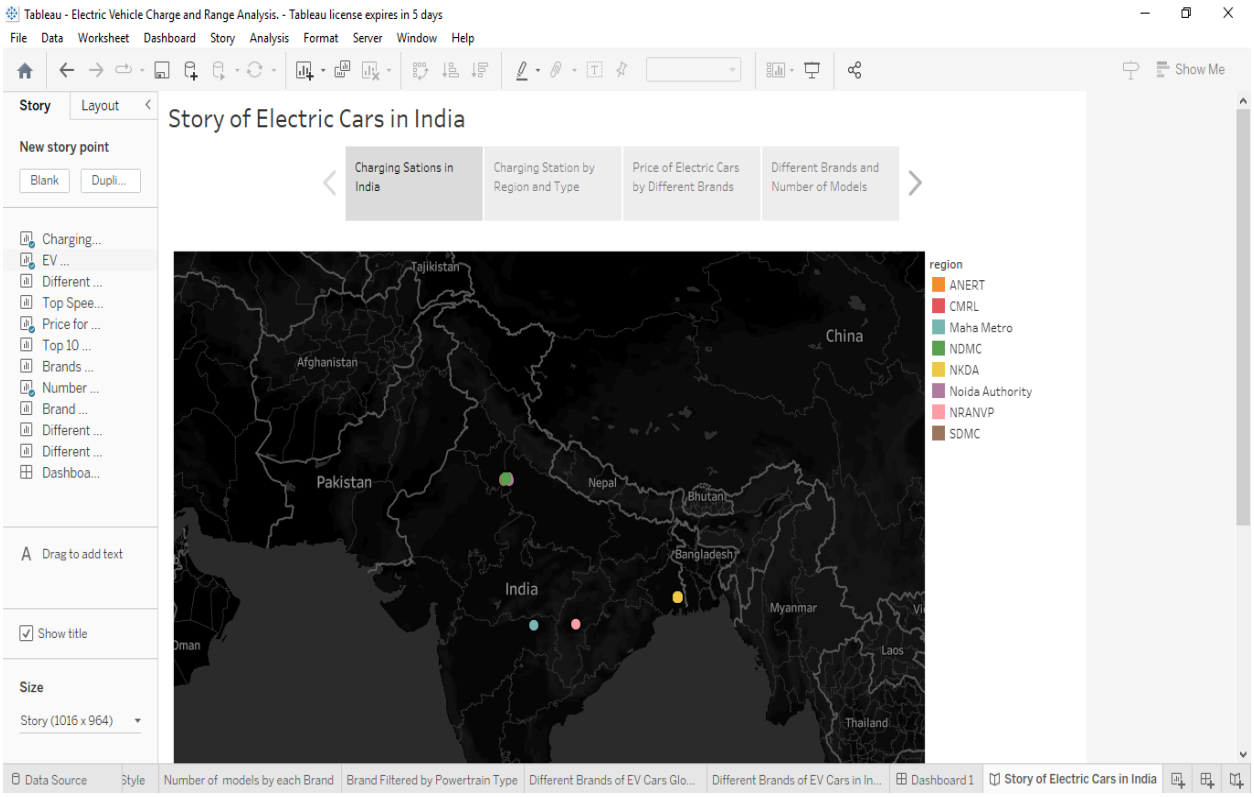
Dashboard 1

STORY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Show Me
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Size
Story (1016 x 964)
Story of Electric Cars in India
Charging Sations in India
Charging Station by Region and Type
Price of Electric Cars by Different Brands
Different Brands and Number of Models
Tajikistan
China
Afghanistan
Pakistan
Nepal
Bhutan
Bangladesh
India
Myanmar
Laos
Thailand
region
ANERT
CMRL
Maha Metro
NDMC
NKDA
Noida Authority
NRANVP
SDMC
Data Source
Style
Number of models by each Brand
Brand Filtered by Powertrain Type
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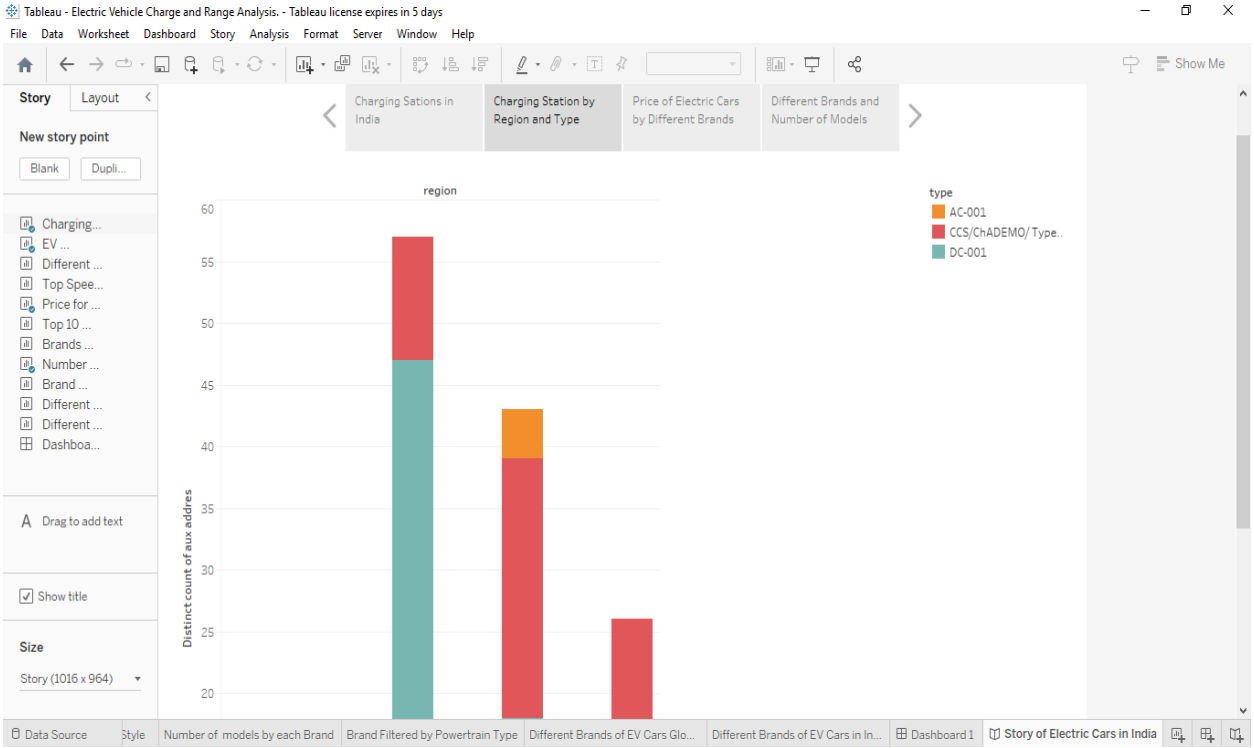
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Charging Sations in India
Charging Station by Region and Type
Price of Electric Cars by Different Brands
Different Brands and Number of Models
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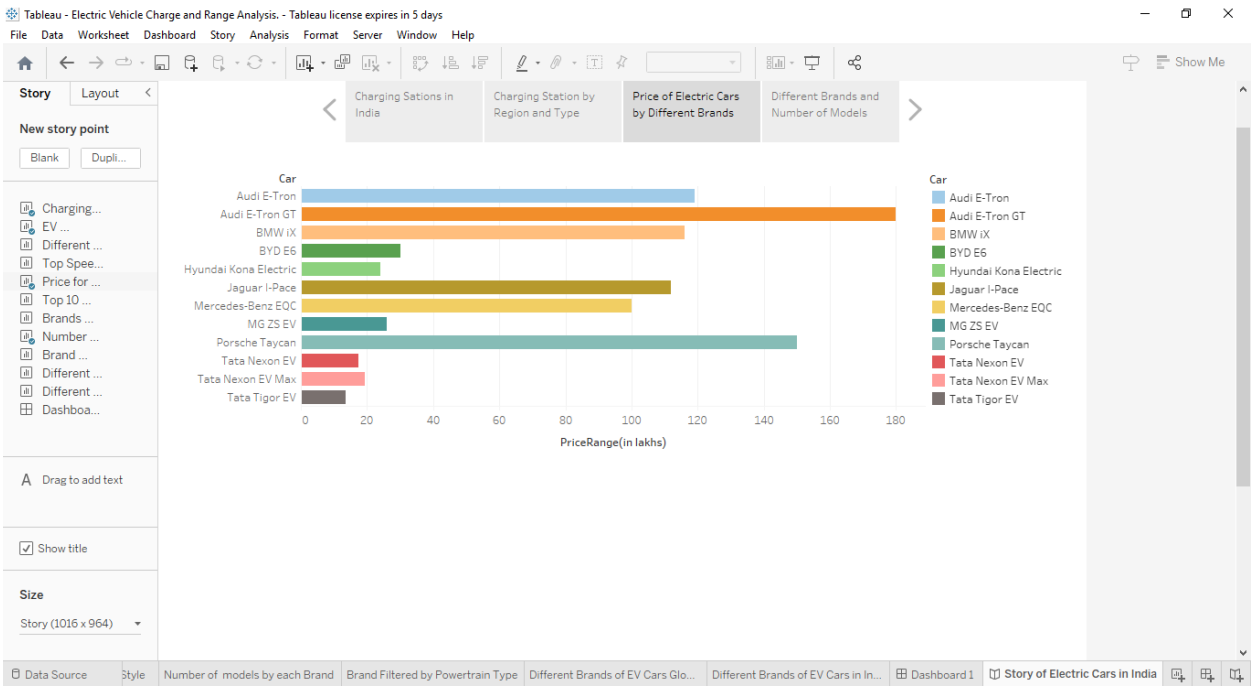
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Drag to add text
Show title
Size
Story (1016 x 964)
Charging Sations in India
Charging Station by Region and Type
Price of Electric Cars by Different Brands
Different Brands and Number of Models
Car
Audi E-Tron
Audi E-Tron GT
BMW iX
BYD E6
Hyundai Kona Electric
Jaguar I-Pace
Mercedes-Benz EQC
MG ZS EV
Porsche Taycan
Tata Nexon EV
Tata Nexon EV Max
Tata Tigor EV
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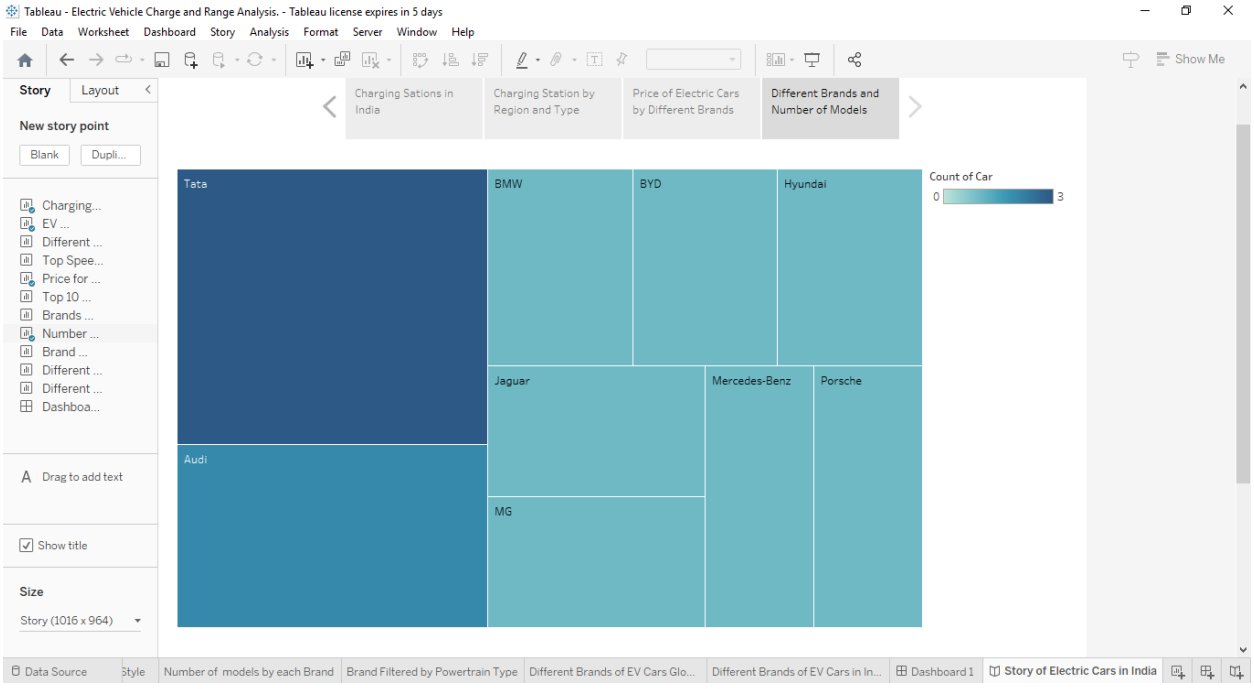
PriceRange(in lakhs)
Data Source
Style
Number of models by each Brand
Brand Filtered by Powertrain Type
Different Brands of EV Cars Glo...
Different Brands of EV Cars in In...
Dashboard 1
Story of Electric Cars in India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Charging Station by Region and Type
Price of Electric Cars by Different Brands
Different Brands and Number of Models
Tata
BMW
BYD
Hyundai
Jaguar
Mercedes-Benz
Porsche
Audi
MG
Count of Car
0 3
Data Source
Style
Number of models by each Brand
Brand Filtered by Powertrain Type
Different Brands of EV Cars Glo...
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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.

Disadvantage

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

The IoT can also be used to track energy usage and demand patterns. This data can help operators better understand how their stations are being used and identify opportunities for improvement. finally, the IoT can help EV charging station operators manage their assets and operations more effectively.

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

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. 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.

7. FUTURE SCOPE

The early 60s marked the rebirth of electric cars based on the need to reduce contamination from exhaust emissions and dependency on imported oil.

Now, burning coal or natural gas at a generation plant to produce electricity to later power electric cars is clearly not the smartest way to reduce pollution and CO_2 emissions—although still better than gasoline vehicles.

What's exciting about electric cars is the near future:

- distributed solar in rooftops, charging…
- clean batteries hopefully, Flash Charge Batteries in the basements, that charge…
- electric cars at any time of the day or night in 15 minutes or less hopefully, cars powered by Flash Charge Batteries.

For 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.