CODE BASICS

RESUME PROJECT CHALLENGE #12: ELECTRIC VEHICLES ANALYSIS

AGENDA

- BACKGROUND
- PROBLEM STATEMENT
- PRIMARY QUESTIONS
- SECONDARY QUESTIONS
- DASHBOARD SHOWCASE
- RECOMMENDATIONS

BACKGROUND

- India’s journey into electric vehicles began with the establishment of the Reva Electric Car Company in 1994, based in Bangalore.
- Tata Motors has emerged as a key player and is currently the market leader in the Indian EV market, particularly in the four-wheeler segment.
- Mahindra & Mahindra, also made early strides with the e2o, an updated version of the Reva.
- Ola Electric has quickly become a dominant player in the two-wheeler segment with the launch of its electric scooters, Ola S1 and S1 Pro, in 2021, focusing on affordable electric mobility.
- Karnataka became one of the first states to actively promote electric vehicles by introducing the Karnataka Electric Vehicle and Energy Storage Policy in 2017.
- Delhi has also been a pioneer in promoting EV adoption. The Delhi Electric Vehicle Policy, launched in 2020, aims to set up extensive charging infrastructure and targets a significant increase in EV adoption by 2024.

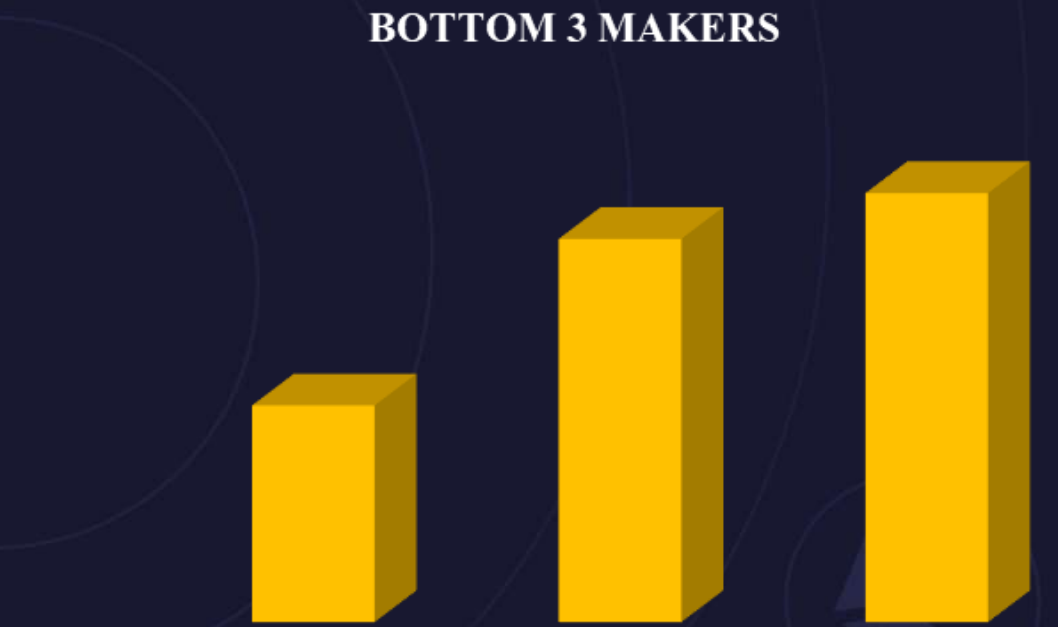
PROBLEM STATEMENT

AtliQ Motors, a leading automotive giant from the USA, has specialized in electric vehicles (EV) and successfully increased its market share to 25% in the electric and hybrid vehicle segment across North America over the last five years. As part of their strategic expansion plans, AtliQ Motors aims to launch their bestselling models in India, a market where they currently hold less than a 2% share. Bruce Haryali, the Chief of AtliQ Motors India, has commissioned a comprehensive market study of the existing EV/Hybrid market in India to guide the company's strategy.

PRIMARY QUESTIONS

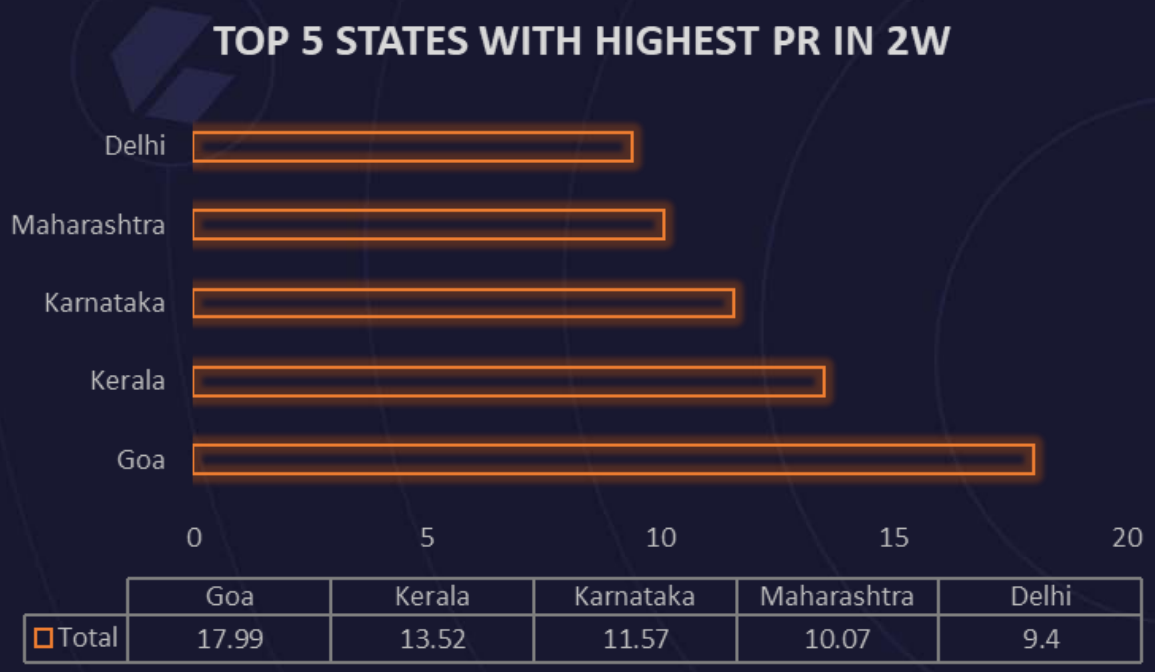
1. List the Top 3 and Bottom 3 makers for the fiscal year 2023 and 2024 in terms of the number of 2-Wheelers sold?

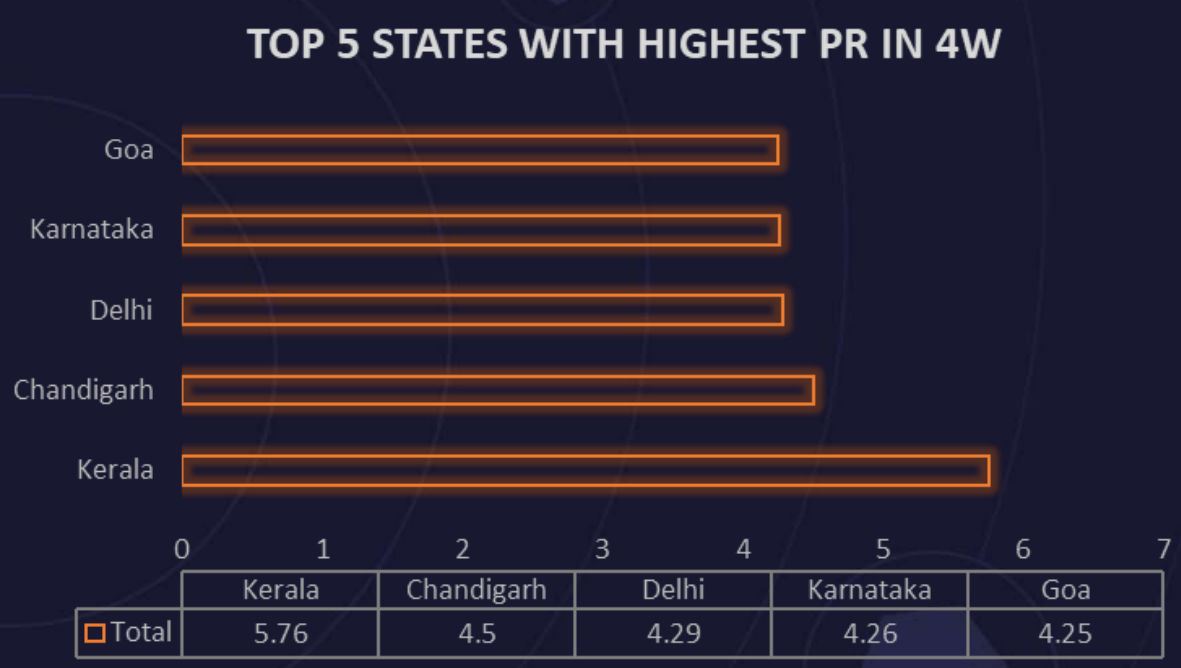
	OLA ELECTRIC	TVS	ATHER
Total	475072	262836	184473



	BATTRE ELECTRIC	JITENDRA	KINETIC GREEN
Total	4841	8563	9585

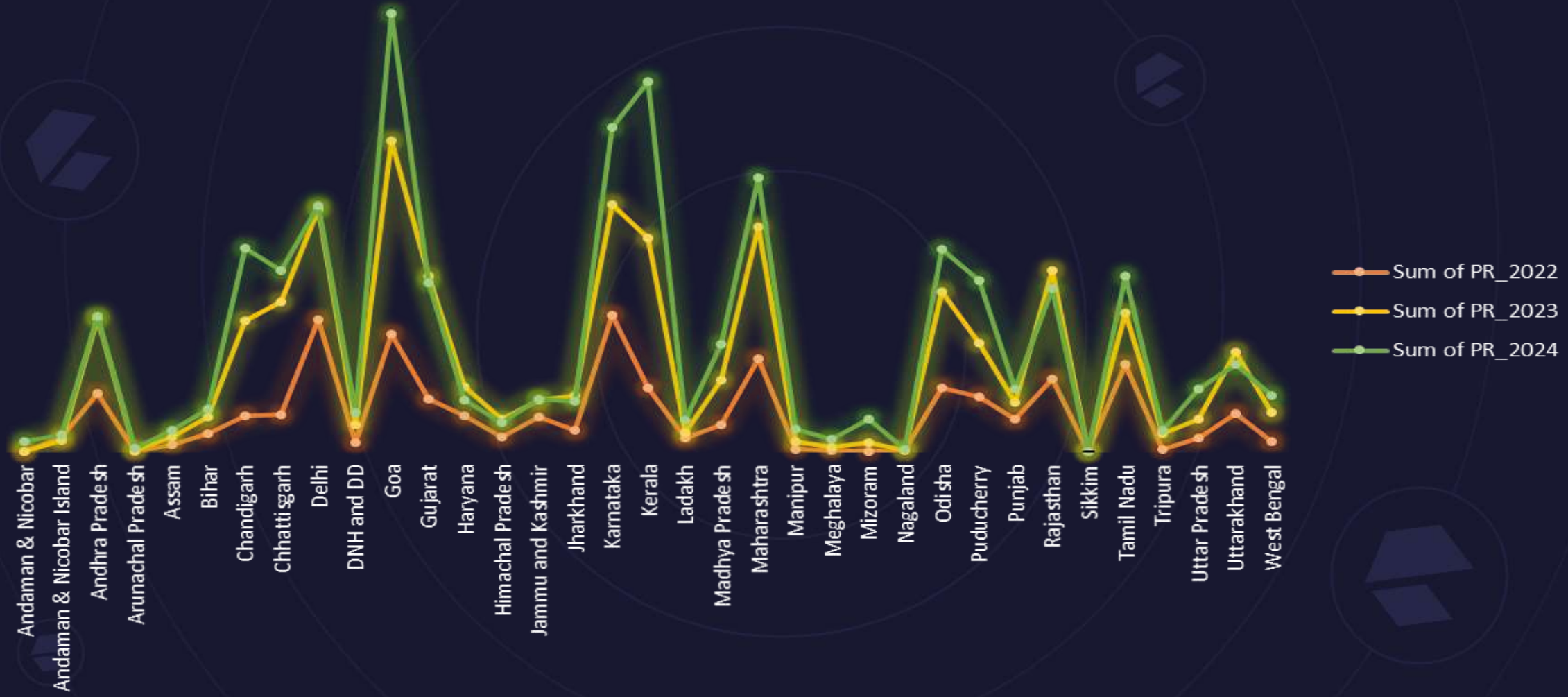
2. Identify the Top 5 States with the highest Penetration Rate in 2-Wheelers and 4-Wheelers electric vehicles Sales in FY 2024?



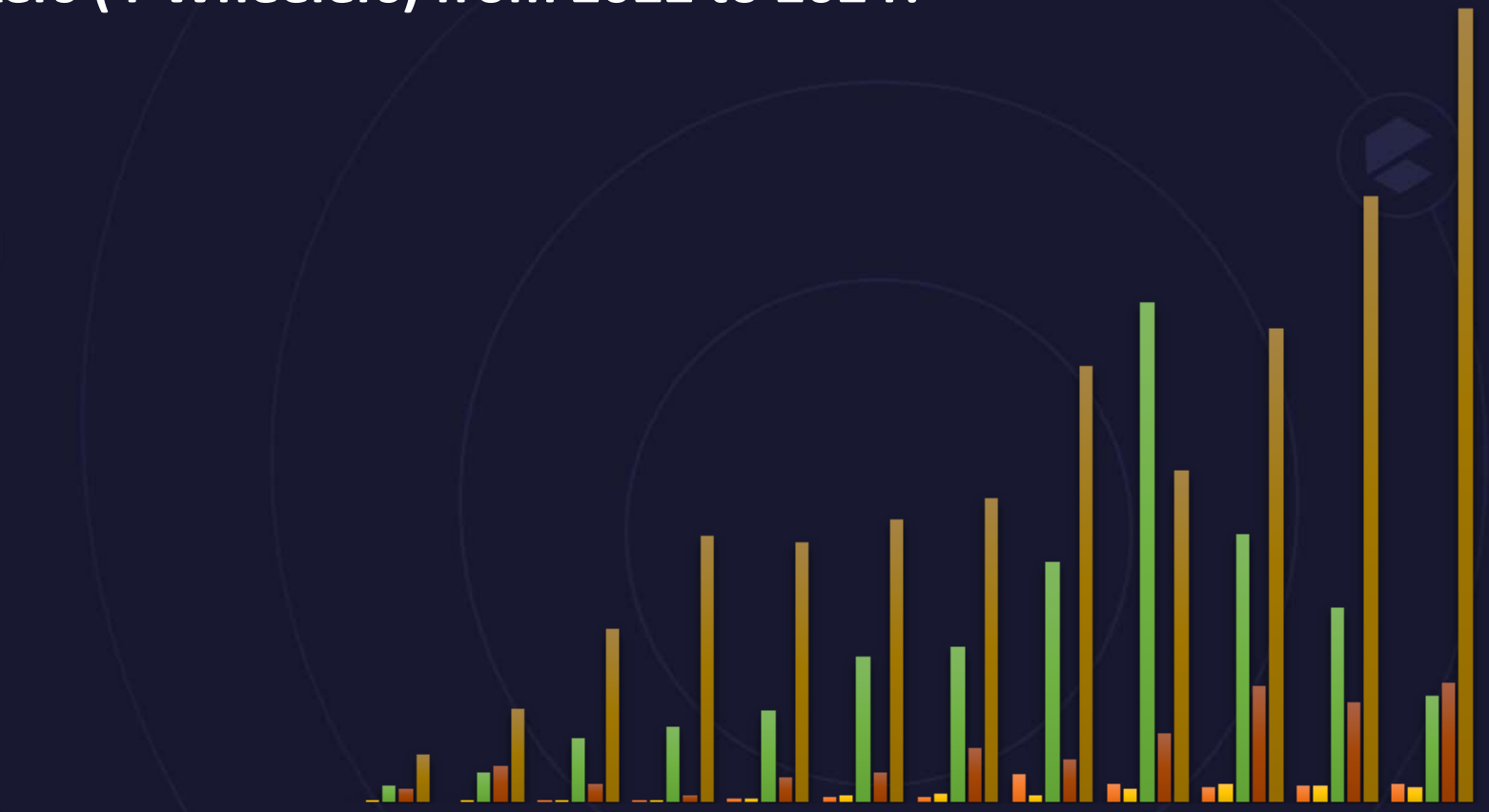


These insights reveal the regional differences in EV adoption, with Goa and Kerala consistently showing strong penetration rates across both vehicle segments.

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

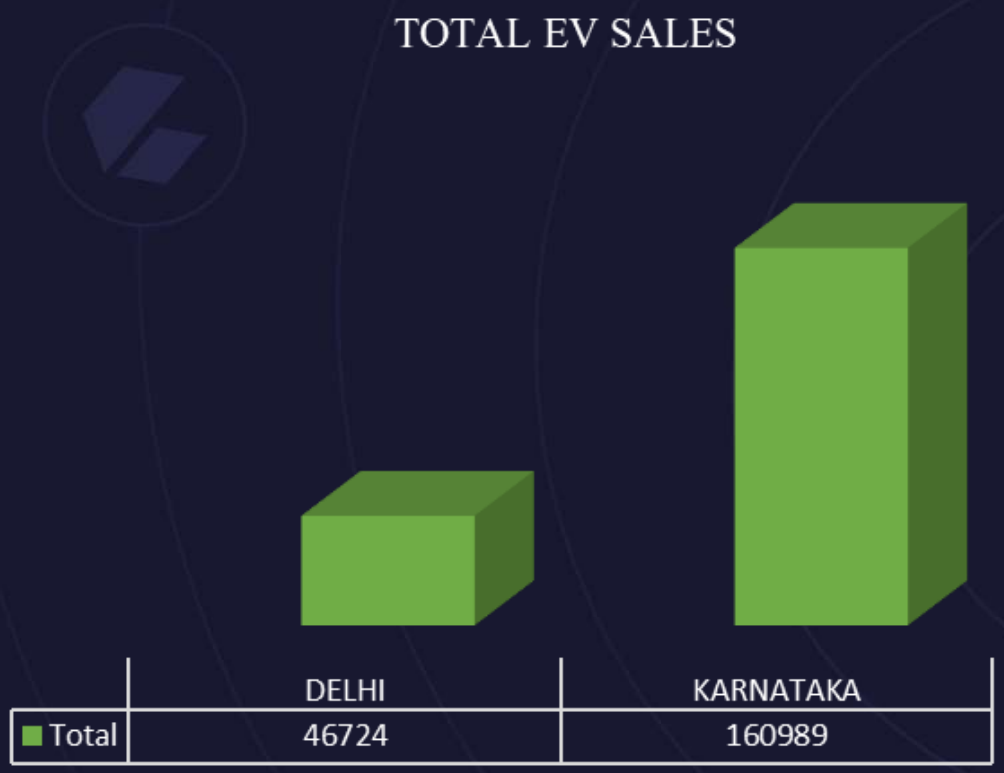


4. What are the Quarterly trends based on the sales volume for the Top 5 EV-makers (4-Wheelers) from 2022 to 2024?

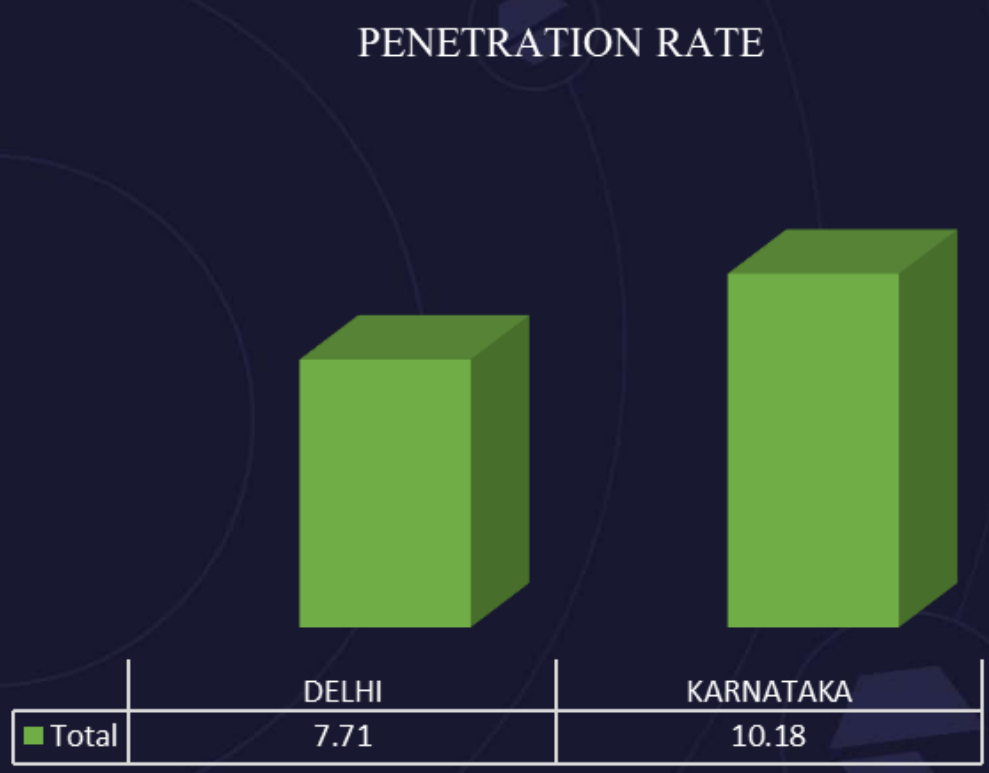


	Q1-22	Q2-22	Q3-22	Q4-22	Q1-23	Q2-23	Q3-23	Q4-23	Q1-24	Q2-24	Q3-24	Q4-24
BYD India	0	0	1	32	81	113	103	623	406	310	350	400
Hyundai Motor	25	34	25	26	75	155	191	155	292	390	370	338
Mahindra & Mahindra	355	651	1383	1653	2020	3164	3378	5243	10911	5855	4264	2316
MG Motor	285	798	411	153	531	635	1165	946	1493	2524	2190	2622
Tata Motors	1031	2052	3791	5834	5675	6192	6651	9528	7247	10337	13236	17361

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



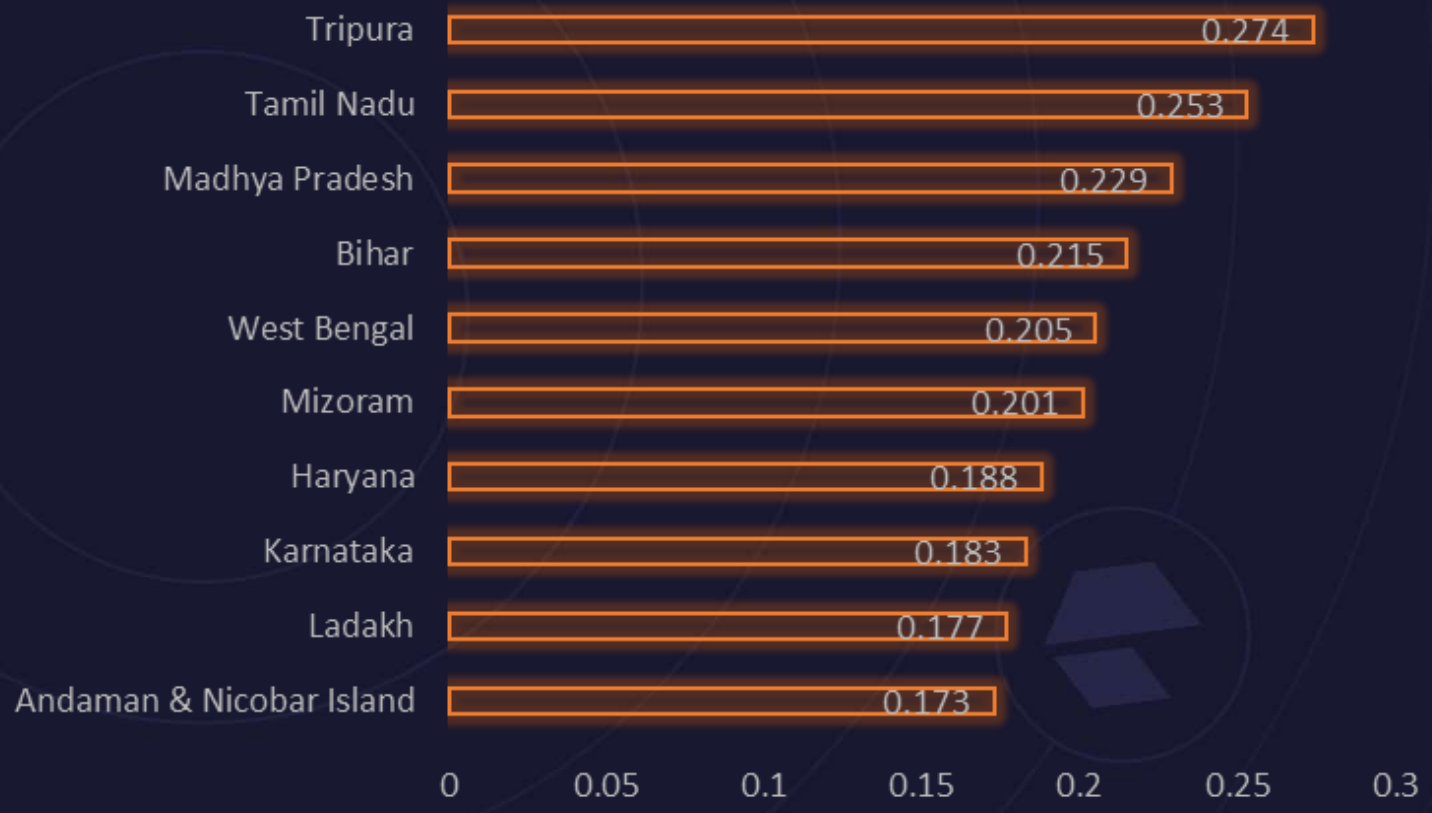
	DELHI	KARNATAKA
Total	46724	160989



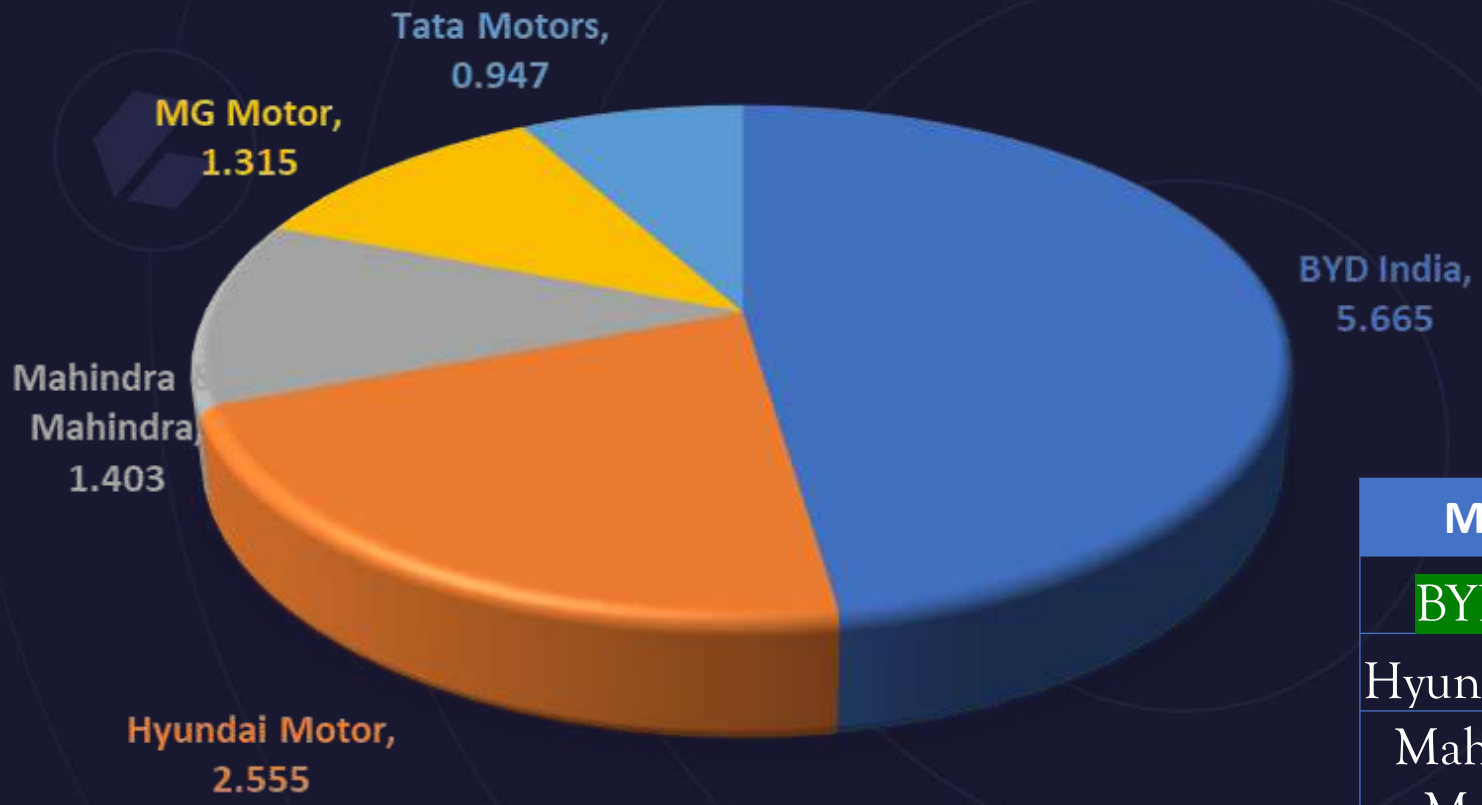
	DELHI	KARNATAKA
Total	7.71	10.18

6. List down the Top 10 States that had the highest compounded annual growth rate (CAGR) from 2022 to 2024 in total vehicles solid?

STATE	CAGR
A & N Island	0.173
Ladakh	0.177
Karnataka	0.183
Haryana	0.188
Mizoram	0.201
West Bengal	0.205
Bihar	0.215
Madhya Pradesh	0.229
Tamil Nadu	0.253
Tripura	0.274

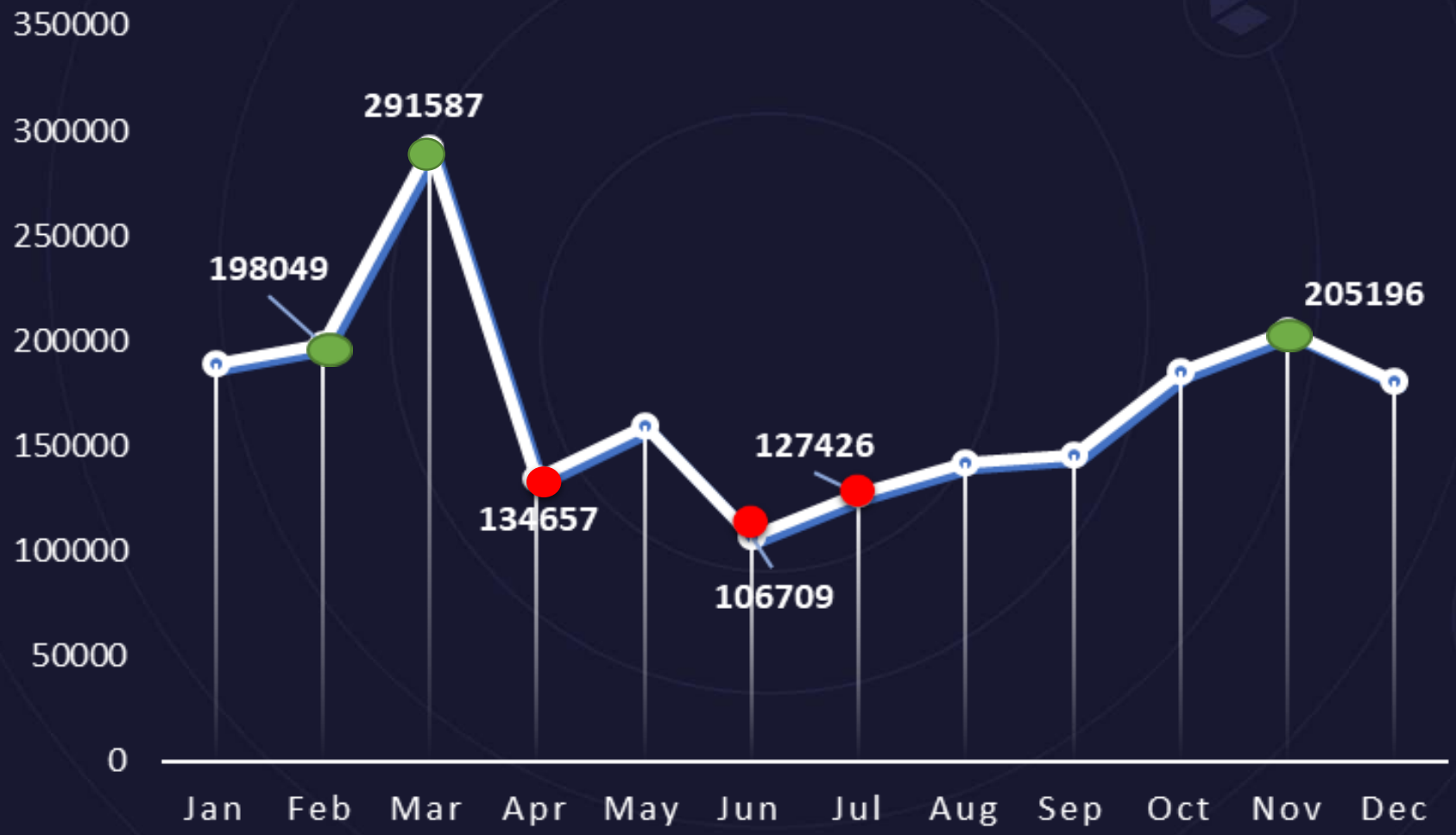


7. List down the compounded annual growth rate (CAGR) in 4-Wheelers units for the Top 5 makers from 2022 to 2024?



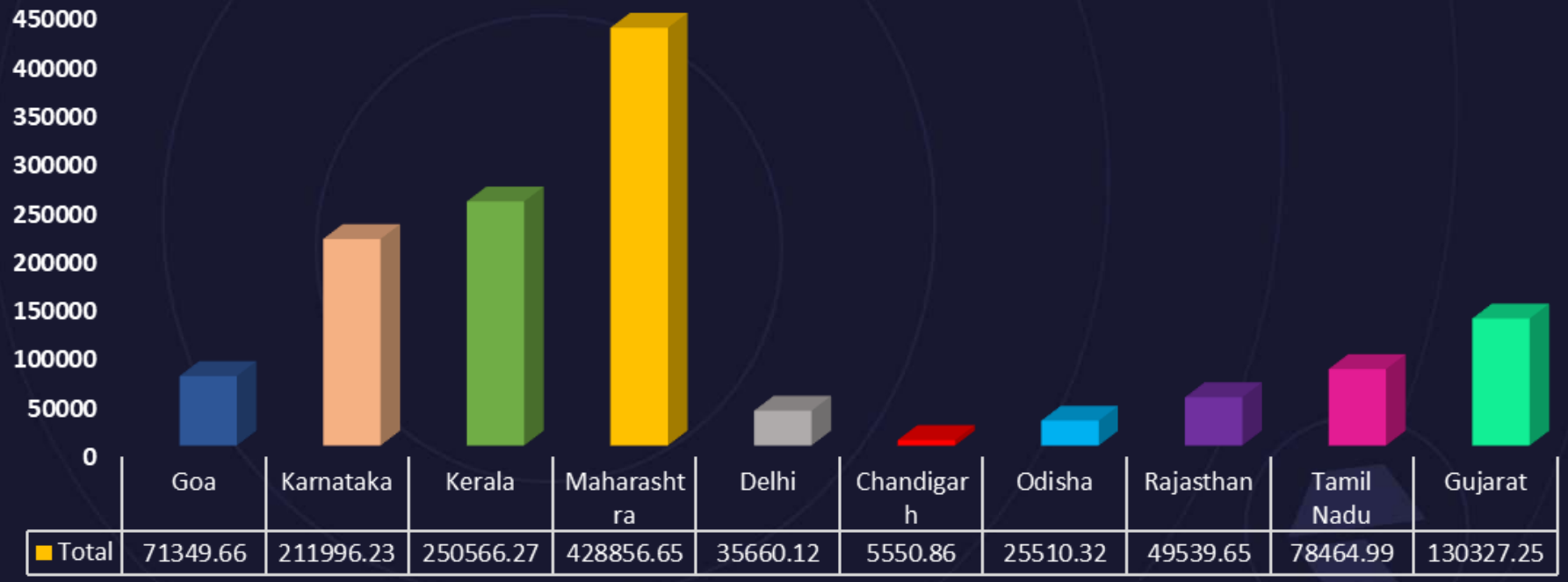
MAKERS	SALES (22-24)	CAGR
BYD India	2419	5.665
Hyundai Motor	2076	2.555
Mahindra & Mahindra	41193	1.403
MG Motor	13753	1.315
Tata Motors	88935	0.947

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



9. What is the projected number of EV-sales (including 2W and 4W) for the Top 10 States by penetration rate in 2030, based on the compounded annual growth rate (CAGR) for previous years?

STATE	AVG PR
Goa	10.42
Karnataka	7.96
Kerala	7.96
Maharashtra	6.66
Delhi	6.58
Chandigarh	4.71
Odisha	4.58
Rajasthan	4.56
Tamil Nadu	4.42
Gujarat	4.27



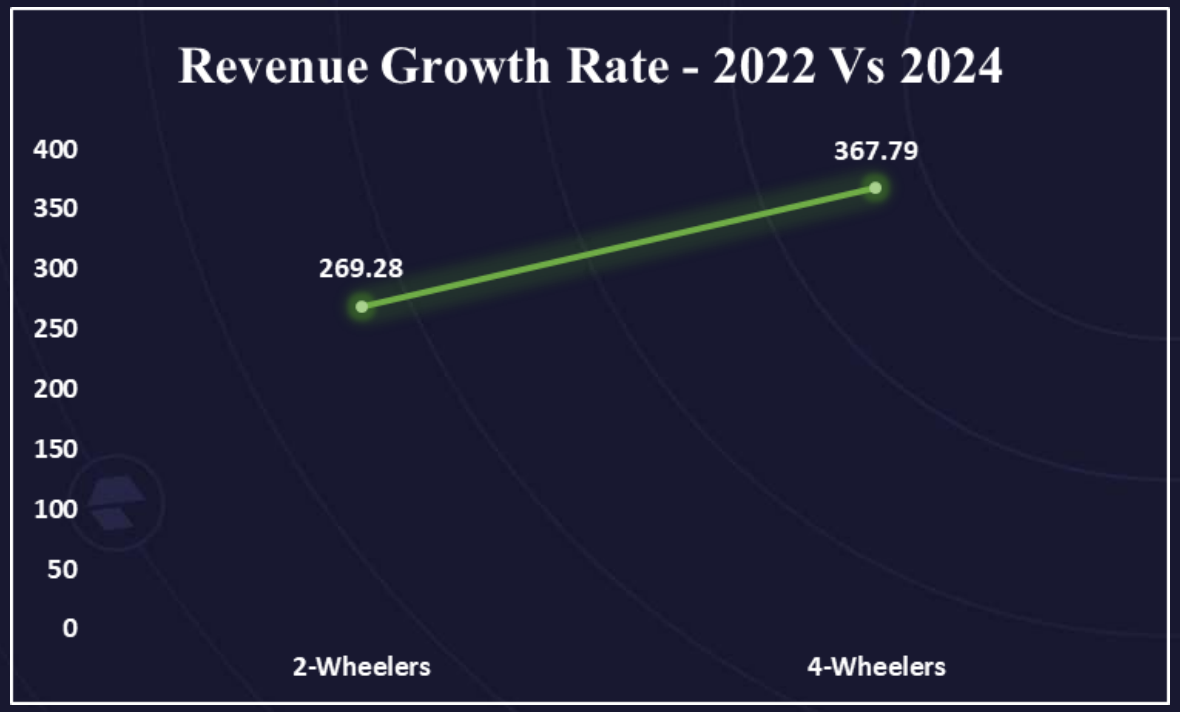
Projected Number Of EV-Sales in 2030

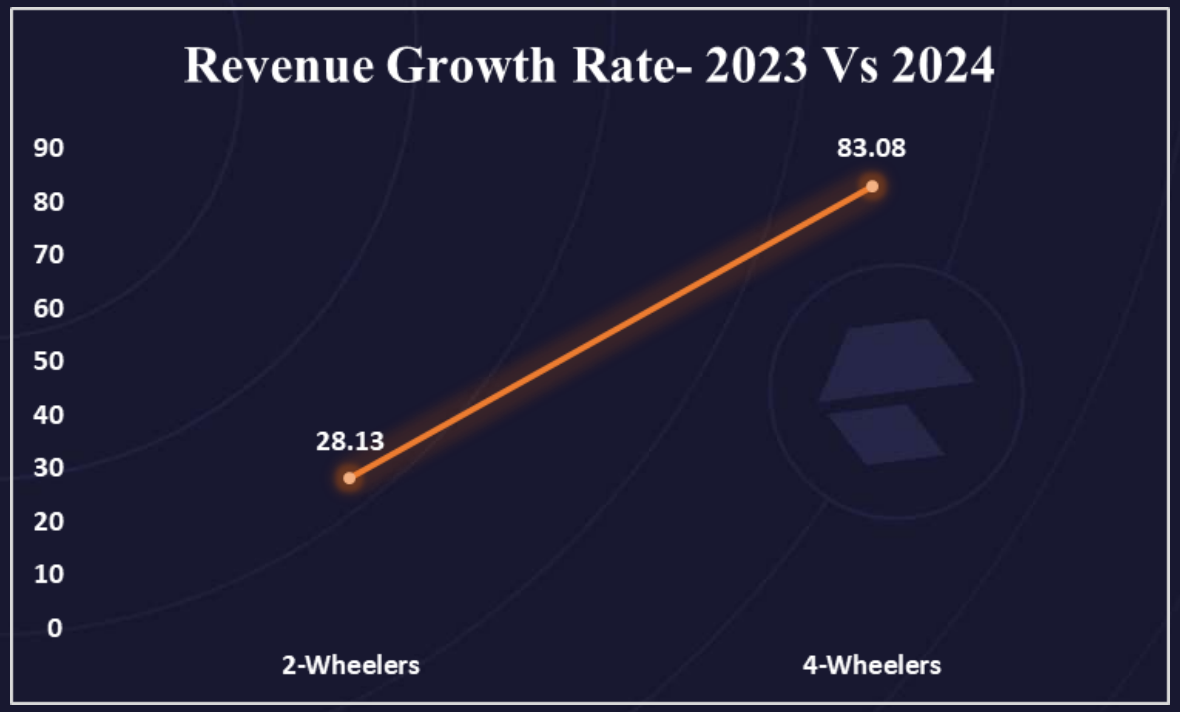
10. Estimate the revenue growth rate of 4W and 2W EVs in India for 2022 Vs 2024 and 2023 Vs 2024, assuming an average unit price.

Vehicle Category	Average Price
2-Wheelers	85000
4-Wheelers	1500000

Total Revenue Year-Wise

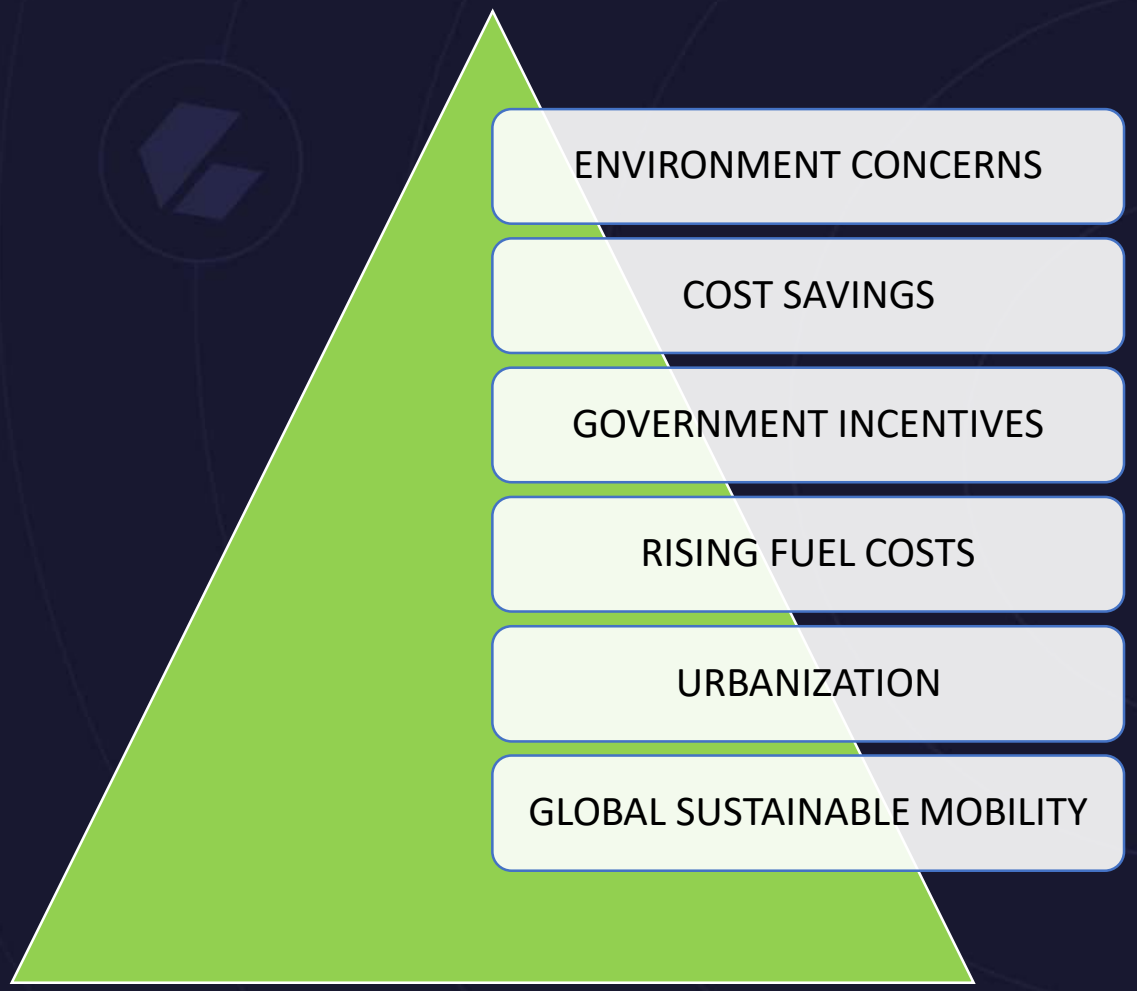
Veh. Category	FY2022	FY2023	FY2024
2-Wheelers	21468705000	61871755000	79278820000
4-Wheelers	27865500000	71197500000	1.30352E+11





SECONDARY QUESTIONS

1. What are the primary reasons for customers choosing 4-Wheelers EVs in 2023 and 2024 ?



- ✓ Lower fuel and maintenance costs.
- ✓ Preference for sustainable and eco-friendly transportation options.
- ✓ Attractive subsidies, tax rebates, and reduced registration fees offered by the government.
- ✓ Availability of incentives for installing home charging stations and reduced electricity tariffs for EV charging.

2. How do government incentives and subsidies impact the adoption rates of 2-Wheelers and 4-Wheelers ? Which State in India provided most subsidies?

❖ WHAT IS SUBSIDY?

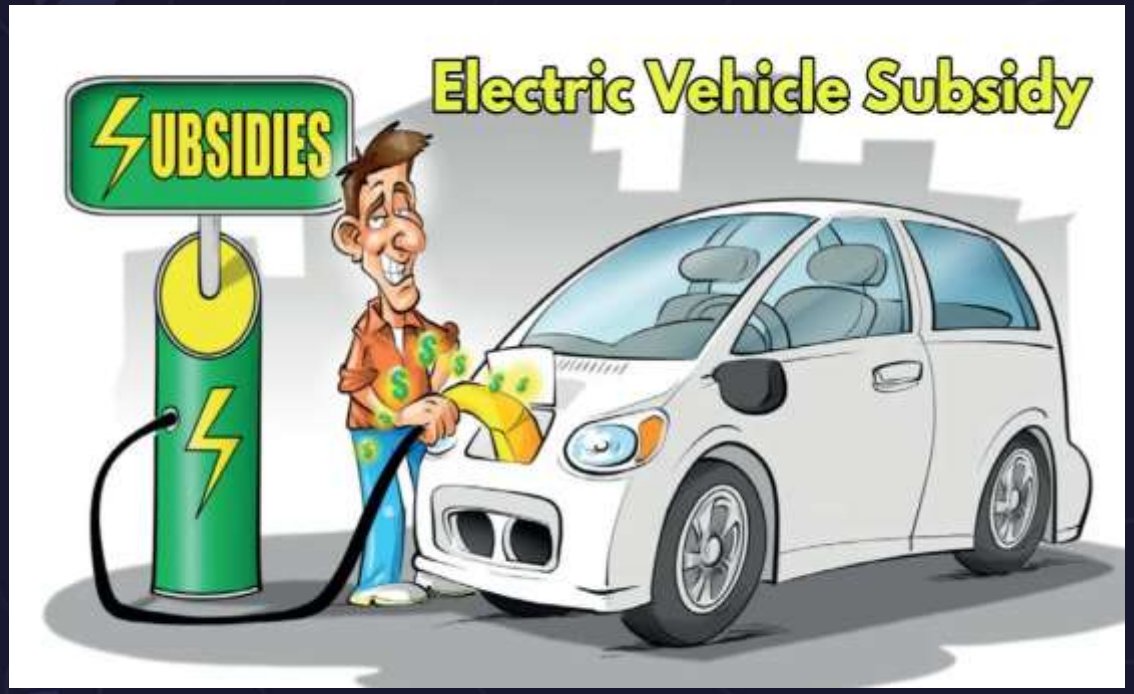
A subsidy is a direct financial aid provided by the government to reduce the cost of goods or services. In the context of EVs, subsidies are typically provided to lower the purchase price of electric vehicles, making them more affordable for consumers.

❖ WHAT IS INCENTIVE?

An incentive is a benefit or reward given to encourage people to take a certain action. It doesn't always involve money but can include things like tax breaks, fee waivers, and support for infrastructure development, which make EV ownership more appealing and cost-effective in the long run.

SUBSIDIES	INCENTIVES
1. Under the FAME-II scheme in India, the government provides a direct subsidy to buyers of electric vehicles. In some states, an electric two-wheeler buyer might receive a subsidy of up to ₹20,000, which directly reduces the price of the vehicle at the time of purchase.	1. Many states in India, like Delhi and Maharashtra, offer exemptions from road tax and registration fees for electric vehicles. By eliminating these costs, the government makes owning an EV more economical.
2. Some governments offer subsidies specifically for the cost of EV batteries. For example, if a government offers a subsidy of ₹10,000 per kilowatt-hour (kWh) of battery capacity, this would reduce the overall price of the EV, particularly for models with larger batteries.	2. The Indian government offers a tax deduction of up to ₹1.5 lakh for the interest paid on loans taken for purchasing an electric vehicle. This incentive reduces the overall financial burden on the buyer by making it more financially attractive to purchase an EV.

TOP 3 EV-friendly States that Offer Best Subsidies



1. Gujarat

Two-wheeler: Maximum up to Rs. 20,000
Three-wheeler: Benefits up to Rs. 50,000
Four-wheeler: Maximum up to Rs. 1.5 lakh

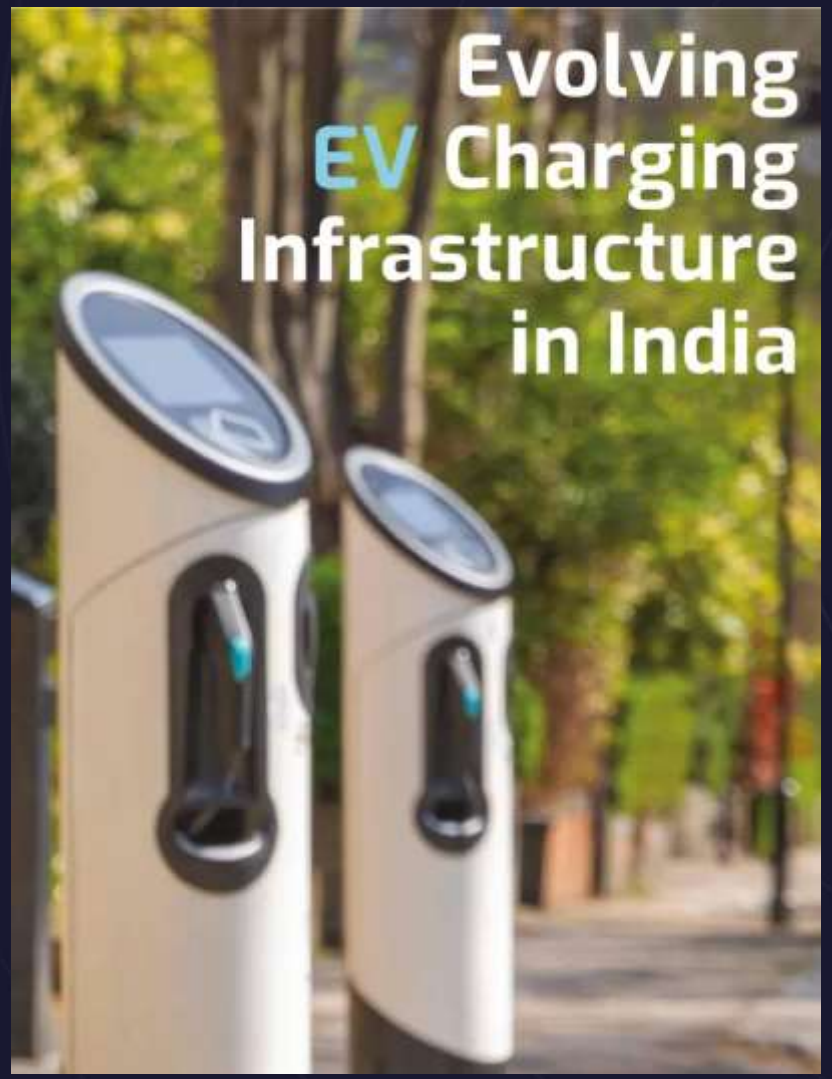
2. Maharashtra

Two-wheeler: Maximum up to Rs. 25,000
Three-wheeler: Benefits up to Rs. 30,000
Four-wheeler: Maximum up to Rs. 2.5 lakh

3. Meghalaya

Two-wheeler: Maximum up to Rs. 20,000
Four-wheeler: Maximum up to Rs. 60,000

3. How does the availability of charging stations infrastructure correlate with the EV-sales and penetration rates in the Top 5 States?



A study conducted by the International Energy Agency (IEA) revealed that in markets where a comprehensive and well-distributed charging network exists, the sales of electric vehicles are markedly higher compared to regions with limited infrastructure.

States with well-developed charging infrastructure (like Delhi, Maharashtra, Karnataka) tend to see higher EV sales and penetration rates. Consumers are more likely to purchase EVs when they know they have reliable access to charging, both at home and in public.

4. Who should be the Brand Ambassador if AtliQ Motors launches their EV/Hybrid vehicles in India and why ?

- Virat Kohli is a highly popular figure among the youth.
- As a sports icon known for his commitment to fitness and healthy living, Virat aligns well with the eco-friendly and sustainable image of EVs.
- With a massive following across India and strong influence on social media, Virat can drive widespread awareness and interest in AtliQ Motors' vehicles.

5. Which State of India is ideal to start the manufacturing unit (Based on subsidies provided, ease of doing business, stability in governance, etc.) ?

1. Tamil Nadu has a well-established automotive industry, hosting major manufacturers like Hyundai, Ford, BMW, and Renault-Nissan.

2. The state offers substantial subsidies and incentives under its EV policy, including capital subsidies, stamp duty exemptions, and electricity tariff concessions for EV manufacturing.

3. Tamil Nadu consistently ranks high in ease of doing business, with streamlined processes for obtaining permits and clearances. The state also offers single-window clearance for industrial projects.

4. With a large pool of skilled and semi-skilled labor, Tamil Nadu is known for its technical expertise in the manufacturing sector.

DASHBOARD

ELECTRIC VEHICLE ANALYSIS

YEAR: All | STATE: All | MONTH: All

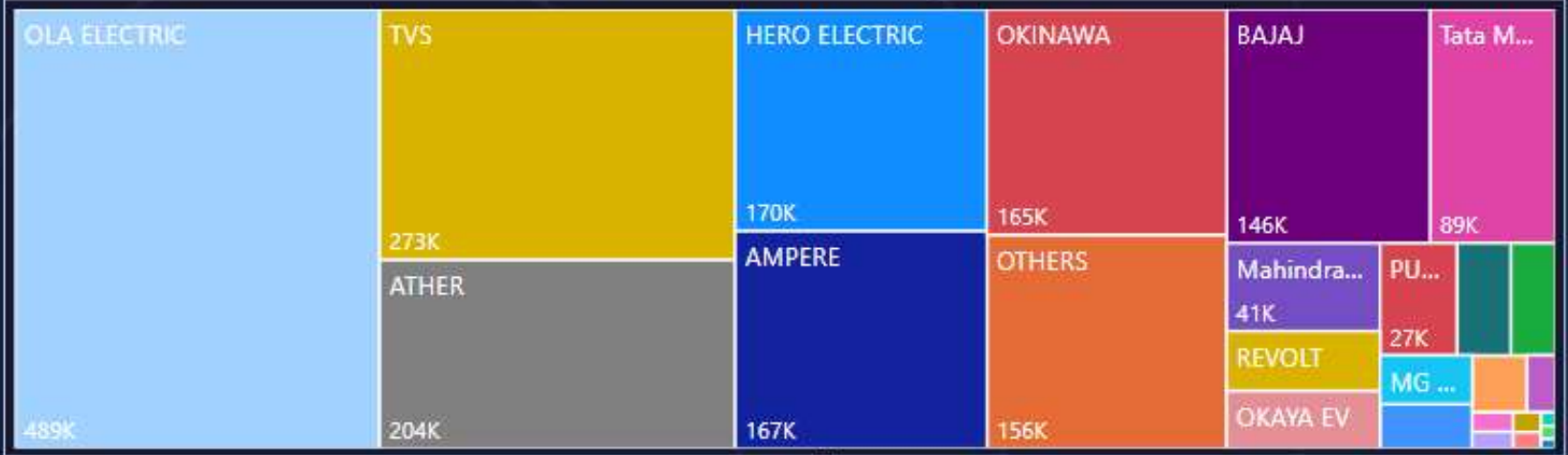
57M	2M	392bn	3.61
Total_Vehicles_Sold	Total_EV_Sold	Total_Revenue	EV_Pen_Rate

Q1 | Q2 | Q3 | Q4

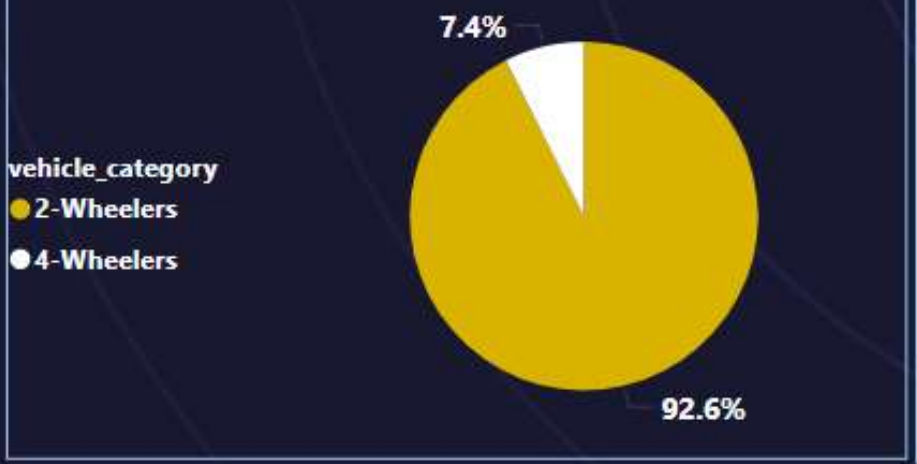
VEHICLE CATEGORY: 2-Wheelers | 4-Wheelers

Total Electric Vehicles Sales

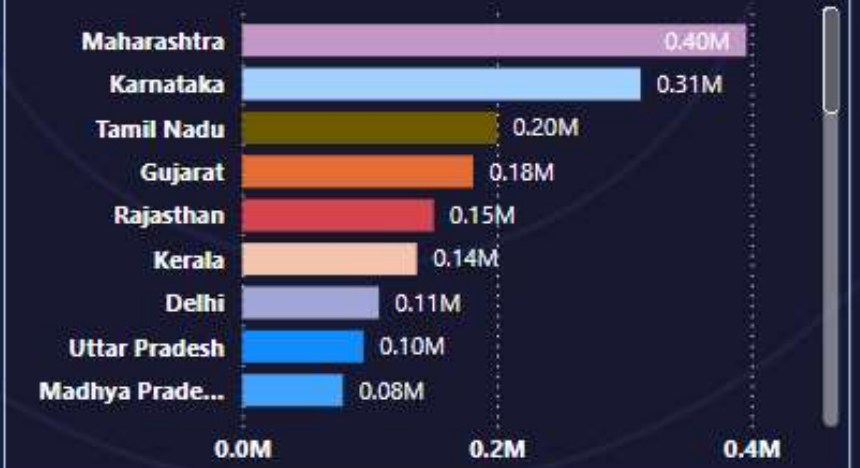
Total Electric Vehicle Sales By Makers



Category-Wise % Of EV Sales



EV-Sales by State



Penetration Rate by state

RECOMMENDATIONS

1. State-Specific Strategies:

States like Tamil Nadu, Gujarat, and Karnataka are especially good for setting up factories because they make it easier for companies to start and grow. By focusing on these states, AtliQ Motors can get their operations up and running faster and more smoothly.

2. Consumer Preferences and Adoption Drivers

People in India are buying electric vehicles mainly because they save money, EV are better for the environment, and have support from the government like subsidies. For 4-wheelers, these reasons are even more important. To attract more buyers, AtliQ Motors should emphasize how their vehicles can save money and help the environment.

3. Tailored Incentives for Two-Wheelers and Four-Wheelers

The Indian government offers several financial benefits to make electric vehicles cheaper and more attractive, like subsidies and tax rebates. AtliQ Motors should take full advantage of these benefits to lower the cost of their vehicles for customers. This not only helps customers save money but also aligns the company with India's goals of reducing pollution and promoting green energy.

THANK YOU

By: ANMOL KAPOOR