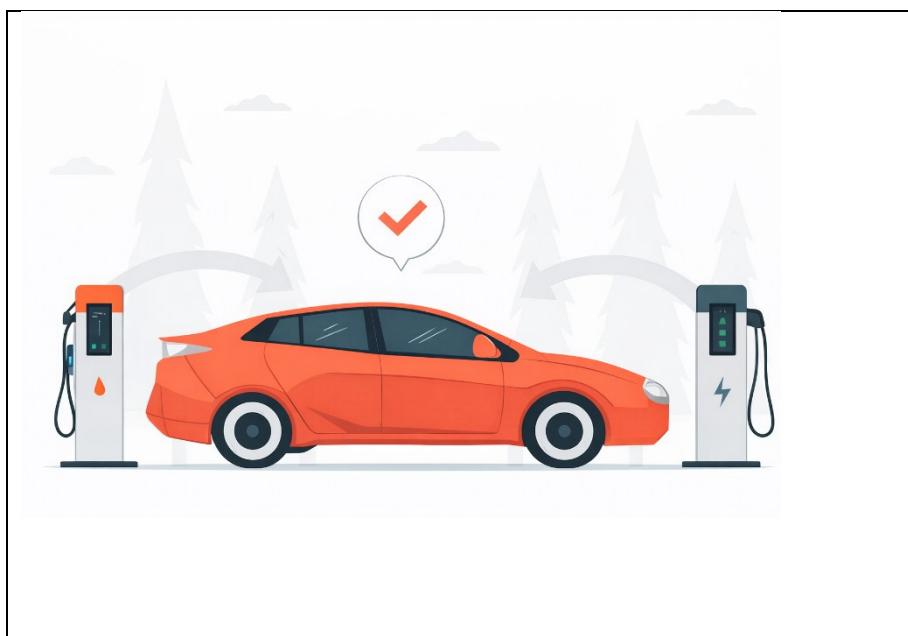


## **FINAL PROJECT REPORT**

# **Visualization tool for electric vehicle charge and range analysis**



A Report submitted by

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**TEAM ID: LTVIP2026TMIDS40575**

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# 1. INTRODUCTION

## 1.1 Project Overview

The project titled “**Visualization Tool for Electric Vehicle Charge and Range Analysis**” is developed to analyze electric vehicle performance using data visualization techniques. The system uses Tableau to create interactive dashboards and stories that help users understand EV range, battery capacity, charging time, and price comparison.

The project connects publicly available EV datasets in CSV format and transforms them into meaningful visual insights.

The dashboard developed in this project provides visual insights into important EV parameters including battery capacity (kWh), driving range (km), charging time, price comparison, and distribution of charging stations. By presenting the data in the form of bar charts, line graphs, maps, and comparison charts, the system allows users to easily understand and compare electric vehicle performance.

## 1.2 Purpose

The primary purpose of this project is to develop an interactive visualization tool that helps users analyze and compare electric vehicle performance parameters effectively. Many users find it difficult to interpret raw EV data presented in tables or technical specifications. Therefore, this project aims to transform complex numerical data into clear and meaningful visual insights.

The specific objectives of this project include:

- To collect and integrate electric vehicle datasets from publicly available sources.
- To clean and preprocess the data to ensure accuracy and consistency.
- To design an interactive Tableau dashboard for EV charge and range analysis.
- To implement filters and calculated fields for dynamic data exploration.
- To create a structured story that presents insights in a logical sequence.
- To demonstrate the use of data visualization techniques for decision-making support.

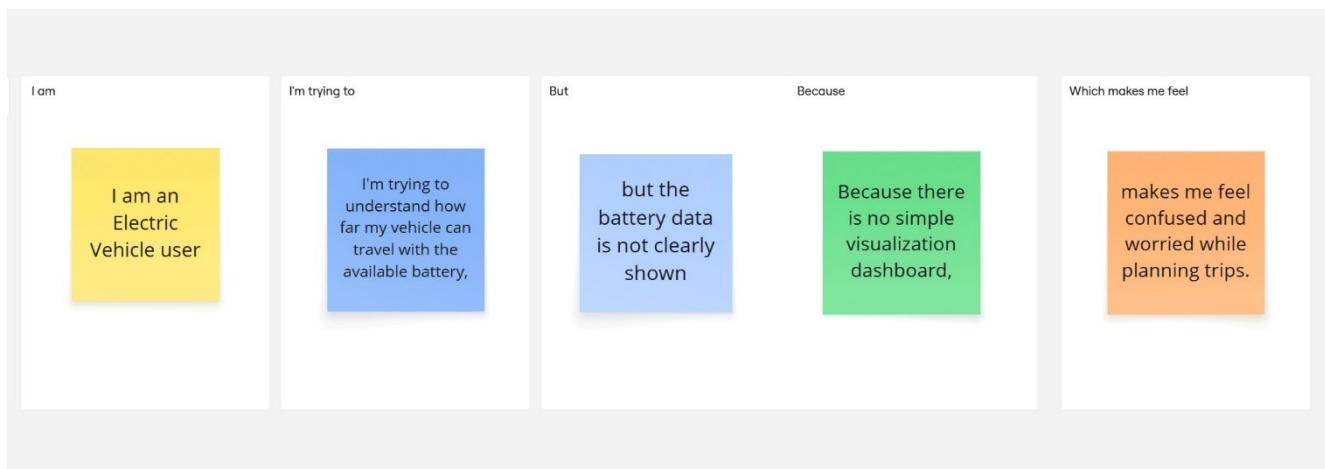
This project not only helps users understand electric vehicle specifications more easily but also showcases the importance of data analytics tools like Tableau in solving practical problems. By converting raw data into visual dashboards, the project supports informed decision-making and enhances user experience.

---

## 2. IDEATION PHASE

### 2.1 Problem Statement

Electric vehicle users often face difficulty in understanding battery capacity, charging time, and actual driving range. There is no simple visual system that clearly compares EV performance parameters in one place.



Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	I am an Electric Vehicle user	I'm trying to understand how far my vehicle can travel with the available battery	But the battery data and range information are not clearly presented	Because most tools show complex technical details instead of simple visuals	Which makes me feel confused and worried about planning trips.
PS-2	I am a daily commuter using an EV	I'm trying to find charging stations and plan my travel efficiently	But the information about charging locations and battery usage is scattered	Because there is no single dashboard that shows clear insights	which makes me feel anxious about battery drain and delays.

## 2.2 Empathy Map Canvas

### User Thinks:

- Which EV gives better range?
- How long does charging take?

### User Feels:

- Confused about technical specifications
- Needs simple comparison

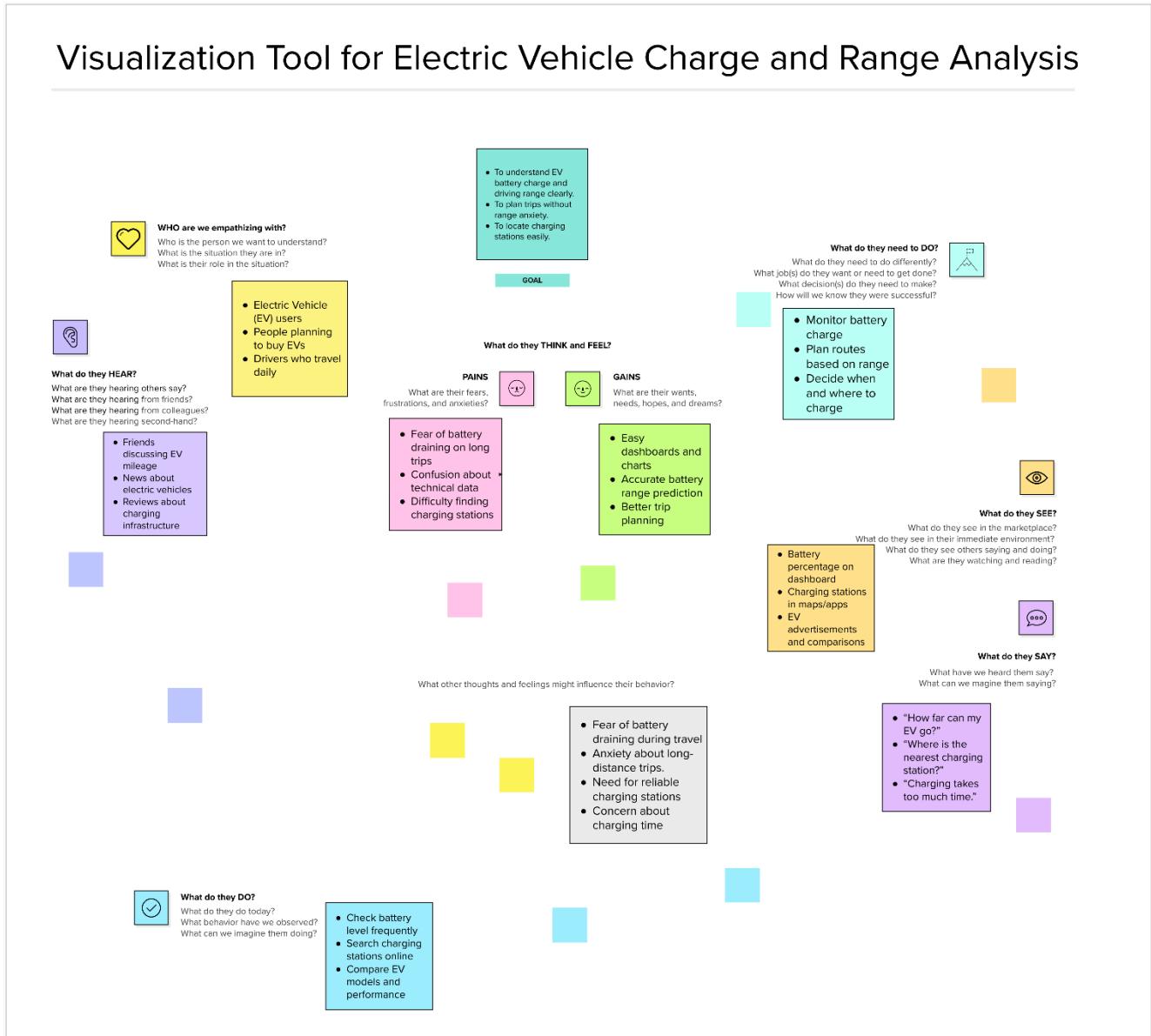
### User Says:

- I want easy comparison
- I need clear visual insights

### User Does:

- Searches EV details online
- Compares different models manually

## Visualization Tool for Electric Vehicle Charge and Range Analysis



## 2.3 Brainstorming

The team discussed various ideas such as:

- Comparing EV models
- Range vs charging time analysis
- Battery efficiency comparison
- Charging station availability visualization

### Step-1: Team Gathering, Collaboration and Select the Problem Statement

This screenshot shows the first step of a Miro template titled "Brainstorm & idea prioritization". The template is divided into three main sections: "Before you collaborate", "Define your problem statement", and "Group ideas".

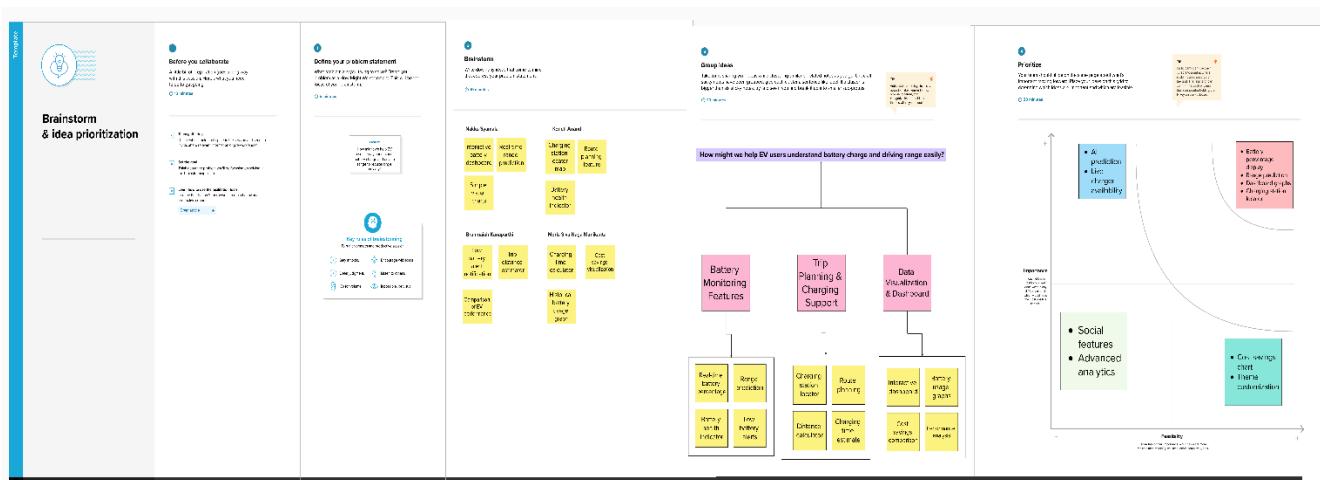
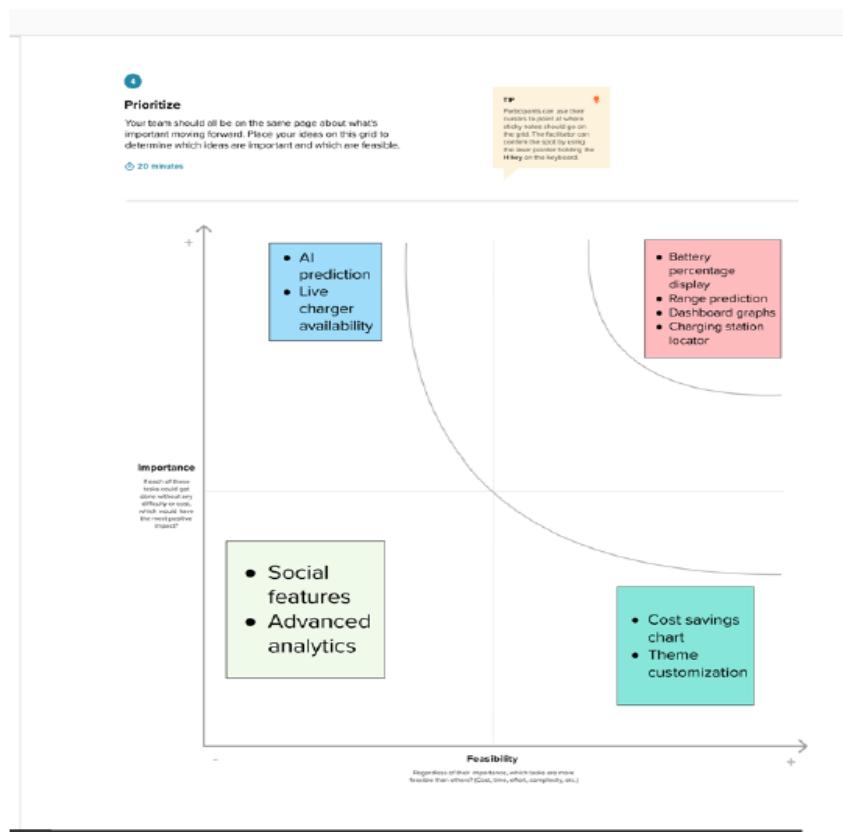
- Before you collaborate:** A section with a lightbulb icon containing a brain. It includes steps like "Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.", "Think about the problem you'll be focusing on solving in the brainstorming session.", and "Learn how to use the facilitation tools". A call-to-action button "Open article" is present.
- Define your problem statement:** A section with a brain icon. It asks "What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm." A note says "How might we help EV users easily understand battery charge and driving range to reduce range anxiety?". A timer indicates "5 minutes".
- Group ideas:** A section with a brain icon. It lists "Key rules of brainstorming" (Stay in topic, Encourage wild ideas, Defer judgment, Listen to others, Go for volume, If possible, be visual). A note says "Add understandable logic to each notes cluster & refine it to fit the problem definition. Add a new cluster if needed." A timer indicates "20 minutes".

### Step-2: Brainstorm, Idea Listing and Grouping

This screenshot shows the second step of the Miro template, "Brainstorm, Idea Listing and Grouping". It features two main sections: "Brainstorm" and "Group ideas".

- Brainstorm:** A section where team members list their ideas. Ideas are categorized by owner (Neha Syamsa, Koneti Anand, Brahmseiah Kanaparthi, Morla Siva Naga Manikanta) and include:
  - Neha Syamsa: Interactive battery dashboard, Real-time range prediction, Simple visual charts, Charging station locator map, Route planning feature, Battery health indicator.
  - Koneti Anand: Low battery alert notification, Trip distance estimator, Comparison of EV performance, Charging time calculator, Historical battery usage graph, Cost savings visualization.
  - Brahmseiah Kanaparthi: Low battery alert notification, Trip distance estimator, Comparison of EV performance, Charging time calculator, Historical battery usage graph, Cost savings visualization.
  - Morla Siva Naga Manikanta: Charging time calculator, Historical battery usage graph, Cost savings visualization.
- Group ideas:** A section where ideas are clustered into groups. A central question is "How might we help EV users understand battery charge and driving range easily?". Three main groups are formed:
  - Battery Monitoring Features:** Real-time battery percentage, Range prediction, Battery health indicator, Low battery alerts.
  - Trip Planning & Charging Support:** Charging station locator, Route planning, Distance calculator, Charging time estimate.
  - Data Visualization & Dashboard:** Interactive dashboard, Battery usage graphs, Cost savings comparison, Performance analysis.

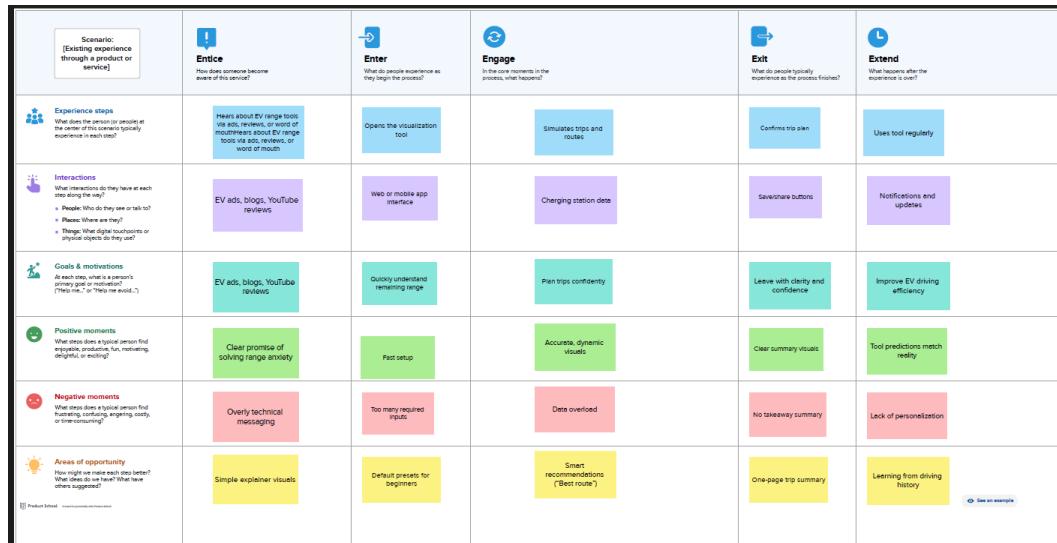
## Step-3: Idea Prioritization



## 3. REQUIREMENT ANALYSIS

### 3.1 Customer Journey Map

1. User selects EV model
2. User checks battery capacity
3. User compares charging time
4. User analyzes driving range
5. User makes decision



### 3.2 Solution Requirement

#### Functional Requirements:

- Display EV model comparison
- Show battery and range analysis
- Provide interactive filters
- Generate visual dashboard and story

#### Functional Requirements:

Following are the functional requirements of the proposed solution

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Dataset Upload & Integration	Upload EV dataset (CSV/Excel) Connect dataset to Tableau
FR-2	Data Cleaning & Processing	Remove missing/null values Format columns (Range, Battery Capacity, Charging Time) Filter incorrect or duplicate data
FR-3	Data Visualization Dashboard	Display charts (Bar chart, Pie chart, Line chart) Show EV range comparison Show charging time analysis
FR-4	User Interaction	Apply Filters like vehicle type , range View dashboards
FR-5	Data Analysis	Compare EV efficiency Identify high range EV models
FR-6	Report Viewing	View dashboards on web browser Access dashboard through Tableau Public

### Non-Functional Requirements:

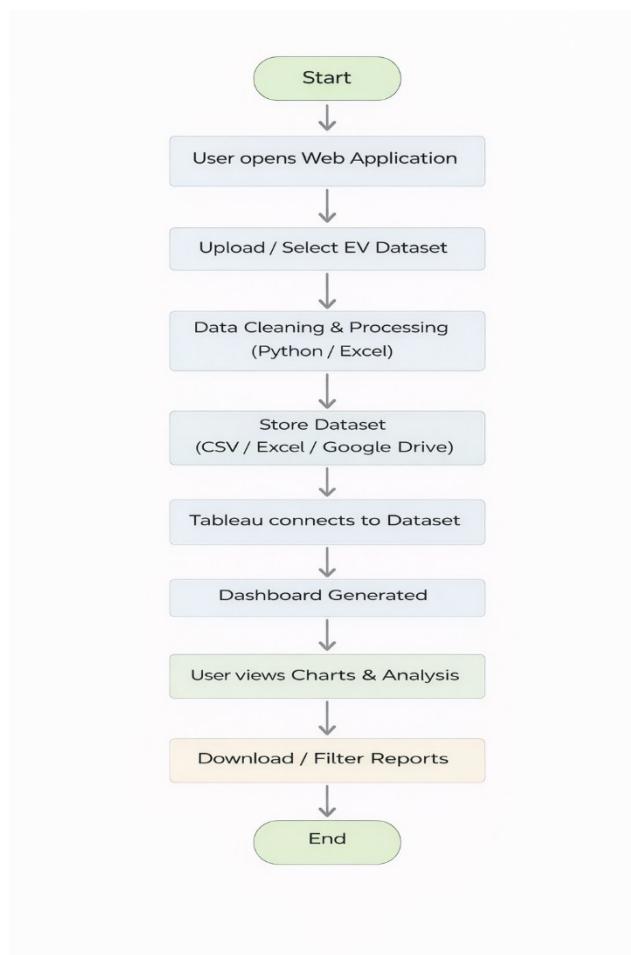
- Easy to use
- Fast data rendering
- Clear visualization

#### Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

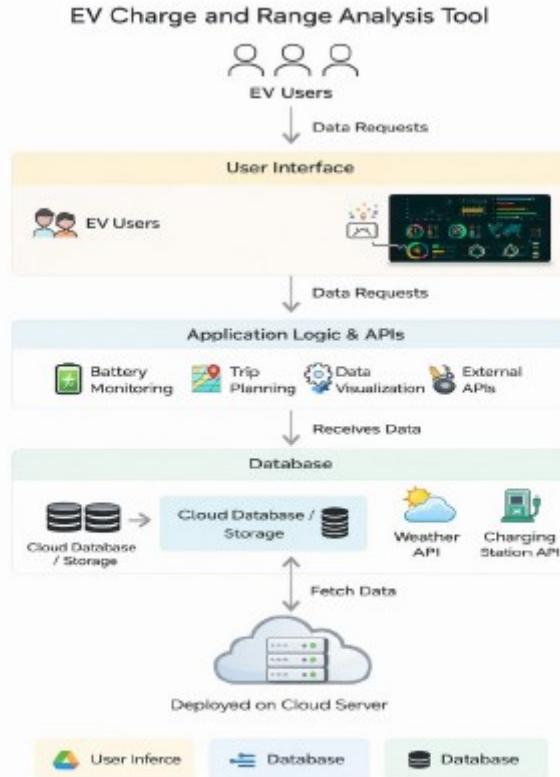
FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	The dashboard should be simple, user-friendly, and easy to understand.
NFR-2	<b>Security</b>	Dataset access controlled through Google Drive & Tableau Public permissions.
NFR-3	<b>Reliability</b>	System should correctly display EV data without errors or data loss.
NFR-4	<b>Performance</b>	Dashboard should load within few seconds after dataset optimization.
NFR-5	<b>Availability</b>	Dashboard available 24/7 through cloud hosting (Tableau Public).
NFR-6	<b>Scalability</b>	System should support adding more EV datasets in future without redesigning architecture.

### 3.3 Data Flow Diagram



### 3.4 Technology Stack

- Tableau (Data Visualization)
- Microsoft Excel (Data Cleaning)
- CSV Files (Dataset Storage)



**Table-1 :**  
Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Users interact through a web-based dashboard to view EV charge & range insights.	HTML, CSS, JavaScript
2.	Application Logic-1	Handles data processing and transformation before visualization.	Python
3.	Application Logic-2	Data cleaning and preprocessing (removing nulls, formatting columns, filtering).	MS excel / Python (pandas)
4.	Application Logic-3	Data aggregation & calculations (range comparison, efficiency metrics).	python
5.	Database	Stores structured EV dataset.	CSV / Excel files
6.	Cloud Database	Cloud-based Storage for dataset sharing.	Google Drive
7.	File Storage	Local system storage for dataset files.	Local File System
8.	External API-1	EV dataset collection from public open data portals.	Public Open Data APIs
9.	External API-2	Fetch charging station locations.	Google Maps API
10.	Machine Learning Model	Not Implemented	Not Applicable
11.	Infrastructure (Server / Cloud)	Deployment of dashboard.	Tableau Public

## 4. PROJECT DESIGN

### 4.1 Problem Solution Fit

The solution directly addresses the problem by providing:

- Clear visual comparison of EV models
- Interactive filters for better analysis
- Easy understanding of charging and range

<b>Define CCS, fit into CC</b>  Focus on J&P, tap into BE, understand RC	<b>1. CUSTOMER SEGMENT(S)</b> <ul style="list-style-type: none"> <li>• Electric Vehicle (EV) owners (2-wheelers, 3-wheelers, cars) <b>CS</b></li> <li>• Fleet operators (ride-hailing, delivery, logistics)</li> <li>• EV buyers evaluating range performance</li> <li>• Charging infrastructure planners</li> <li>• Automotive engineers &amp; data analysts</li> </ul>	<b>6. CUSTOMER CONSTRAINTS</b> <ul style="list-style-type: none"> <li>• Limited technical knowledge of battery behavior</li> <li>• Inaccurate or static range estimates.</li> <li>• Lack of real-time data visualization</li> <li>• Poor integration with driving conditions</li> <li>• Data overload without clear insights</li> </ul> <b>CC</b>	<b>5. AVAILABLE SOLUTIONS</b> <ul style="list-style-type: none"> <li>• Basic dashboard range estimators in EVs</li> <li>• Mobile apps showing battery percentage only</li> <li>• Static manufacturer-claimed range values</li> <li>• Simple navigation apps with charging points</li> </ul> <b>E</b>
Focus on J&P, tap into BE, understand RC	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <ul style="list-style-type: none"> <li>• Understand real-time battery charge and remaining range</li> <li>• Predict how driving behavior, terrain, and weather affect range</li> <li>• Reduce "range anxiety" during trips</li> <li>• Plan charging stops efficiently</li> <li>• Compare expected vs actual vehicle performance</li> </ul> <b>JP</b>	<b>9. PROBLEM ROOT CAUSE</b> <ul style="list-style-type: none"> <li>• Range calculations based on ideal conditions</li> <li>• No visualization of energy consumption patterns</li> <li>• Lack of predictive analytics</li> <li>• Poor user understanding of battery dynamics</li> <li>• Fragmented data sources</li> </ul> <b>RC</b>	<b>7. BEHAVIOUR</b> <ul style="list-style-type: none"> <li>• Frequently checking battery percentage</li> <li>• Over-charging due to fear of running out</li> <li>• Avoiding long trips</li> <li>• Driving conservatively to save charge</li> <li>• Relying on external apps for reassurance</li> </ul> <b>BE</b>
<b>Focus on J&amp;P, tap into BE, understand RC</b>	<b>3. TRIGGERS</b> <ul style="list-style-type: none"> <li>• Low battery warning</li> <li>• Planning a long or unfamiliar trip</li> <li>• Unexpected drop in remaining range</li> <li>• Searching for nearby charging stations</li> <li>• Comparing EV efficiency across routes or vehicles</li> </ul> <b>TR</b>  <b>4. EMOTIONS: BEFORE / AFTER</b>  <b>EM</b> Before <ul style="list-style-type: none"> <li>• Anxiety about reaching destination</li> <li>• Uncertainty and lack of trust in range estimates</li> <li>• Frustration due to inaccurate predictions</li> </ul> After <ul style="list-style-type: none"> <li>• Confidence in trip planning</li> <li>• Reduced stress while driving</li> <li>• Trust in EV performance and data insights</li> </ul>	<b>10. YOUR SOLUTION</b>  <b>SL</b> Interactive visual dashboard showing: <ul style="list-style-type: none"> <li>• Battery charge vs distance</li> <li>• Energy consumption trends</li> <li>• Predicted remaining range</li> </ul> Real-time data integration (speed, terrain, weather) <ul style="list-style-type: none"> <li>• Route-based range forecasting</li> <li>• Charging station visualization and recommendations</li> <li>• User-friendly graphs, alerts, and insights</li> </ul>	<b>8. CHANNELS of BEHAVIOUR</b>  <b>CH</b> <ul style="list-style-type: none"> <li>• In-vehicle infotainment system</li> <li>• Mobile application (Android / iOS)</li> <li>• Web dashboard for analytics</li> <li>• Alerts &amp; notifications</li> <li>• Navigation and maps integration</li> </ul>

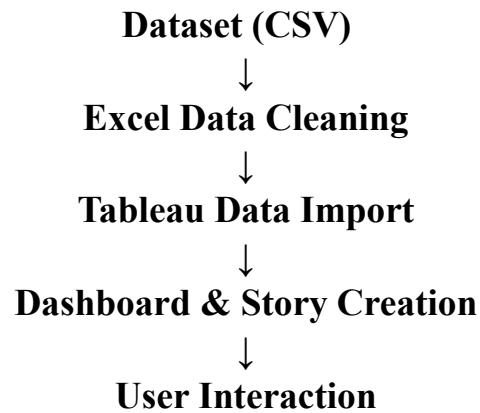
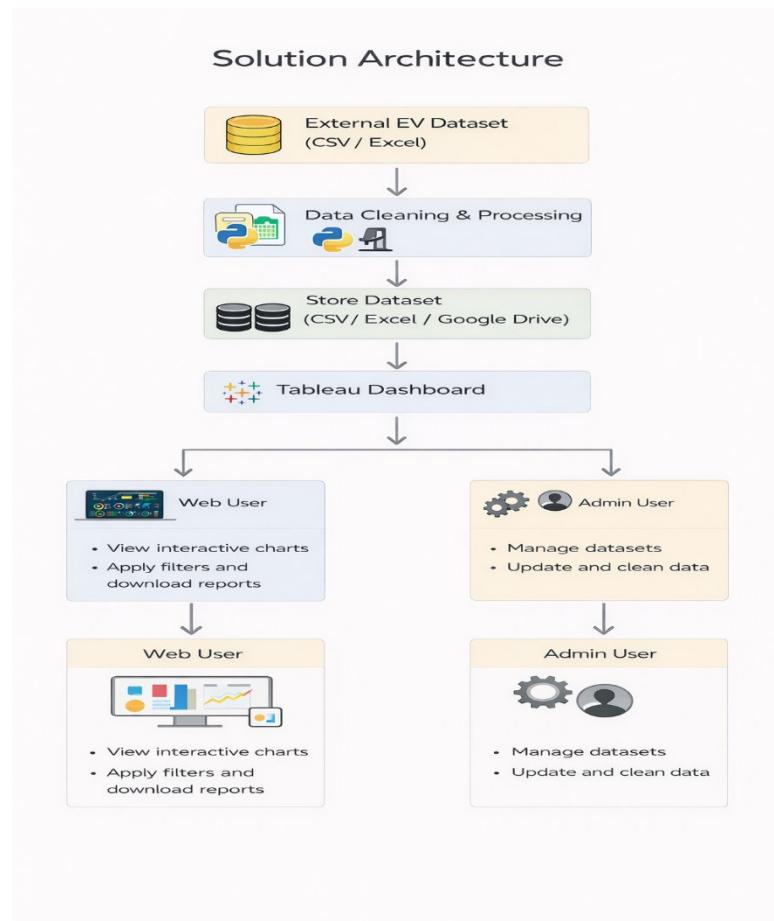
## 4.2 Proposed Solution

A Tableau-based visualization system that:

- Connects EV dataset
- Cleans and preprocesses data
- Creates dashboards and stories
- Provides interactive analysis

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Electric vehicle users and researchers often find it difficult to analyze charging time, battery range, and performance data because the information is scattered and not presented in an easy-to-understand format. There is a need for a system that can clean, analyze, and visualize EV data clearly.
2.	Idea / Solution description	The proposed solution is a visualization tool that collects EV datasets, cleans the data using Excel/Python, and creates interactive dashboards in Tableau. Users can view charging trends, range comparisons, and performance insights through charts and filters.
3.	Novelty / Uniqueness	<ul style="list-style-type: none"> <li>➢ Combines data cleaning, analysis, and visualization in one workflow</li> <li>➢ Interactive dashboards for better understanding of EV performance</li> <li>➢ Easy-to-use interface for students and researchers</li> </ul>
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> <li>➢ Helps people understand electric vehicles better</li> <li>➢ Supports awareness of eco-friendly transportation</li> <li>➢ Useful for students, researchers, and EV users to analyze trends easily</li> </ul>
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> <li>➢ Free dashboard for basic users</li> <li>➢ Advanced analytics or customized reports can be offered as a paid service</li> <li>➢ Can be used by automobile companies or research organizations</li> </ul>
6.	Scalability of the Solution	<ul style="list-style-type: none"> <li>➢ Can handle larger datasets in the future</li> <li>➢ Can be extended to real-time EV data</li> <li>➢ Can integrate cloud storage and web dashboards for multiple users.</li> </ul>

## 4.3 Solution Architecture



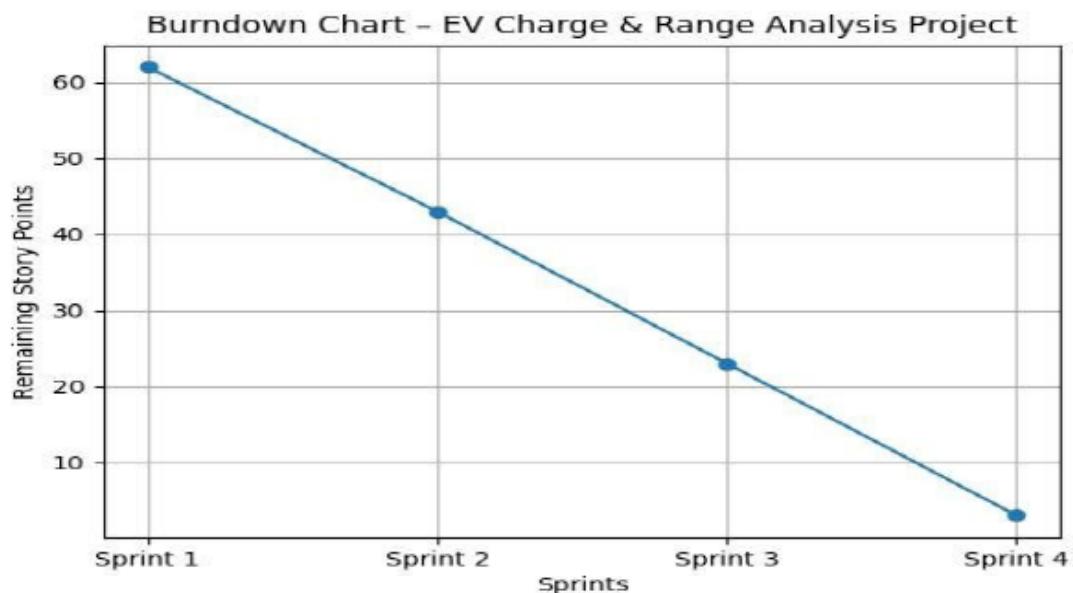
## 5. PROJECT PLANNING & SCHEDULING

### 5.1 Project Planning

The project was divided into four sprints:

- Sprint 1: Data Collection & Cleaning
- Sprint 2: Range Calculation
- Sprint 3: Dashboard Development
- Sprint 4: Story & Reporting

Velocity =  $77 \div 4 = 19.25$  story points per sprint



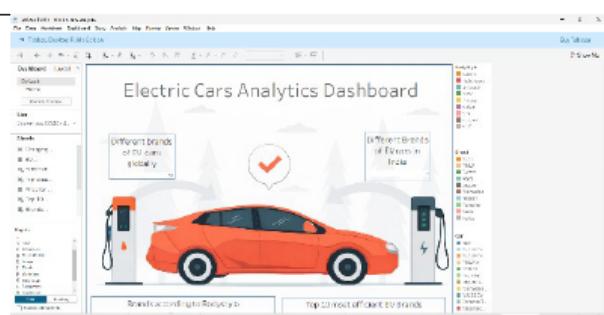
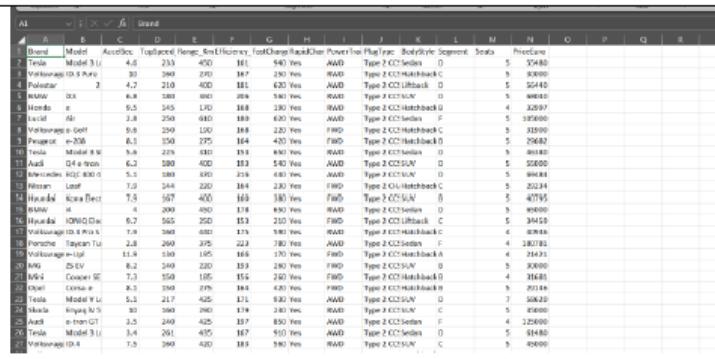
Project Tracker, Velocity & Burndown Chart:(4Marks)

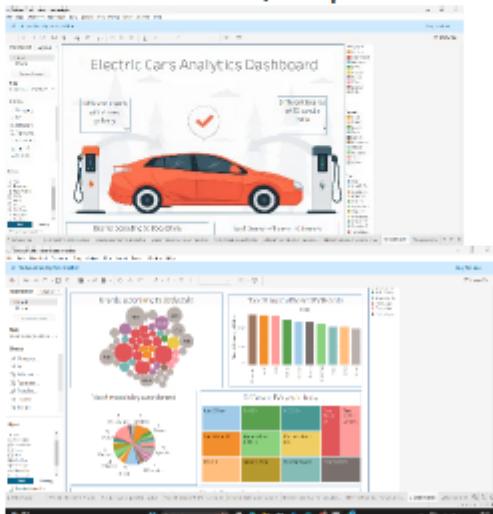
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6Days	2 February2026	7 February2026	18	7 February2026
Sprint-2	20	6Days	9 February2026	14 February2026	19	14 February2026
Sprint-3	20	6Days	16 February2026	21 February2026	20	21 February2026
Sprint-4	20	6Days	23 February2026	28 February2026	20	28 February2026

## 6. FUNCTIONAL AND PERFORMANCE TESTING

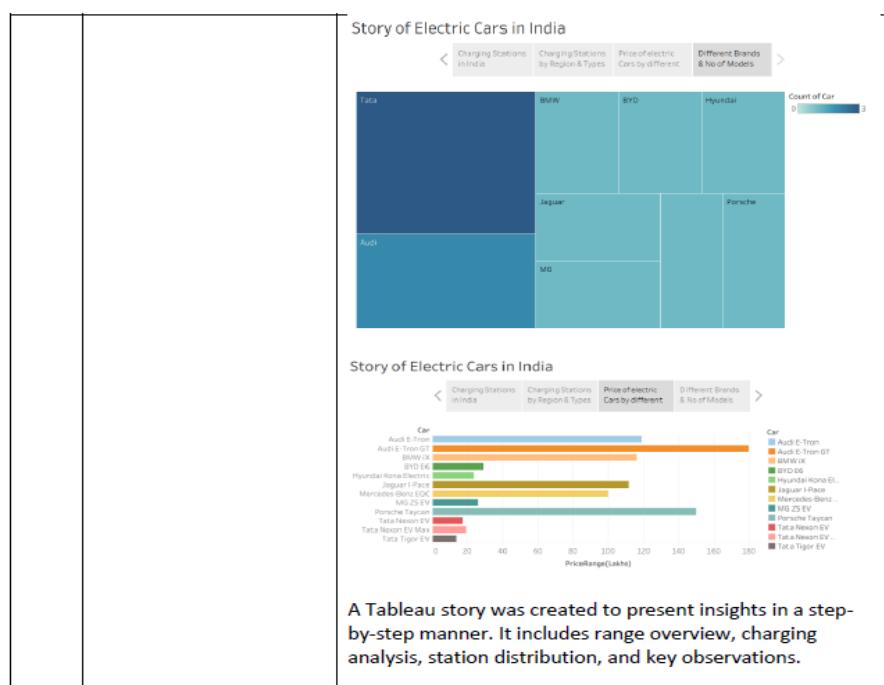
### 6.1 Performance Testing

- Data rendered successfully without errors
- Filters respond dynamically
- Calculated fields work correctly
- Dashboard loads efficiently
- Story presents insights clearly

S.No.	Parameter	Screenshot / Values
1.	Data Rendered	 <p>The dashboard successfully renders EV data including vehicle model, battery capacity (kWh), charging time, price, and driving range (km). The data is visualized using charts and map representations for better understanding.</p>
2.	Data Preprocessing	 <p>Data was cleaned before visualization by removing null values and duplicate records. Column names were standardized and units such as km and kWh were formatted properly to ensure consistency and accuracy.</p>

3. Utilization of Filters	 <p>Interactive filters were implemented in the dashboard to allow users to analyze data based on EV model, brand, range, and battery capacity. These filters enable dynamic and customized data exploration.</p>
4. Calculation fields Used	 <p>Calculated fields were created in Tableau to perform additional analysis such as average range and efficiency comparison. These calculated fields improve analytical insights and dashboard performance.</p>
5. Dashboard design	<p>No of Visualizations / Graphs – 6</p> 

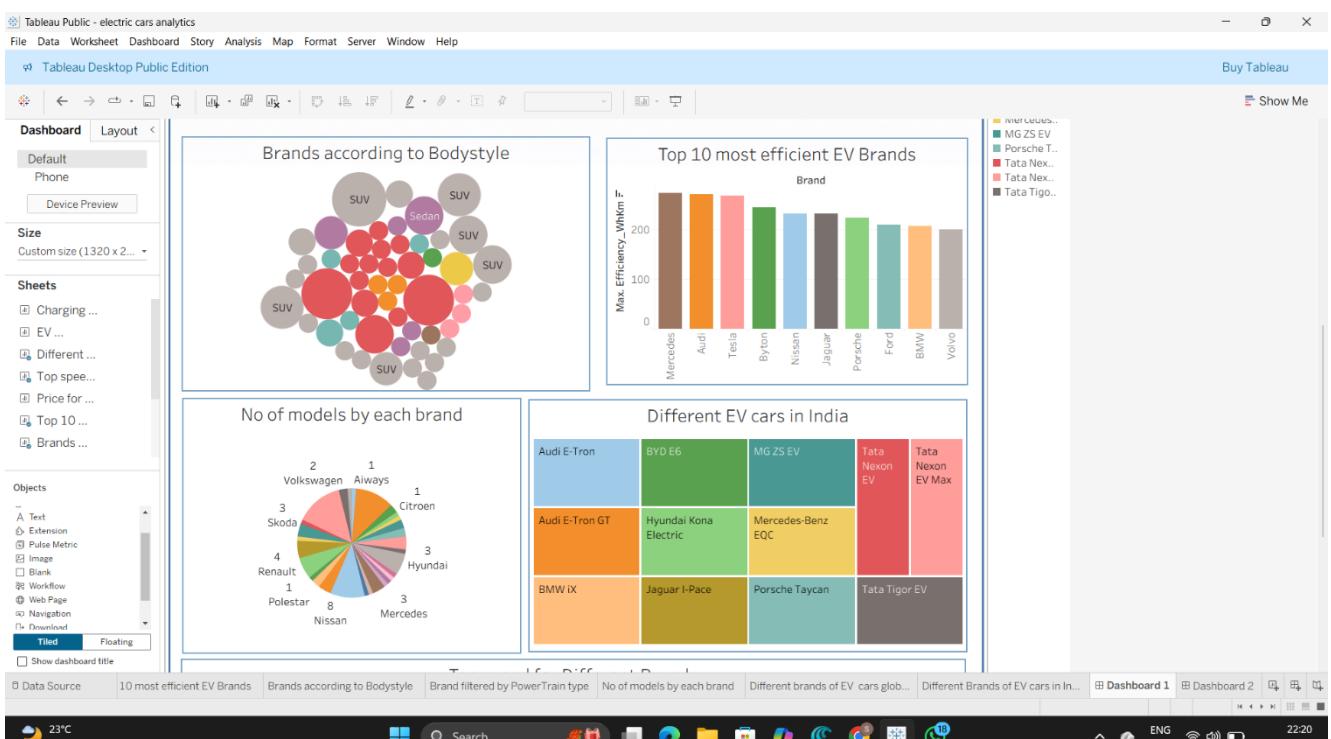
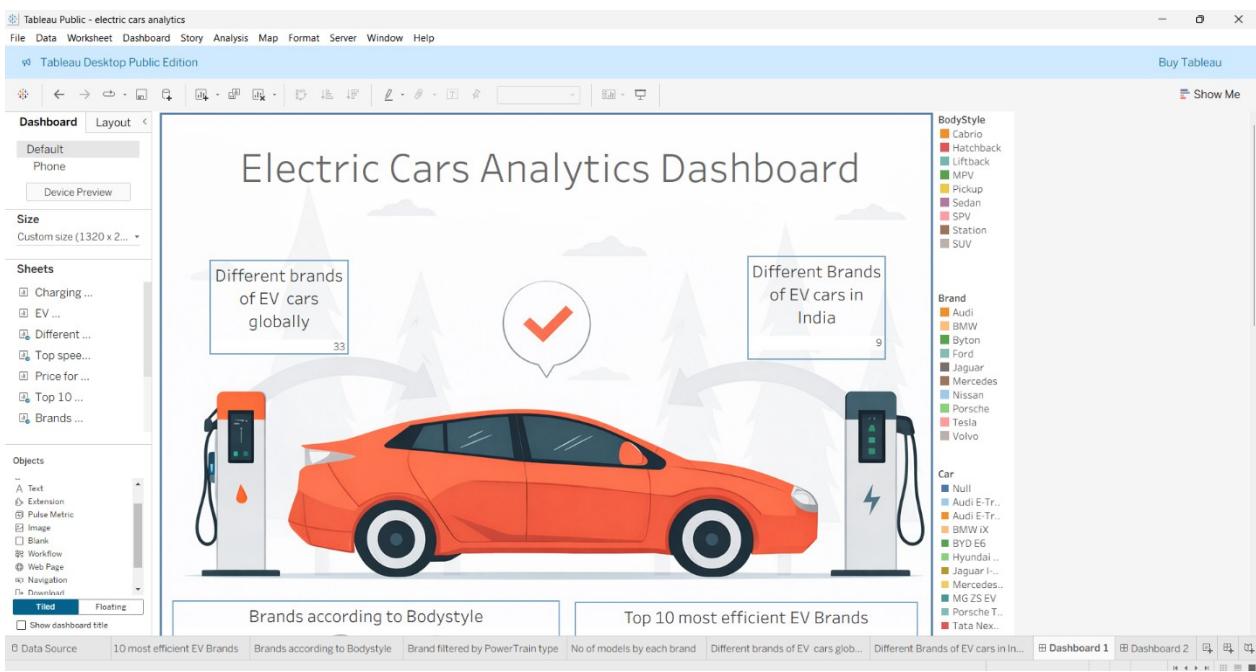
		<p>The dashboard combines multiple visualizations to provide a clear overview of EV charge and range analysis</p>
6	Story Design	<h3>No of Visualizations / Graphs -4</h3> <p>Story of Electric Cars in India</p>



## 7. RESULTS

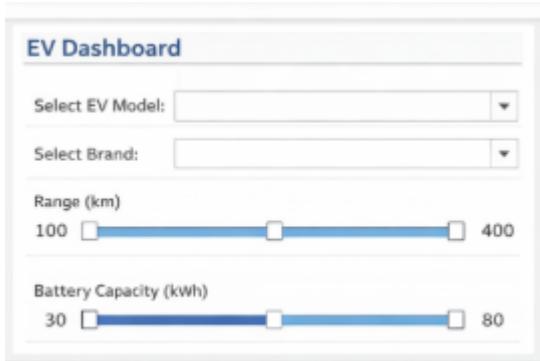
### 7.1 Output Screenshots

#### • Dashboard Screenshot





## • Filter Screenshot

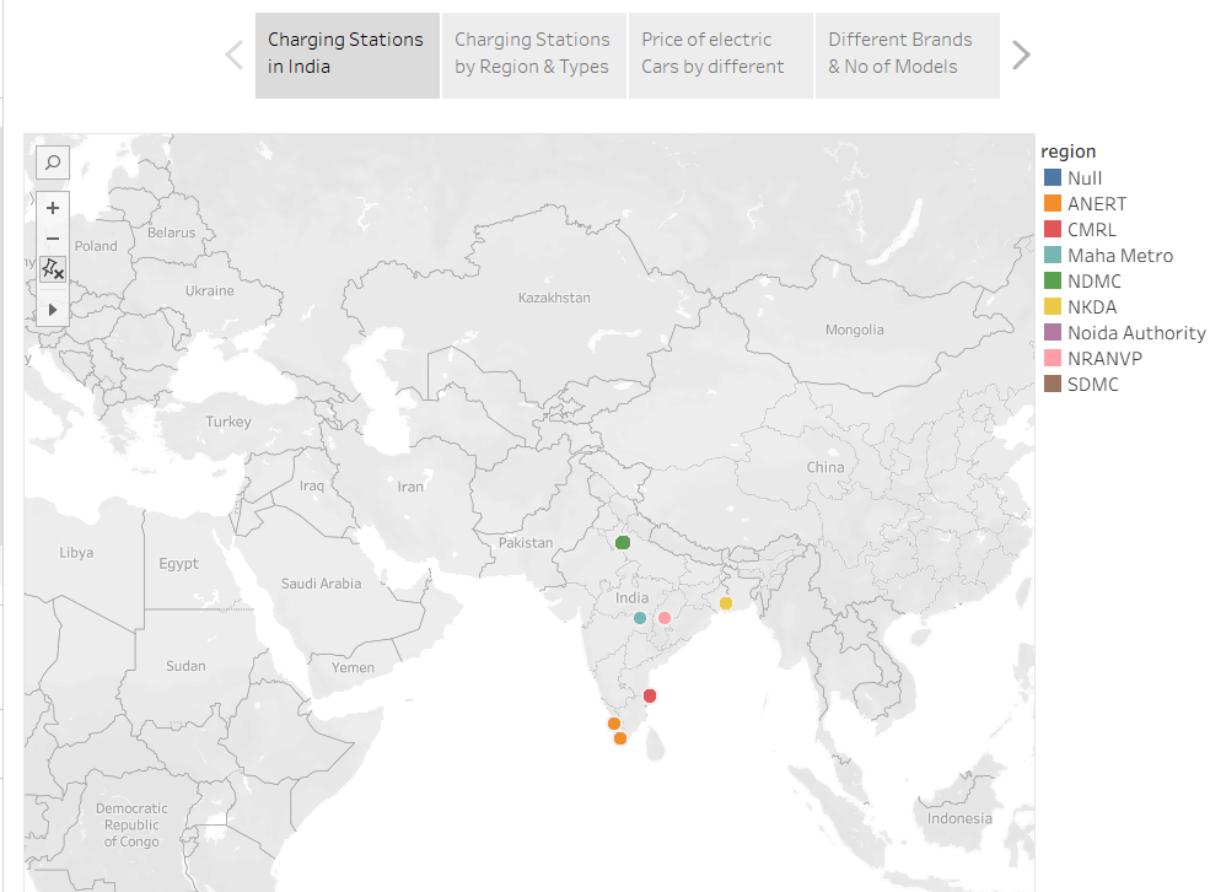


## • Calculated Field Screenshot

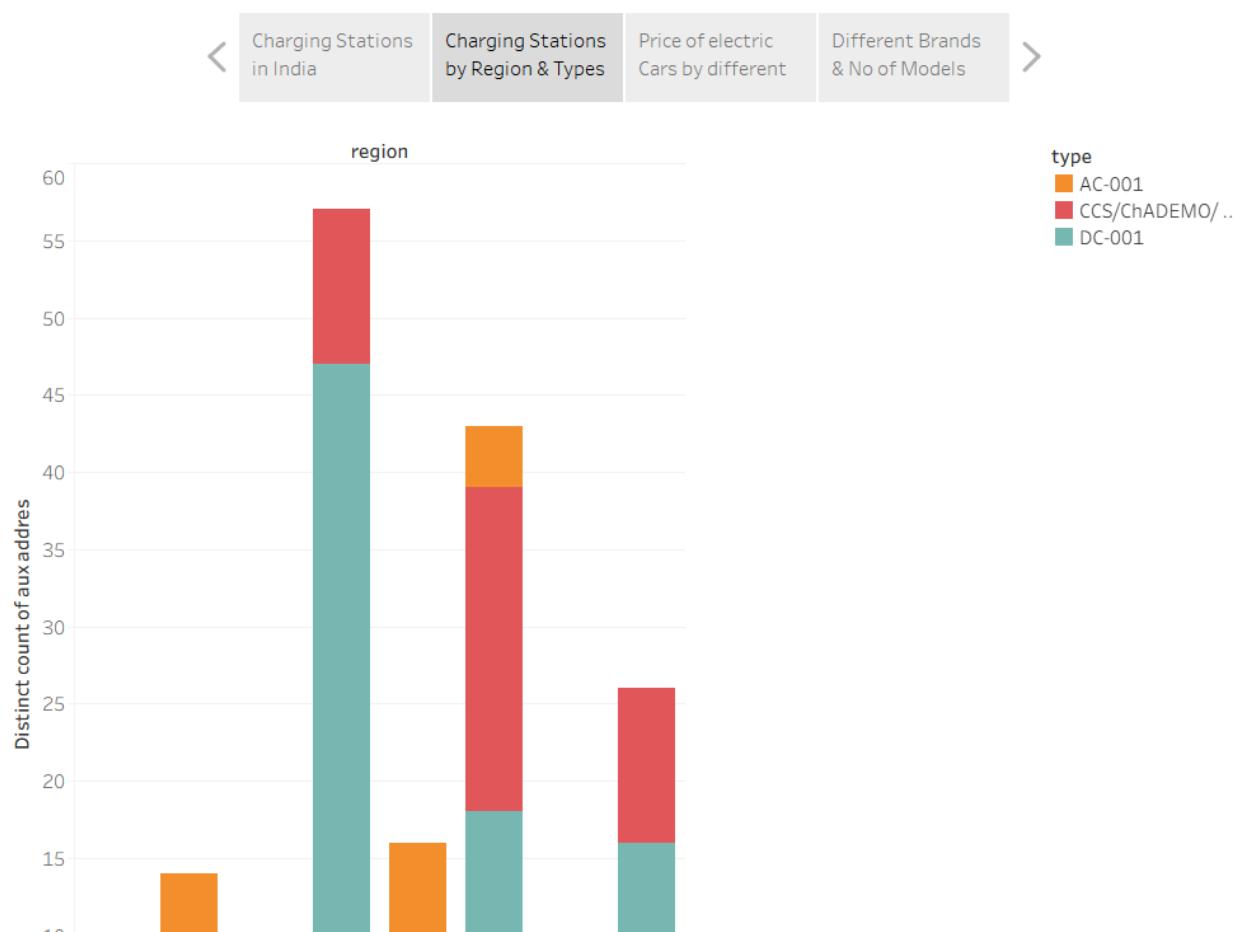


## • Story Screenshot

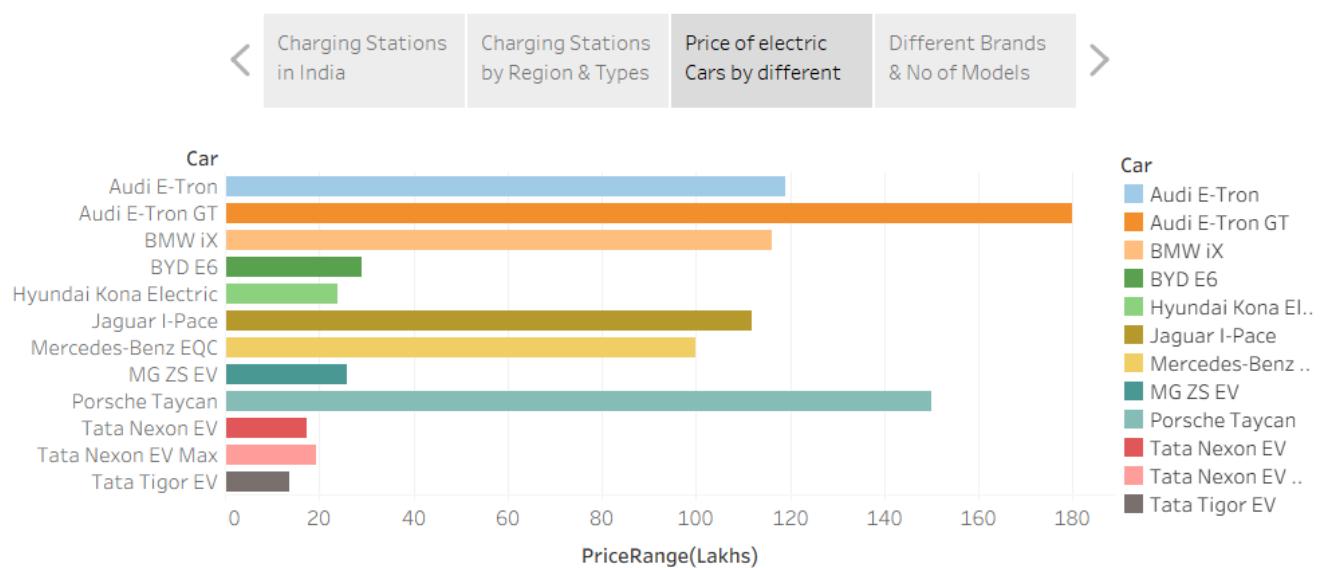
### Story of Electric Cars in India



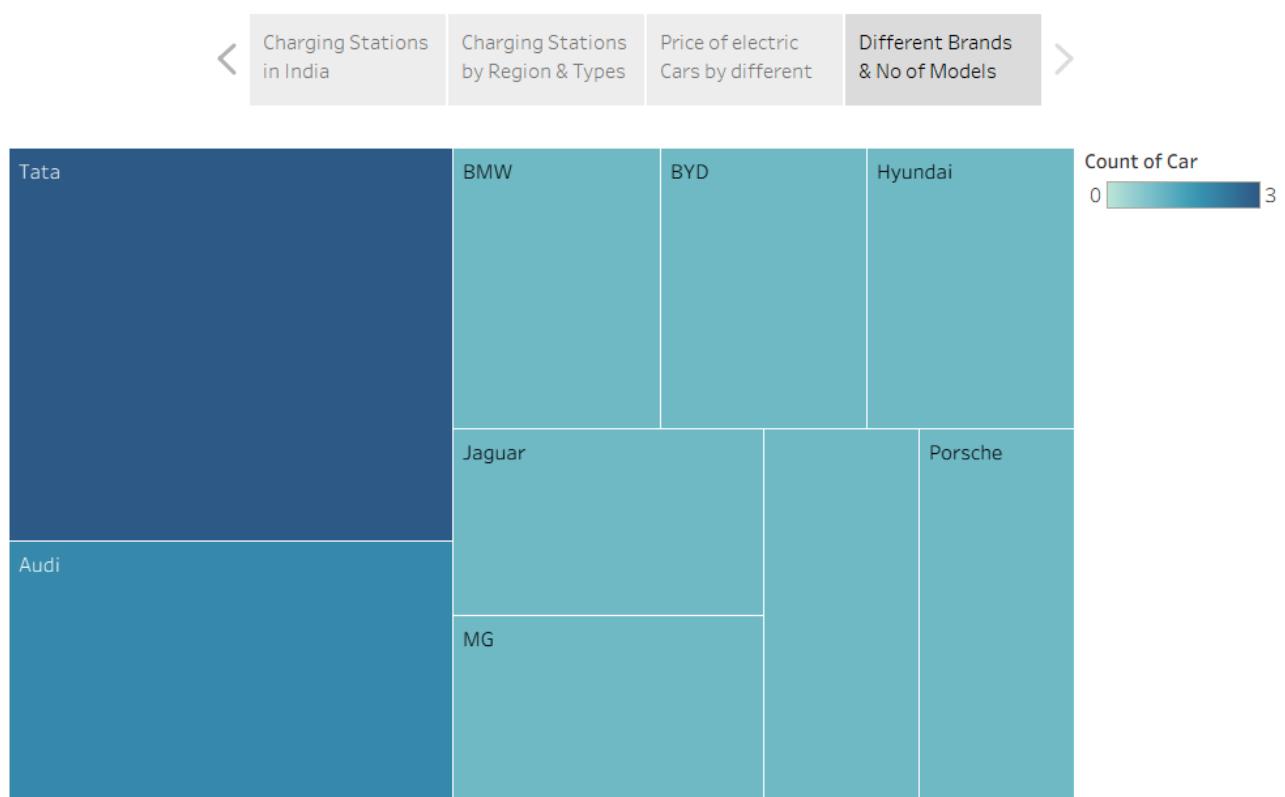
### Story of Electric Cars in India



## Story of Electric Cars in India



## Story of Electric Cars in India



The results show successful visualization of EV charge and range analysis.

## 8. ADVANTAGES & DISADVANTAGES

### **Advantages:**

- Easy comparison of EV models
- Interactive and user-friendly
- Clear graphical insights

### **Disadvantages:**

- Depends on dataset accuracy
  - Limited to available EV data
- 

## 9. CONCLUSION

The project successfully demonstrates the use of data visualization techniques to analyze electric vehicle performance. The dashboard and story provide meaningful insights into EV battery capacity, charging time, and driving range. The system is interactive, informative, and useful for decision-making.

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## 10. FUTURE SCOPE

- Integration of **real-time electric vehicle data** using APIs instead of static CSV files.
  - Implementation of **predictive analytics** to estimate driving range based on factors like weather, traffic, and battery health.
  - Development of a **web-based or mobile application** for easy access from anywhere.
  - Addition of more **global electric vehicle datasets** for wider comparison.
  - Inclusion of **cost analysis** such as maintenance cost and long-term savings.
  - Comparison between **electric vehicles and fuel-based vehicles**.
  - Integration of **carbon emission analysis** to show environmental impact.
  - Implementation of **charging station route optimization** using geographic data.
  - Adding **personalized vehicle recommendations** based on user budget and travel distance.
  - Deployment of the dashboard on **cloud platforms** for better scalability and accessibility.
-

## 11. APPENDIX

### Source Code:

```

1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4     <meta charset="UTF-8">
5     <meta name="viewport" content="width=device-width, initial-scale=1.0">
6     <meta name="description" content="Narrative story on Electric Vehicles in India.">
7     <title>EV Story</title>
8     <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">
9     <link href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.10.0/font/bootstrap-icons.css" rel="stylesheet">
10    <style>
11        body { background: #f8f9fa; }
12        .navbar { box-shadow: 0 2px 4px rgba(0,0,0,0.1); }
13        .container { max-width: 1200px; }
14        .tableauPlaceholder { border-radius: 10px; overflow: hidden; box-shadow: 0 4px 20px rgba(0,0,0,0.1); }
15        .loading { display: flex; justify-content: center; align-items: center; height: 900px; background: #e9ecef; }
16        .back-to-top { position: fixed; bottom: 20px; right: 20px; display: none; }
17        footer { background: #343a40; color: white; padding: 10px 0; text-align: center; margin-top: 20px; }
18    </style>
19 </head>
20 <body>
21     <nav class="navbar navbar-dark bg-dark">
22         <div class="container-fluid">
23             <a href="/" class="navbar-brand"><i class="bi bi-house"></i> ← Home</a>
24             <span class="navbar-text">EV Story</span>
25         </div>
26     </nav>
27
28     <div class="container mt-4">
29         <nav aria-label="breadcrumb">
30             <ol class="breadcrumb">
31                 <li class="breadcrumb-item"><a href="/">Home</a></li>
32                 <li class="breadcrumb-item active" aria-current="page">Story</li>
33             </ol>

```

```

1 <html lang="en">
2 <body>
3
4     <div class="container mt-4">
5         <nav aria-label="breadcrumb">
6             <ol class="breadcrumb">
7                 <li class="breadcrumb-item"><a href="/">Home</a></li>
8                 <li class="breadcrumb-item active" aria-current="page">Dashboard</li>
9             </ol>
10        </nav>
11        <h3 class="text-center mb-4"><i class="bi bi-bar-chart-line"></i> EV Dashboard</h3>
12
13        <div class="loading" id="loading">
14            <div class="spinner-border text-primary" role="status">
15                <span class="visually-hidden">Loading...</span>
16            </div>
17            <p class="ms-2">Loading Dashboard...</p>
18        </div>
19
20        <div class='tableauPlaceholder' id='vizDashboard' style='position: relative; display: none;'>
21            <object class='tableauViz' style='display:none;'>
22                <param name='host_url' value='https://public.tableau.com/' />
23                <param name='embed_code_version' value='3' />
24                <param name='name' value='electriccarsanalytics/DashboardofElectricCars' />
25                <param name='tabs' value='no' />
26                <param name='toolbar' value='yes' />
27            </object>
28        </div>
29
30        <button class="btn btn-primary back-to-top" onclick="window.scrollTo({top: 0, behavior: 'smooth'})"><i class="bi bi-arrow-u

```

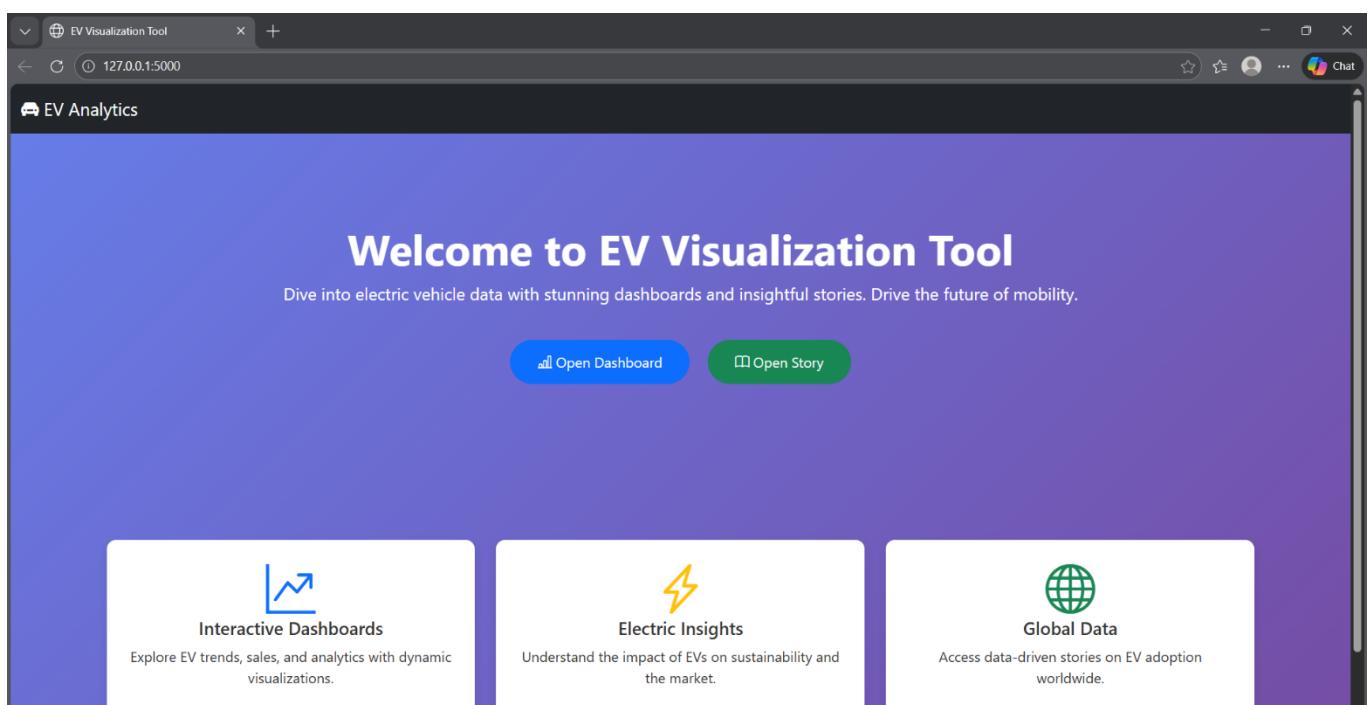
```

Users > HP > OneDrive > Visualization Tool for Electric Vehicle Charge and Range Analysis > Project Files > static > css > * st
1 body {
2   font-family: 'Inter', sans-serif;
3   background-color: #f4f6f9;
4   margin: 0;
5 }
6
7 /* Navbar */
8 .navbar {
9   background-color: #1f2937 !important;
10  padding: 15px 0;
11 }
12
13 /* Accent Color */
14 :root {
15   --primary-accent: #2563eb;
16   --primary-hover: #1d4ed8;
17 }
18
19 /* Hero Section */
20 .hero {
21   padding: 120px 20px;
22   background: linear-gradient(to right, #ffffff, #f9fafb);
23   text-align: center;
24 }
25
26 .hero h1 {
27   font-size: 3rem;
28   font-weight: 700;
29   color: #111827;
30 }
31
32 .hero p {
33   font-size: 1.2rem;
34 }

```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    AZURE

## Output Screenshot :



← Home

Home / Dashboard

## EV Dashboard

Different brands of EV cars globally 33

Different Brands of EV cars in India 9

The dashboard features a central illustration of a red electric car parked between two charging stations. A speech bubble above the car contains a red checkmark. Two callout boxes are positioned at the top: one on the left for 'Different brands of EV cars globally' with the number 33, and one on the right for 'Different Brands of EV cars in India' with the number 9.

EV Story

← Home

Home / Story

## EV Story Analysis

Charging Stations in India | Charging Stations by Region & Types | Price of electric Cars by different | Different Brands & No of Models

The analysis page includes a navigation bar with four tabs: 'Charging Stations in India', 'Charging Stations by Region & Types', 'Price of electric Cars by different', and 'Different Brands & No of Models'. Below the tabs is a world map with colored dots representing charging station locations. A legend on the right side maps colors to regions: Null (dark blue), ANERT (orange), CMRL (red), Maha Metro (teal), NDMC (green), NKDA (yellow), Noida Authority (purple), NRANVP (pink), and SDMC (brown).

**Dataset Links:**

1. [https://drive.google.com/file/d/1rMhNvFitXodYzuPbxJ60dy4s2zaYGyR/view?usp=drive\\_link](https://drive.google.com/file/d/1rMhNvFitXodYzuPbxJ60dy4s2zaYGyR/view?usp=drive_link)
2. [https://drive.google.com/file/d/1rTANUsWxe2Et5vF6ik0SWjUTUTNoZhP/view?usp=drive\\_link](https://drive.google.com/file/d/1rTANUsWxe2Et5vF6ik0SWjUTUTNoZhP/view?usp=drive_link)
3. [https://drive.google.com/file/d/1mv1GeOzwShlv4vYyXF82kBfLtZMqIDoN/view?usp=drive\\_link](https://drive.google.com/file/d/1mv1GeOzwShlv4vYyXF82kBfLtZMqIDoN/view?usp=drive_link)
4. [https://drive.google.com/file/d/1f8hcispK439nJNgcAb13tBEsCx2vTcv/view?usp=drive\\_link](https://drive.google.com/file/d/1f8hcispK439nJNgcAb13tBEsCx2vTcv/view?usp=drive_link)

**GitHub & Project Demo Link:****GitHub Link:****Demo Link:**

<https://drive.google.com/file/d/1dQjSiVJlcQHL61TIUk4S0PEksfhhjPwg/view?usp=sharing>