

ATLIQ

ELECTRIC VEHICLE

SALES ANALYSIS



AI GENERATED IMAGE





PROBLEM STATEMENT

“AtliQ Motors is an automotive giant from the USA specializing in electric vehicles (EV). In the last 5 years, their market share rose to 25% in electric and hybrid vehicles segment in North America. As a part of their expansion plans, they wanted to launch their bestselling models in India where their market share is less than 2%. Bruce Haryali, the chief of AtliQ Motors India wanted to do a detailed market study of existing EV/Hybrid market in India before proceeding further”

DATA SET

01

| dim_date | |
|-------------|------|
| SNdate | date |
| quarter | date |
| fiscal_year | date |

02

| electric_vehicle_sales_by_makers | |
|----------------------------------|---------|
| SNdate | date |
| maker | varchar |
| vehicle_category | varchar |
| electric_vehicle_sold | varchar |

03

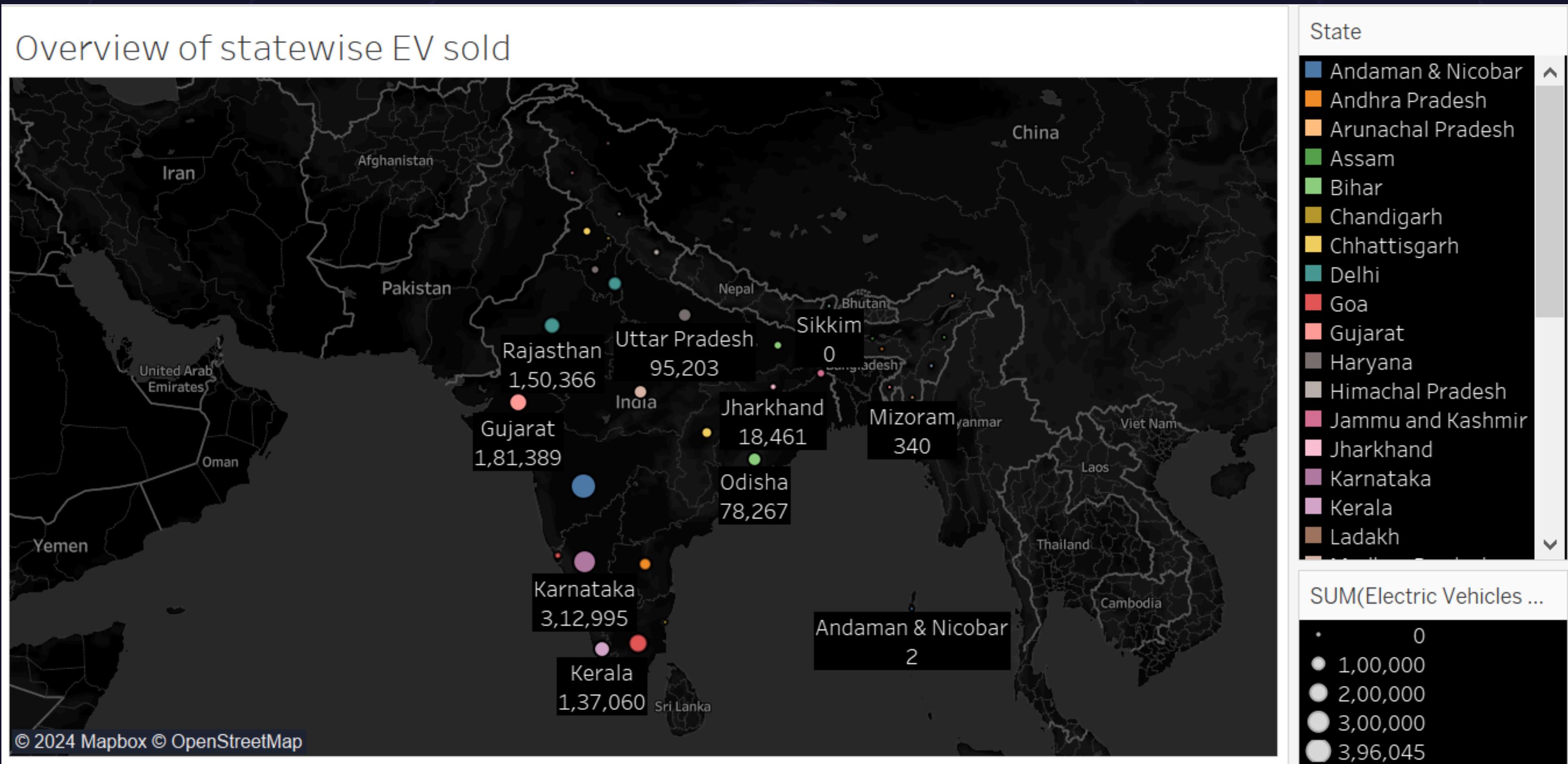
| electric_vehicle_sales_by_states | |
|----------------------------------|---------|
| SNdate | date |
| state | varchar |
| electric_vehicle_sold | varchar |
| vehicle_category | varchar |
| total_vehicle_sold | varchar |

STEPS INVOLVED:

1. Data Import
2. Data Exploration
3. Data Cleaning
4. Data Analysis
5. Data Visualisation
6. Summary/ Decision

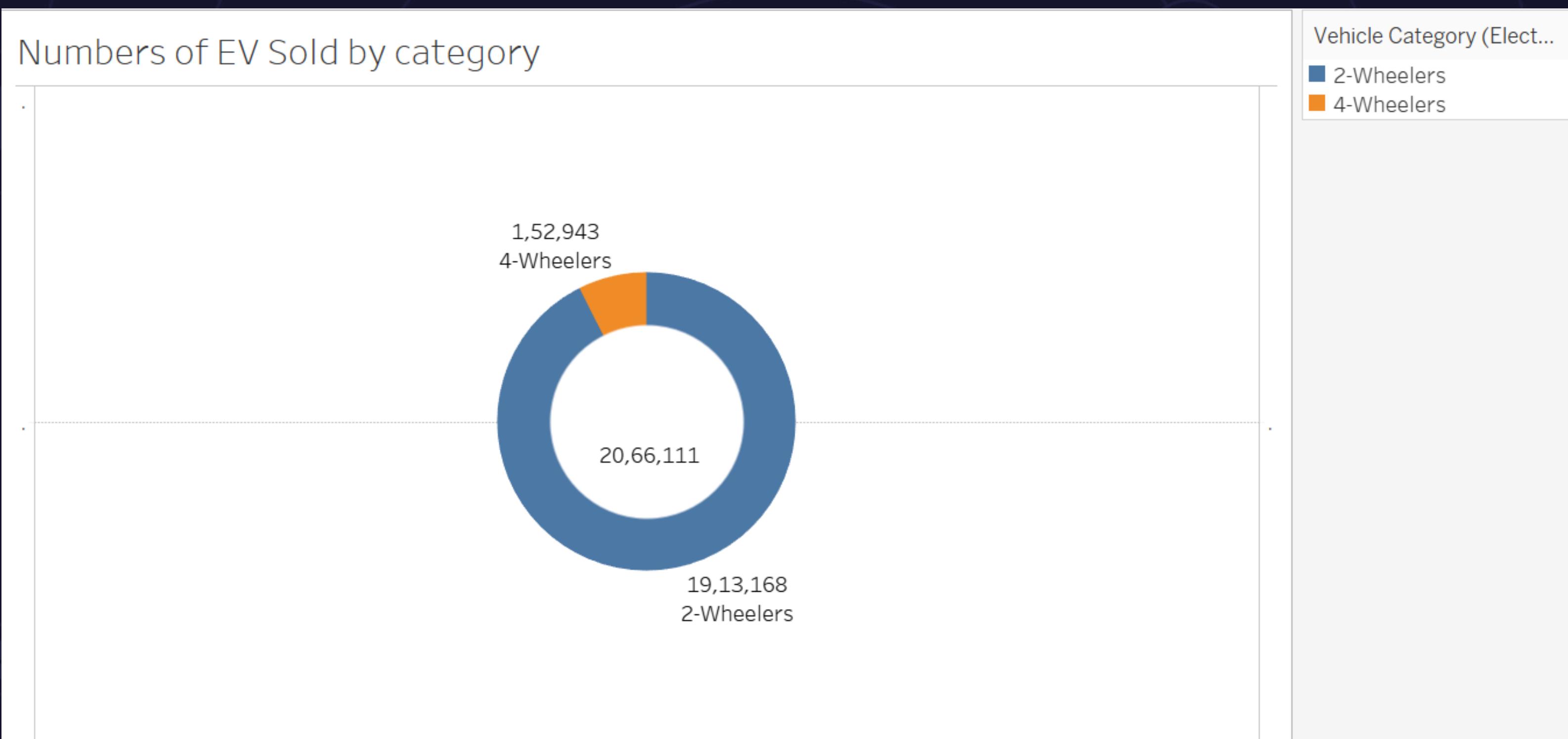


VISULISATION OF CATEGORIZED DATA



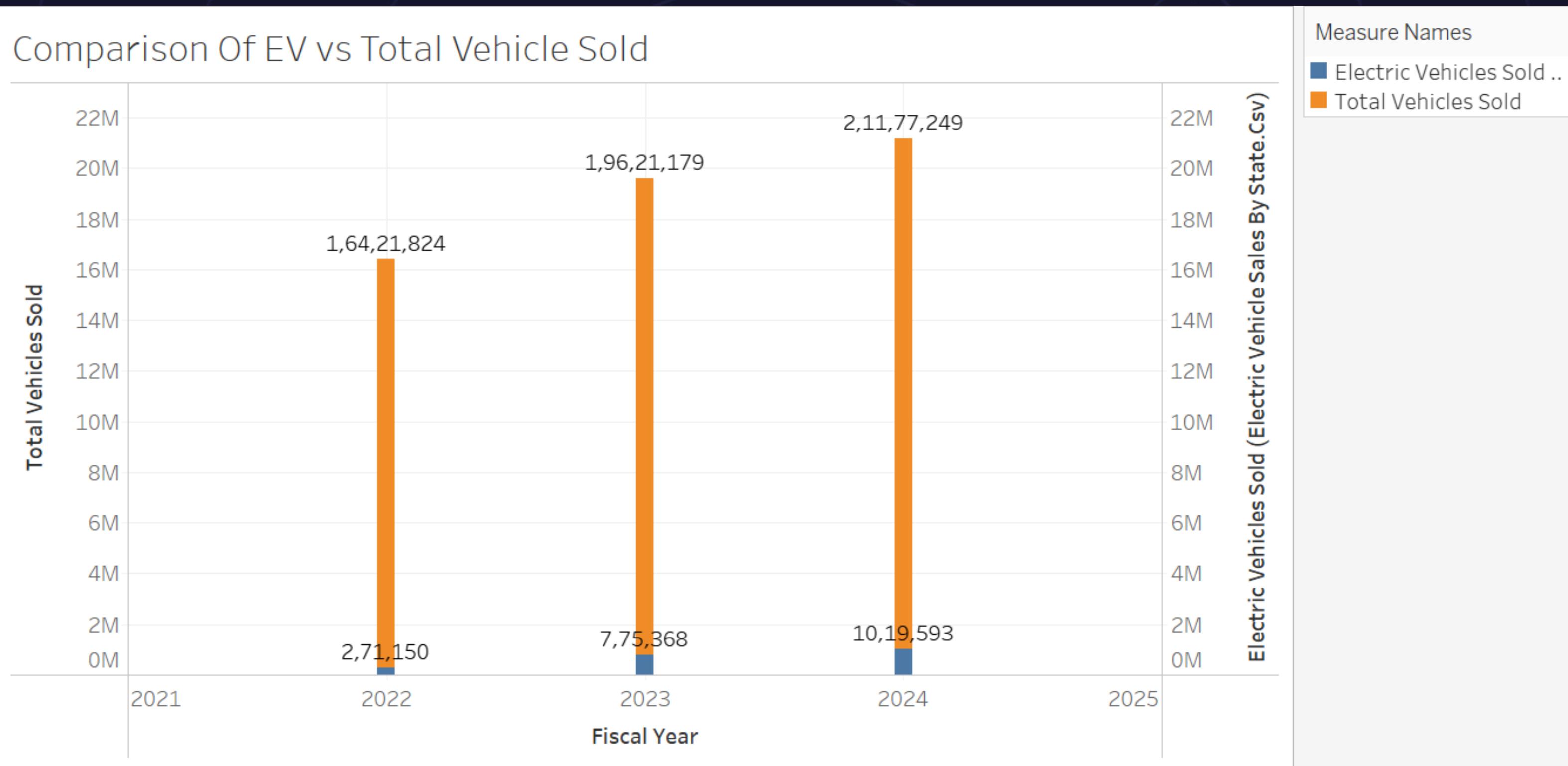


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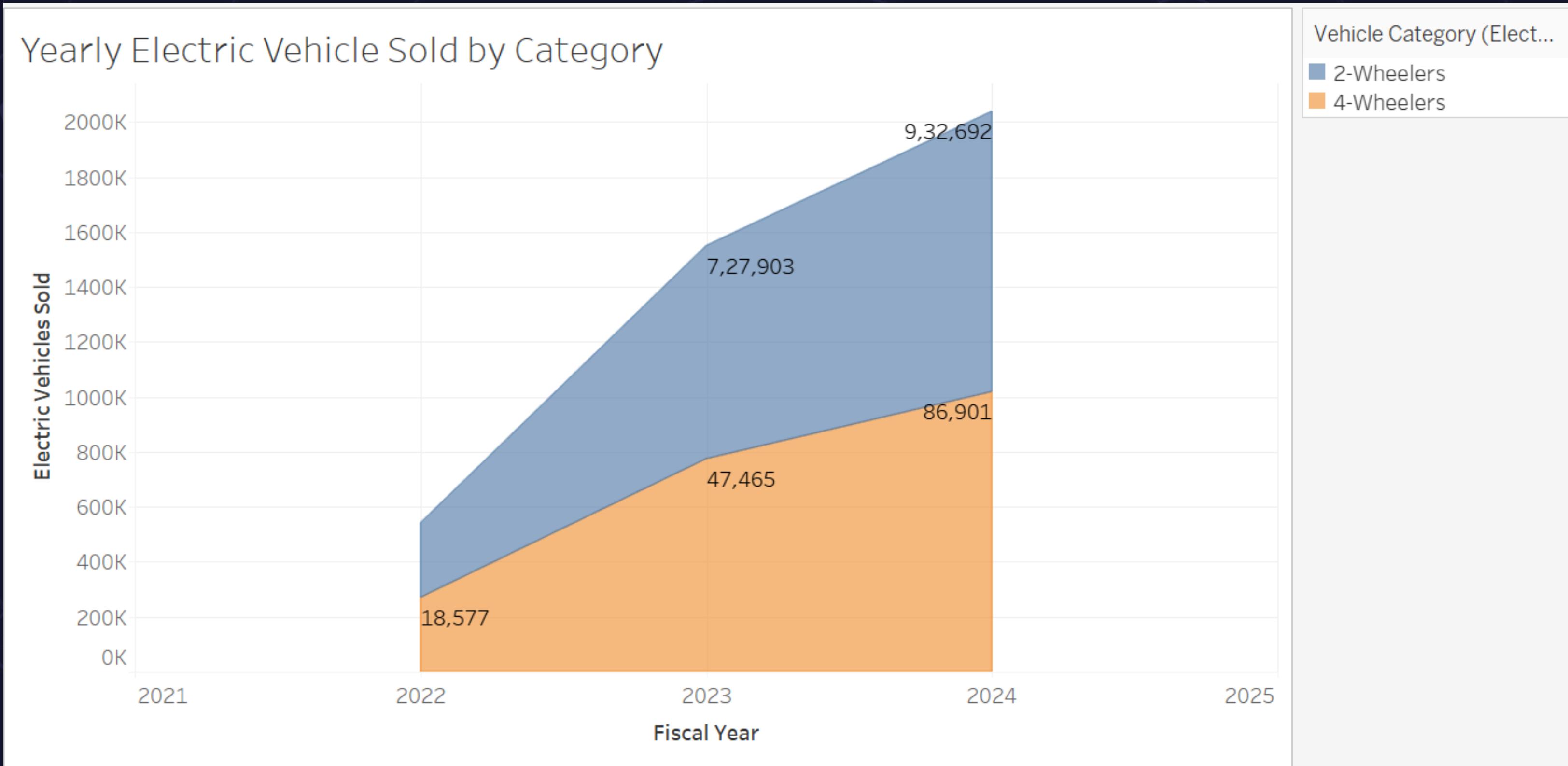


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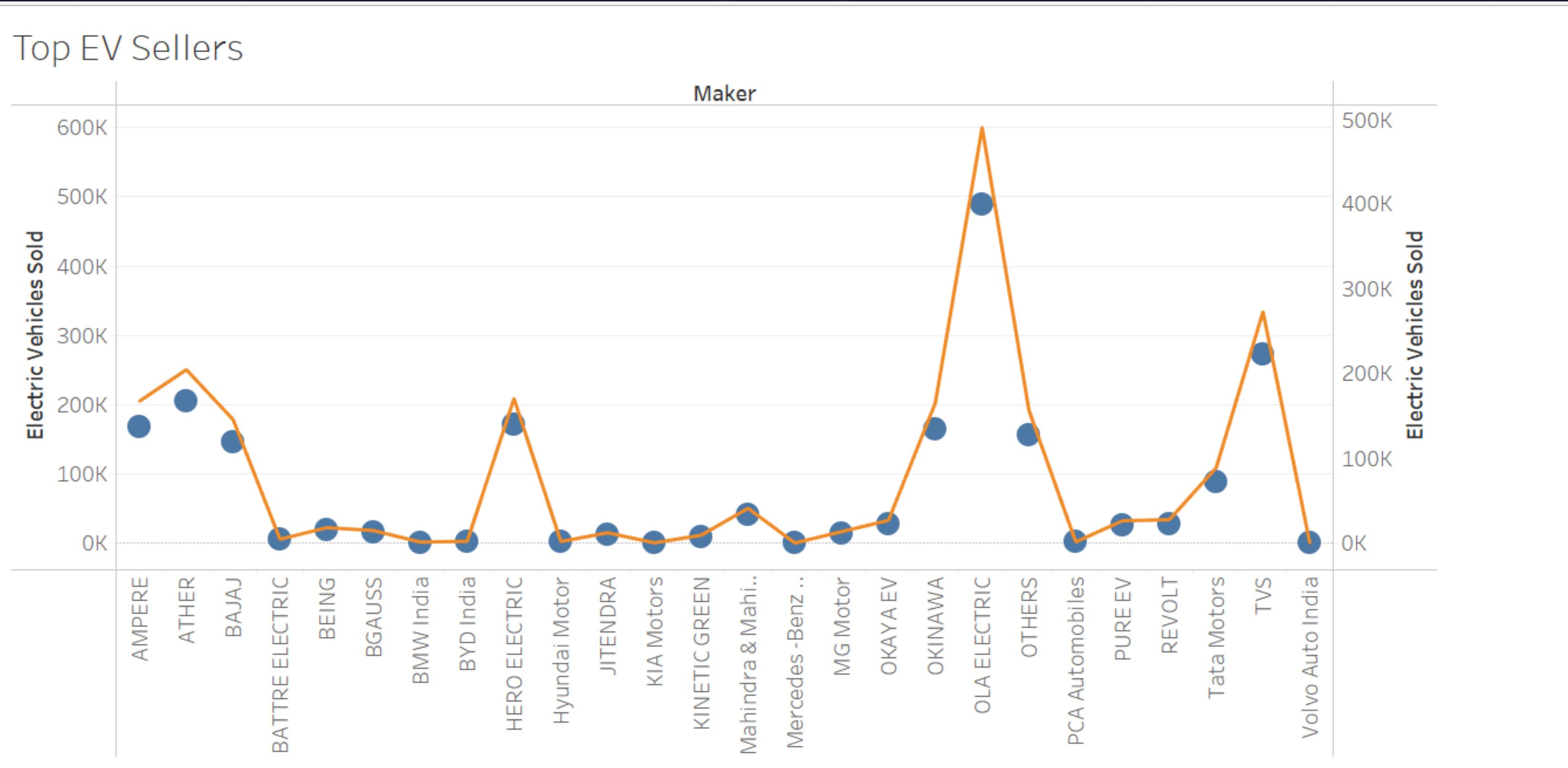


VISULISATION OF CATEGORIZED DATA





VISULISATION OF CATEGORIZED DATA





VISULISATION OF CATEGORIZED DATA





1. List the top 3 and bottom 3 makers for the fiscal years 2023 and 2024 in terms of the number of 2-wheelers sold.

```
with EVRanking as
(
  SELECT em.maker, dd.fiscal_year, sum(em.electric_vehicles_sold) as EVsold,
         DENSE_RANK()OVER(PARTITION BY dd.fiscal_year ORDER BY sum(em.electric_vehicles_sold) DESC) AS ranking
  FROM electric_vehicle_sales_by_makers em
  JOIN dim_date dd ON em.SNdate=dd.SNdate
  WHERE dd.fiscal_year IN("2023","2024") AND em.vehicle_category = '2-Wheelers'
  GROUP BY em.maker, dd.fiscal_year
  ORDER BY fiscal_year)
SELECT
  maker,fiscal_year,EVsold,ranking
FROM
  EVRanking
WHERE ranking<=3;
```

List of top 3 and bottom 3 makers

| maker | fiscal_year | EVsold | ranking |
|---------------|-------------|--------|---------|
| OLA ELECTRIC | 2023 | 152583 | 1 |
| OKINAWA | 2023 | 96945 | 2 |
| HERO ELECTRIC | 2023 | 88993 | 3 |

| | | | |
|----------|------|-------|----|
| PURE EV | 2023 | 11556 | 11 |
| BEING | 2023 | 11018 | 12 |
| JITENDRA | 2023 | 8563 | 13 |

| | | | |
|-----------------|------|------|----|
| KINETIC GREEN | 2024 | 9585 | 11 |
| REVOLT | 2024 | 7254 | 12 |
| BATTRE ELECTRIC | 2024 | 4841 | 13 |

| | | | |
|--------------|------|--------|---|
| OLA ELECTRIC | 2024 | 322489 | 1 |
| TVS | 2024 | 180743 | 2 |
| ATHER | 2024 | 107552 | 3 |



2. Identify the top 5 states with the highest penetration rate in 2-wheeler and 4-wheeler EV sales in FY 2024.

```
-- Identify the top 5 states with the highest penetration
-- rate in 2-wheeler and 4-wheeler EV sales in FY 2024.

SELECT es.state,
       (SUM(es.electric_vehicles_sold)/sum(es.total_vehicles_sold))*100 AS PenetrationRate
FROM electric_vehicle_sales_by_state AS es
JOIN dim_date dd ON es.SNdate=dd.SNdate
WHERE fiscal_year = 2024 AND es.vehicle_category = '2-Wheelers'
GROUP BY es.state
ORDER BY PenetrationRate DESC;
```

HP Rate in 2 & 4 Wheeler

| state | PenetrationRate |
|-------------|-----------------|
| Goa | 17.9923 |
| Kerala | 13.5249 |
| Karnataka | 11.5733 |
| Maharashtra | 10.0725 |
| Delhi | 9.4009 |

| state | PenetrationRate |
|------------|-----------------|
| Kerala | 5.7584 |
| Chandigarh | 4.5031 |
| Delhi | 4.2908 |
| Karnataka | 4.2611 |
| Goa | 4.2544 |



3. List the states with negative penetration (decline) in EV sales from 2022 to 2024?

```
-- List the states with negative penetration (decline) in EV sales from 2022 to 2024?  
SELECT state, total_ev_sold2022, total_ev_sold2024, (total_ev_sold2024 - total_ev_sold2022) as SalesDiff  
FROM  
(SELECT state,  
        sum(CASE WHEN fiscal_year = 2022 THEN electric_vehicles_sold ELSE 0 End) as total_ev_sold2022,  
        sum(CASE WHEN fiscal_year = 2024 THEN electric_vehicles_sold ELSE 0 End) as total_ev_sold2024  
FROM electric_vehicle_sales_by_state as es  
JOIN dim_date dd on es.SNdate=dd.SNdate  
WHERE dd.fiscal_year IN (2022,2024)  
GROUP BY es.state  
ORDER BY es.state) as SalesRate22_24  
ORDER BY  
    SalesDiff;
```

| state | TotalEVSold2022 | TotalEVSold2024 | SalesDifference |
|--------------------------|-----------------|-----------------|-----------------|
| Sikkim | 0 | 0 | 0 |
| Nagaland | 1 | 9 | 8 |
| Andaman & Nicobar Island | 22 | 33 | 11 |
| Ladakh | 12 | 31 | 19 |
| Arunachal Pradesh | 0 | 31 | 31 |
| Manipur | 25 | 126 | 101 |
| Meghalaya | 4 | 133 | 129 |
| DNH and DD | 35 | 198 | 163 |
| Mizoram | 0 | 275 | 275 |
| Tripura | 28 | 304 | 276 |
| Himachal Pradesh | 443 | 1048 | 605 |
| Jammu and Kashmir | 1434 | 2283 | 849 |
| Puducherry | 734 | 3098 | 2364 |
| Chandigarh | 411 | 2877 | 2466 |
| Assam | 730 | 3497 | 2767 |
| Uttarakhand | 2079 | 6336 | 4257 |
| Jharkhand | 2713 | 7830 | 5117 |



4. What are the quarterly trends based on sales volume for the top 5 EV makers (4-wheelers) from 2022 to 2024?

```
-- List the states with negative penetration (decline) in EV sales from 2022 to 2024?  
SELECT state, total_ev_sold2022, total_ev_sold2024, (total_ev_sold2024 - total_ev_sold2022) as SalesDiff  
FROM  
(SELECT state,  
        sum(CASE WHEN fiscal_year = 2022 THEN electric_vehicles_sold ELSE 0 End) as total_ev_sold2022,  
        sum(CASE WHEN fiscal_year = 2024 THEN electric_vehicles_sold ELSE 0 End) as total_ev_sold2024  
FROM electric_vehicle_sales_by_state as es  
JOIN dim_date dd on es.SNdate=dd.SNdate  
WHERE dd.fiscal_year IN (2022,2024)  
GROUP BY es.state  
ORDER BY es.state) as SalesRate22_24  
ORDER BY  
    SalesDiff;
```

| maker | quarter | EvSold |
|---------------------|---------|--------|
| Tata Motors | Q4 | 32723 |
| Tata Motors | Q3 | 23678 |
| Tata Motors | Q2 | 18581 |
| Tata Motors | Q1 | 13953 |
| MG Motor | Q4 | 3721 |
| MG Motor | Q3 | 3766 |
| MG Motor | Q2 | 3957 |
| MG Motor | Q1 | 2309 |
| Mahindra & Mahindra | Q4 | 9212 |
| Mahindra & Mahindra | Q3 | 9025 |
| Mahindra & Mahindra | Q2 | 9670 |
| Mahindra & Mahindra | Q1 | 13286 |
| Hyundai Motor | Q4 | 519 |
| Hyundai Motor | Q3 | 586 |
| Hyundai Motor | Q2 | 579 |
| Hyundai Motor | Q1 | 392 |
| BYD India | Q4 | 1055 |
| BYD India | Q3 | 454 |
| BYD India | Q2 | 423 |
| BYD India | Q1 | 487 |



5. How do the EV sales and penetration rates in Delhi compare to Karnataka for 2024?

```
SELECT es.state, dd.fiscal_year,  
       round((sum(es.electric_vehicles_sold)/sum(es.total_vehicles_sold)) *100,2) as penetration_rate  
FROM electric_vehicle_sales_by_state as es  
JOIN dim_date dd on es.SNdate=dd.SNdate  
WHERE dd.fiscal_year = 2024 and es.state IN('delhi','karnataka')  
GROUP BY es.state  
ORDER BY es.state;
```

| state | fiscal_year | penetration_rate |
|-----------|-------------|------------------|
| Delhi | 2024 | 7.71 |
| Karnataka | 2024 | 10.18 |



6. List down the compounded annual growth rate (CAGR) in 4-wheeler units for the top 5 makers from 2022 to 2024.

```
WITH TOPMAKERS AS(
SELECT
    maker
FROM
    electric_vehicle_sales_by_makers em
JOIN
    dim_date dd ON em.SNdate = dd.SNdate
WHERE
    vehicle_category = '4-Wheelers'
GROUP BY
    maker
ORDER BY sum(electric_vehicles_sold) desc
LIMIT 5)
SELECT
    maker,
    (ROUND(POWER((SUM(CASE WHEN fiscal_year = 2024 THEN electric_vehicles_sold ELSE 0 END) /
        SUM(CASE WHEN fiscal_year = 2022 THEN electric_vehicles_sold ELSE 0 END)), 1 / 2) - 1, 5))*100 AS CAGR
FROM
    electric_vehicle_sales_by_makers em
JOIN
    dim_date dd ON em.SNdate = dd.SNdate
WHERE vehicle_category = '4-Wheelers' AND maker IN(SELECT maker FROM TOPMAKERS)
GROUP BY maker
ORDER BY CAGR desc;
```

| maker | CAGR |
|---------------------|---------|
| BYD India | 566.515 |
| Hyundai Motor | 255.477 |
| Mahindra & Mahindra | 140.33 |
| MG Motor | 131.531 |
| Tata Motors | 94.715 |



6. List down the compounded annual growth rate (CAGR) in 4-wheeler units for the top 5 makers from 2022 to 2024.

```
WITH TOPMAKERS AS(
SELECT
    maker
FROM
    electric_vehicle_sales_by_makers em
JOIN
    dim_date dd ON em.SNdate = dd.SNdate
WHERE
    vehicle_category = '4-Wheelers'
GROUP BY
    maker
ORDER BY sum(electric_vehicles_sold) desc
LIMIT 5)
SELECT
    maker,
    (ROUND(POWER((SUM(CASE WHEN fiscal_year = 2024 THEN electric_vehicles_sold ELSE 0 END) /
        SUM(CASE WHEN fiscal_year = 2022 THEN electric_vehicles_sold ELSE 0 END)), 1 / 2) - 1, 5))*100 AS CAGR
FROM
    electric_vehicle_sales_by_makers em
JOIN
    dim_date dd ON em.SNdate = dd.SNdate
WHERE vehicle_category = '4-Wheelers' AND maker IN(SELECT maker FROM TOPMAKERS)
GROUP BY maker
ORDER BY CAGR desc;
```

| maker | CAGR |
|---------------------|---------|
| BYD India | 566.515 |
| Hyundai Motor | 255.477 |
| Mahindra & Mahindra | 140.33 |
| MG Motor | 131.531 |
| Tata Motors | 94.715 |



7. List down the top 10 states that had the highest compounded annual growth rate (CAGR) from 2022 to 2024 in total vehicles sold.

```
WITH TOP10STATES AS(
SELECT
    state
FROM
    electric_vehicle_sales_by_state
GROUP BY
    state
ORDER BY sum(total_vehicles_sold) desc
LIMIT 10)
SELECT
    state,
    (ROUND(POWER((SUM(CASE WHEN fiscal_year = 2024 THEN total_vehicles_sold ELSE 0 END) /
        SUM(CASE WHEN fiscal_year = 2022 THEN total_vehicles_sold ELSE 0 END)), 1 / 2) - 1, 2)) AS CAGR
FROM
    electric_vehicle_sales_by_state es
JOIN
    dim_date dd ON es.SNdate = dd.SNdate
WHERE state IN(SELECT state FROM TOP10STATES)
GROUP BY state
ORDER BY CAGR desc;
```

| state | CAGR |
|----------------|------|
| Karnataka | 250 |
| Rajasthan | 210 |
| Gujarat | 210 |
| Maharashtra | 170 |
| Madhya Pradesh | 150 |
| Tamil Nadu | 130 |
| Bihar | 130 |
| Uttar Pradesh | 80 |
| West Bengal | 60 |
| Andhra Pradesh | 10 |



7. List down the top 10 states that had the highest compounded annual growth rate (CAGR) from 2022 to 2024 in total vehicles sold.

```
-- What are the peak and low season months for
-- EV sales based on the data from 2022 to 2024?

SELECT
    DATE_FORMAT(STR_TO_DATE(dd.SNdate, '%d-%b-%y'), '%M') as SalesMonth,
    sum(es.electric_vehicles_sold) as MaxEVsold
FROM
    electric_vehicle_sales_by_state es
JOIN
    dim_date dd ON es.SNdate = dd.SNdate
GROUP BY
    SalesMonth
ORDER BY
    SalesMonth;
```

| SalesMonth | MaxEVsold |
|------------|-----------|
| April | 134657 |
| August | 141961 |
| December | 180401 |
| February | 198049 |
| January | 189099 |
| July | 127426 |
| June | 106709 |
| March | 291587 |
| May | 159869 |
| November | 205196 |
| October | 185185 |
| September | 145972 |



8. What are the peak and low season months for EV sales based on the data from 2022 to 2024?

```
-- What are the peak and low season months for
-- EV sales based on the data from 2022 to 2024?

SELECT
    DATE_FORMAT(STR_TO_DATE(dd.SNdate, '%d-%b-%y'), '%M') as SalesMonth,
    sum(es.electric_vehicles_sold) as MaxEVsold
FROM
    electric_vehicle_sales_by_state es
JOIN
    dim_date dd ON es.SNdate = dd.SNdate
GROUP BY
    SalesMonth
ORDER BY
    SalesMonth;
```

| SalesMonth | MaxEVsold |
|------------|-----------|
| April | 134657 |
| August | 141961 |
| December | 180401 |
| February | 198049 |
| January | 189099 |
| July | 127426 |
| June | 106709 |
| March | 291587 |
| May | 159869 |
| November | 205196 |
| October | 185185 |
| September | 145972 |



Estimate the revenue growth rate of 4-wheeler and 2-wheelers EVs in India for 2022 vs 2024 and 2023 vs 2024, assuming an average unit price

```
SELECT vehicle_category,
       ((revenue2024 - revenue2022) / revenue2022) * 100 as revenue2022_2024,
       ((revenue2024 - revenue2023) / revenue2023) * 100 as revenue2023_2024
FROM (
    SELECT vehicle_category,
           SUM(CASE WHEN fiscal_year = 2024 THEN total_revenue END) as revenue2024,
           SUM(CASE WHEN fiscal_year = 2023 THEN total_revenue END) as revenue2023,
           SUM(CASE WHEN fiscal_year = 2022 THEN total_revenue END) as revenue2022
    FROM (
        SELECT
            vehicle_category,
            fiscal_year,
            SUM(electric_vehicles_sold) * CASE
                WHEN vehicle_category = '2-Wheelers' THEN 85000
                WHEN vehicle_category = '4-Wheelers' THEN 1500000
            END AS total_revenue
        FROM electric_vehicle_sales_by_state es
        JOIN dim_date dd ON es.SNdate = dd.SNdate
        WHERE fiscal_year IN (2022, 2023, 2024)
        GROUP BY vehicle_category, fiscal_year
    ) trv
    GROUP by vehicle_category
) trvy
```

| Vehicle_category | Average Price |
|------------------|----------------|
| 2-Wheelers | ₹ 85,000.00 |
| 4-Wheelers | ₹ 15,00,000.00 |

| vehide_category | revenue2022_2024 | revenue2023_2024 |
|-----------------|------------------|------------------|
| 2-Wheelers | 269.2762 | 28.1341 |
| 4-Wheelers | 367.7881 | 83.0844 |



WHAT ARE THE PRIMARY REASONS FOR CUSTOMERS CHOOSING 4-WHEELER EVS IN 2023 AND 2024 [COST SAVINGS, ENVIRONMENTAL CONCERNs, GOVERNMENT INCENTIVES]?

01

Environmental Concerns:

The escalating levels of air pollution in Indian cities have propelled the demand for electric vehicles in India as a cleaner alternative to conventional petrol and diesel vehicles. Using the Environmental benefits of electric vehicles helps to make cities cleaner and healthier because they don't produce as much pollution as regular vehicles.

02

Rising Fuel Costs:

Fuel prices have been rising steadily, which has forced people to look for more affordable options. As a result, demand for electric vehicles in India has increased rapidly. When compared to their fossil fuel alternatives, electric bikes and scooters provide a more cost-effective form of transportation due to their considerably lower operating expenses.

03

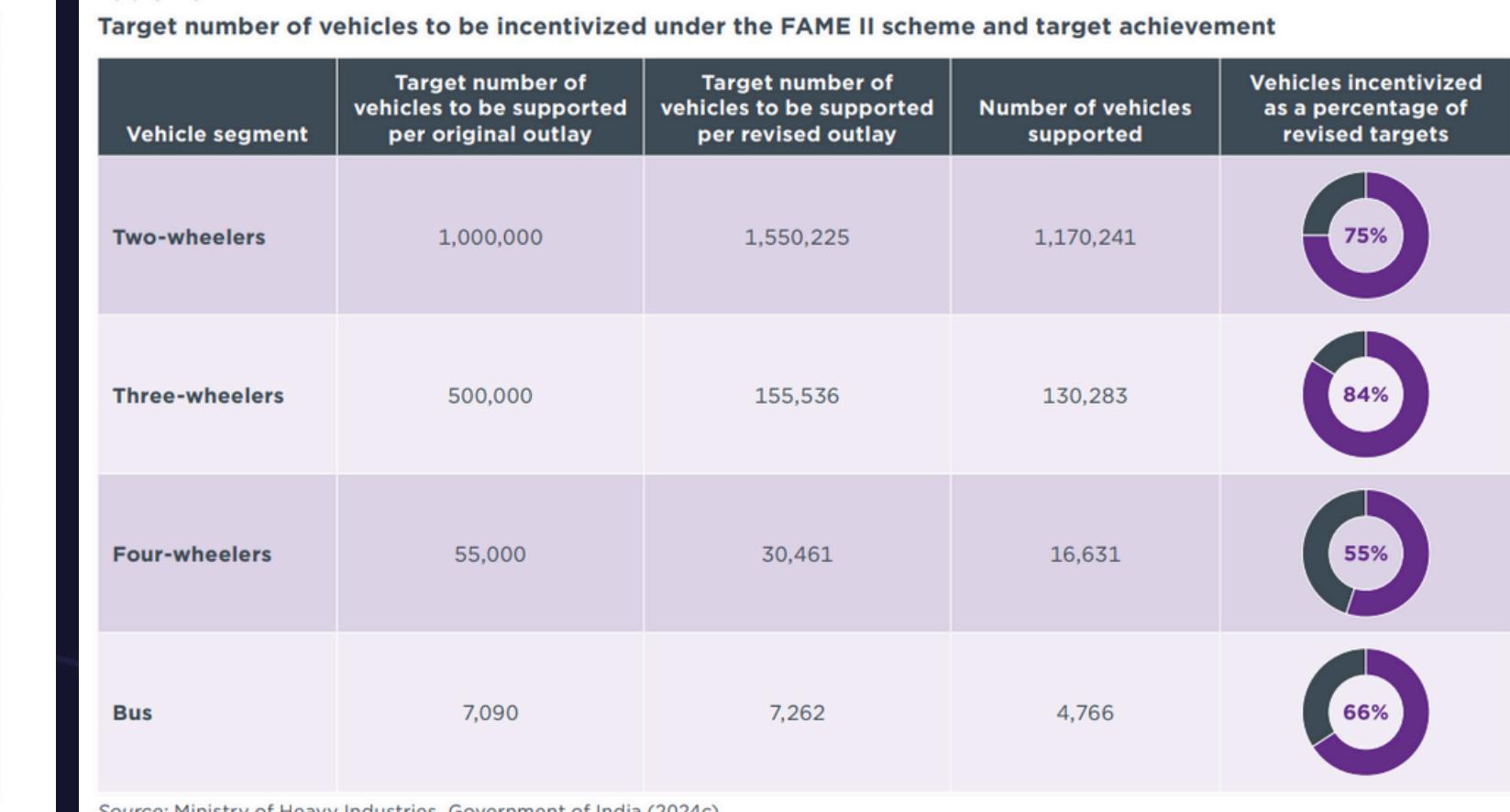
Reduced Operating Costs:

Electric vehicles, like electric scooters and bikes, save money because they don't require fuel and need as much maintenance when compared to traditional vehicles. This makes them very appealing to people who want to save money. Many people are choosing electric vehicles for getting around cities because of this reason. Demand for electric vehicles in India is also surging due to these cost-saving benefits and the increasing awareness of environmental sustainability.



HOW DO GOVERNMENT INCENTIVES AND SUBSIDIES IMPACT THE ADOPTION RATES OF 2-WHEELERS AND 4-WHEELERS? WHICH STATES IN INDIA PROVIDED MOST SUBSIDIES?

| Segment | Policy considerations | | |
|--------------------------|---|---|---|
| Two-wheelers | Consider offering purchase subsidies for electric two-wheelers through 2025-2027, beginning with a higher subsidy of ₹15,000/kWh of battery capacity, capped at 40% of the ex-showroom price, and gradually phasing down the subsidy amount by type, in line with EV cost reduction trends. | | |
| Passenger three-wheelers | Consider offering purchase incentives of at least ₹10,000/kWh of battery capacity, capped at 20% of ex-showroom price, to enhance TCO and upfront cost competitiveness of electric passenger three-wheelers. | | |
| Four-wheelers | To facilitate financing for a broader adoption of electric passenger three-wheelers, consider offering lower interest rates, longer payback periods and credit guarantees through notified agencies such as government banks and other financial institutions. | | |
| Buses | Consider offering subsidies for the purchase of private electric passenger cars of at least ₹10,000/kWh, capped at 20% of ex-showroom price. | | |
| Trucks | Consider prioritizing the electrification of private inter-city buses by facilitating access to favorable financing through interventions such as interest subvention, longer loan tenures, and credit guarantees. | Consider offering a purchase subsidy of ₹20,000/kWh of battery capacity, capped at 40% of ex-showroom price, for purchase of battery electric trucks. | Targeted purchase subsidy programs, initially focusing on trucks deployed in government operations and eventually extended to private truck fleet operators, could help spur battery electric truck adoption. |



Top State Provides Most Subsidies:

- 1.Tamil Nadu
- 2.karnataka
- 3.Maharastra



HOW DOES THE AVAILABILITY OF CHARGING STATIONS INFRASTRUCTURE CORRELATE WITH THE EV SALES AND PENETRATION RATES IN THE TOP 5 STATES?

01

There is Always a correlation between sales and penetration rate in EV sales on availability of charging station

02

Increasing in Charging Station Can Increase both EV Sales penetration rate and Adoption of Electric vehicle.

03

In the Example state of Bangalore we can Find relativity in Availability of charging station and EV Sales

| VEHICLE SEGMENTS | Daily kms driven | Battery capacity in kWh | Driving range in km/full charge | Daily charging demand in kWh | Total daily charging demand in kWh - 2025 |
|--------------------------|------------------|-------------------------|---------------------------------|------------------------------|---|
| E-2W | 40 | 2.5 | 80 | 1.25 | 1,25,596 |
| E-3W (passenger / cargo) | 120 | 7 | 100 | 8.4 | 2,55,162 |
| E-car (personal) | 40 | 30.2 | 312 | 4 | 17,498 |
| E-car (commercial) | 100 | 21.2 | 181 | 12 | 55,931 |



WHO SHOULD BE THE BRAND AMBASSADOR IF ATLIQ MOTORS LAUNCHES THEIR EV/HYBRID VEHICLES IN INDIA AND WHY?

01



Neeraj Chopra

02



Manu Bhakar



RECOMMENDATIONS FOR ATLIQ MOTORS

01

Focus more on 2 whellers that are easy to afford, low cost, and easy to maintenance in the most selling states.

- Consider designing sleek and compact two-wheelers that are budget-friendly and cost-effective.
- Emphasize creating models that are simple to maintain and have affordable upkeep costs.
- Target the top-selling states and tailor the design to meet the preferences and needs of those specific markets.
- Prioritize durability and efficiency in the design to appeal to a wide range of consumers.

02

Ties up with govt incentives of related states and launch the charging station in states where already an EV market is established. that can makes sense to be competitive stand in market.

- By partnering with state government incentives in specific states, we can leverage support for establishing charging stations.

03

Focusing on states with existing EV markets can help us tap into established customer bases.

This strategic approach can enhance our competitiveness in the market and position us for success in the EV industry.



THANK YOU