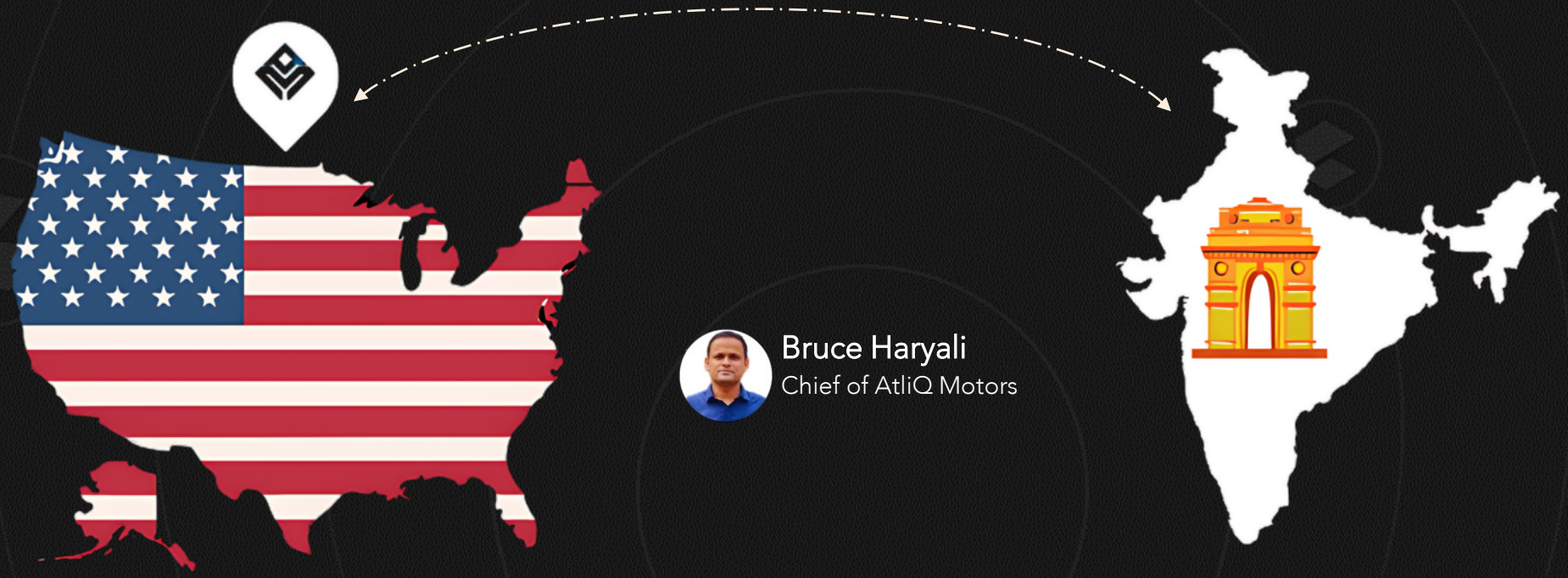
Resume Project Challenge #12

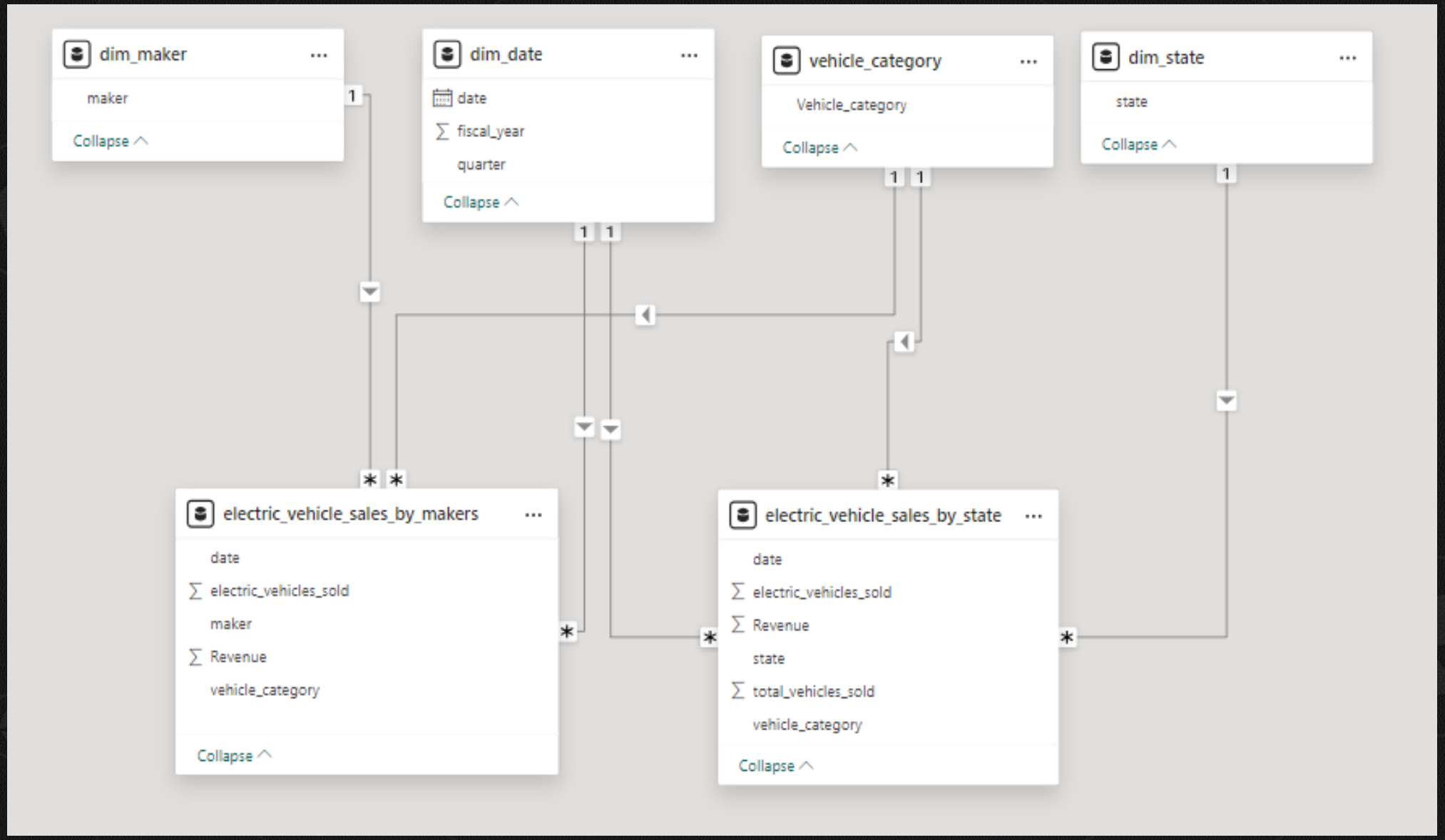
PROBLEM STATEMENT



Bruce Haryali
Chief of AtliQ Motors

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. Bruce gave this task to the data analytics team of AtliQ motors and Peter Pandey is the data analyst working in this team. My Task is to imagine myself as Peter Pandey and provide insights to the necessary questions.

DATASET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QUESTIONS

PRIMARY QUESTIONS

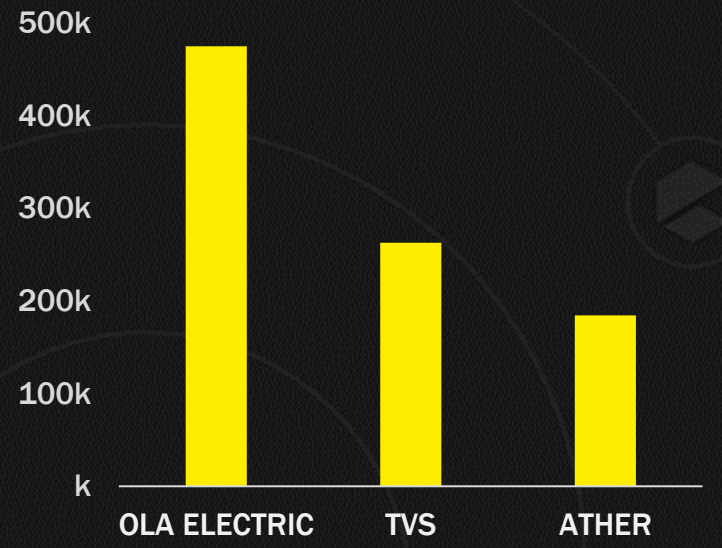
Q) List the top 3 and bottom 3 makers for the fiscal years 2023 and 2024 in terms of the number of 2-wheelers sold.

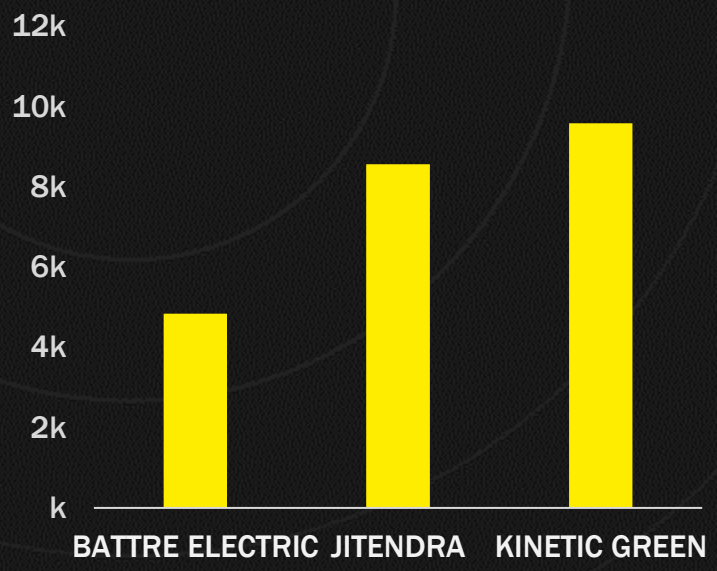
Top 3 Makers

Maker	EV SOLD
OLA ELECTRIC	475,072
TVS	262,836
ATHER	184,473

Bottom 3 Makers

Maker	EV SOLD
BATTRE ELECTRIC	4,841
JITENDRA	8,563
KINETIC GREEN	9,585





Ola Electric is the market leader in the EV 2-wheeler segment with **475,072** units sold

TVS follows with **262,836** units sold, which is about **55%** of Ola Electric's sales.

Ather comes in third with **184,473** units sold, which is about **70%** of TVS's sales and roughly **39%** of Ola Electric's sales

The bottom three manufacturers have sold a combined total of **22,989** units, which is still less than 5% of Ola Electric's sales alone

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

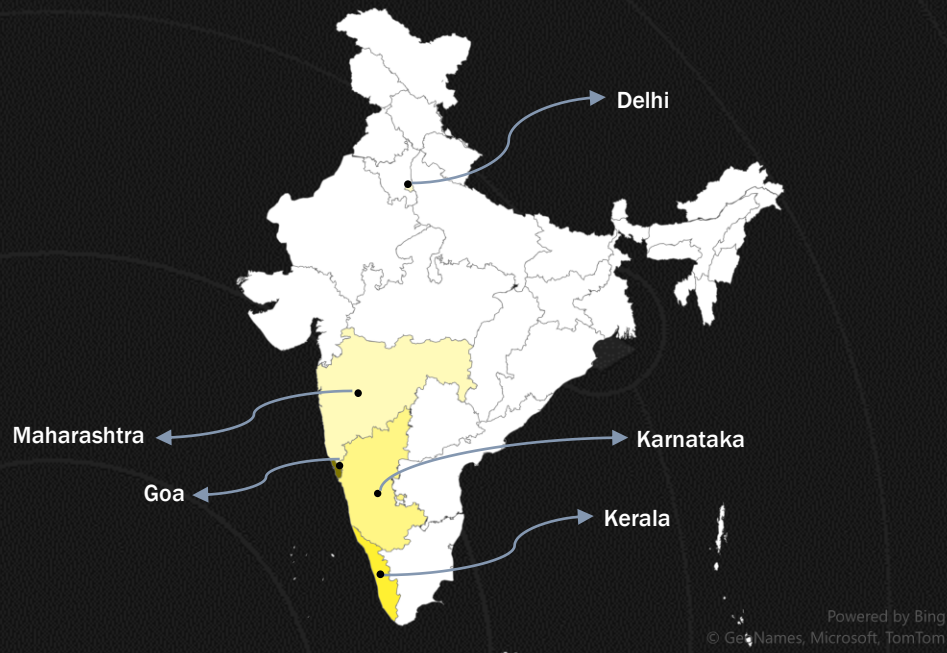
$$\text{Penetration Rate} = \frac{\text{EV SOLD}}{\text{TOTAL VEHICLES SOLD}} \times 100$$

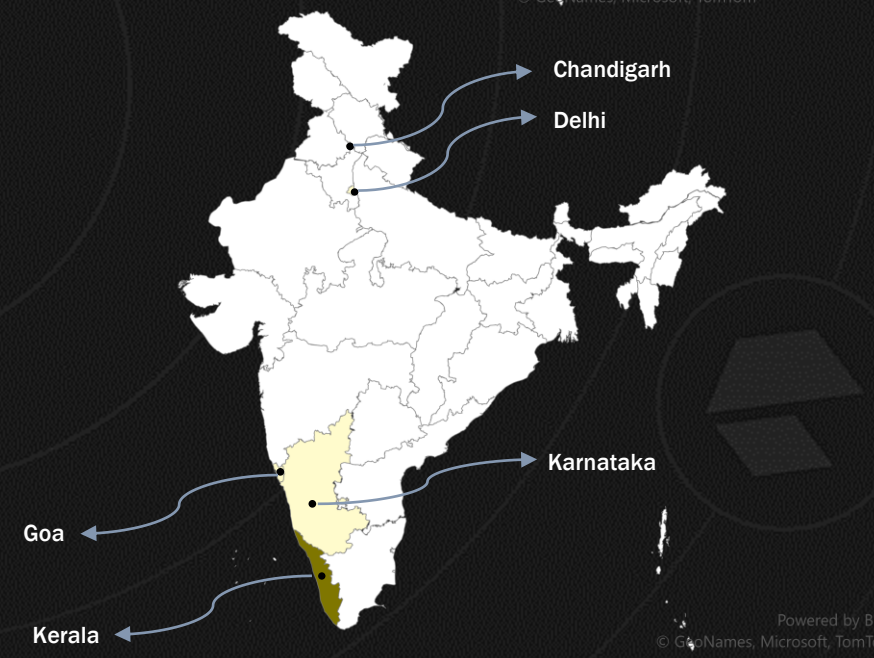
Top 5 States (2-Wheelers)

State	Penetration(%)
Goa	17.99
Kerala	13.52
Karnataka	11.57
Maharashtra	10.07
Delhi	9.40

Top 5 States (4-Wheelers)

State	Penetration(%)
Kerala	5.76
Chandigarh	4.50
Delhi	4.29
Karnataka	4.26
Goa	4.25





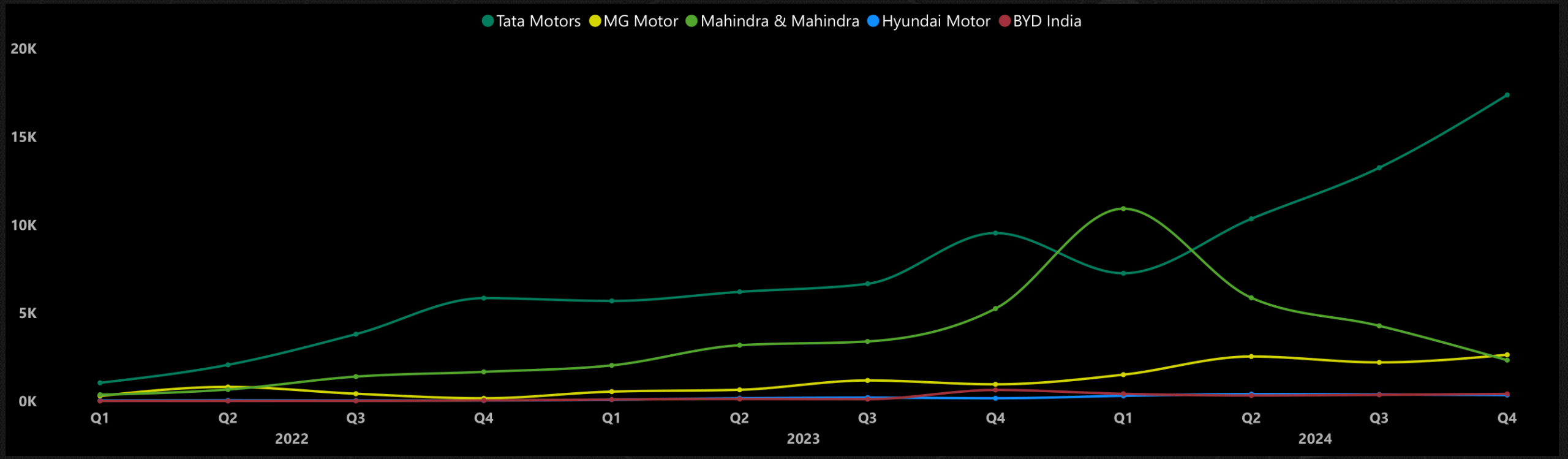
Q) List the states with negative penetration (decline) in EV sales from 2022 to 2024?

There are no such state with a decline in EV sales from 2024 compared to 2022. But there are 2 states with a decline in penetration rate. Which could be due to increase in total vehicle sold and increase in overall market growth or change in the preference of the customers in these areas.

State	Penetration Change
Andaman & Nicobar Island	-0.056
Ladakh	-0.624

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

Quarterly Trends based on sales volume for the Top 5 EV Makers from 2022 to 2024



- Overall, the EV market for 4-wheelers in India seems to be growing, especially for leading brands like Tata Motors and Mahindra & Mahindra.
- The period from 2023 Q4 to 2024 shows a general upward trend in the market, indicating increasing consumer adoption of EVs.

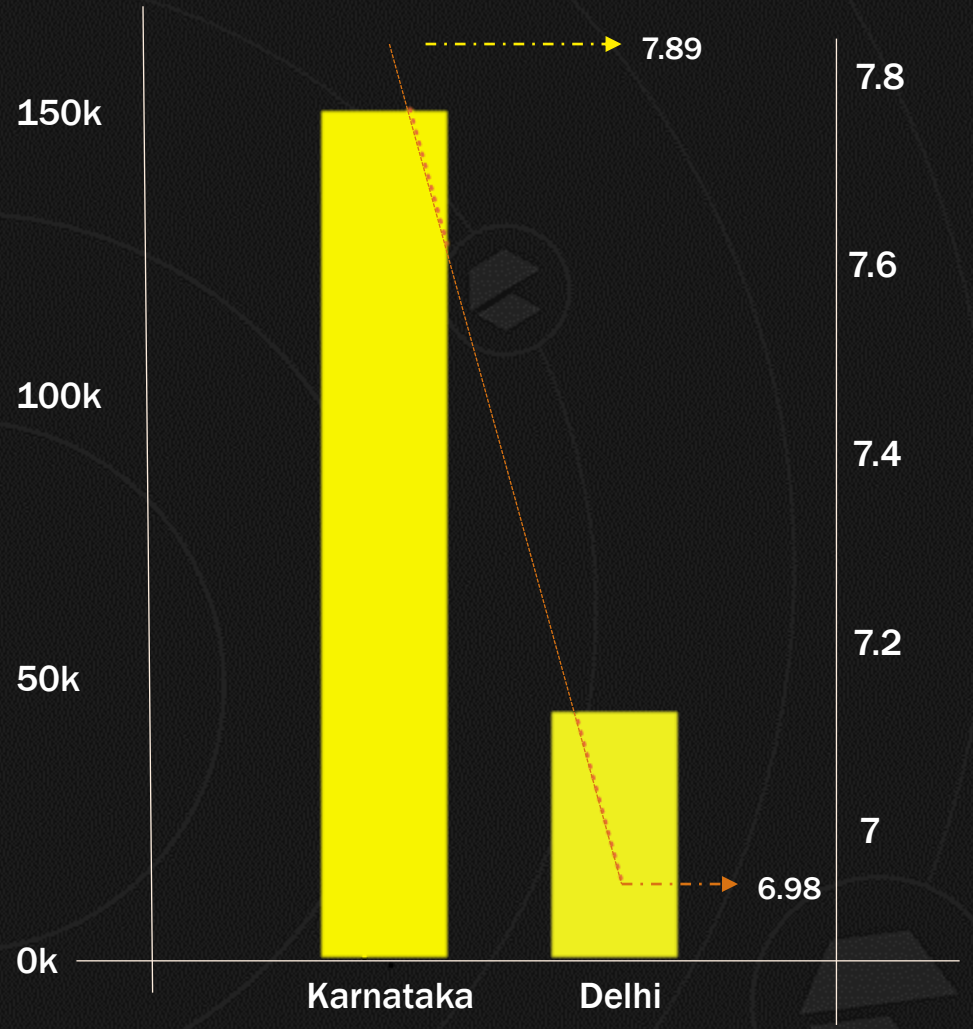
Q) How do the EV sales and penetration rates in Delhi compare to Karnataka for 2024?

EV Sales in Karnataka – 161k

EV Sales in Delhi – 47k

Penetration Rate in Karnataka – 7.89

Penetration Rate in Delhi – 6.89



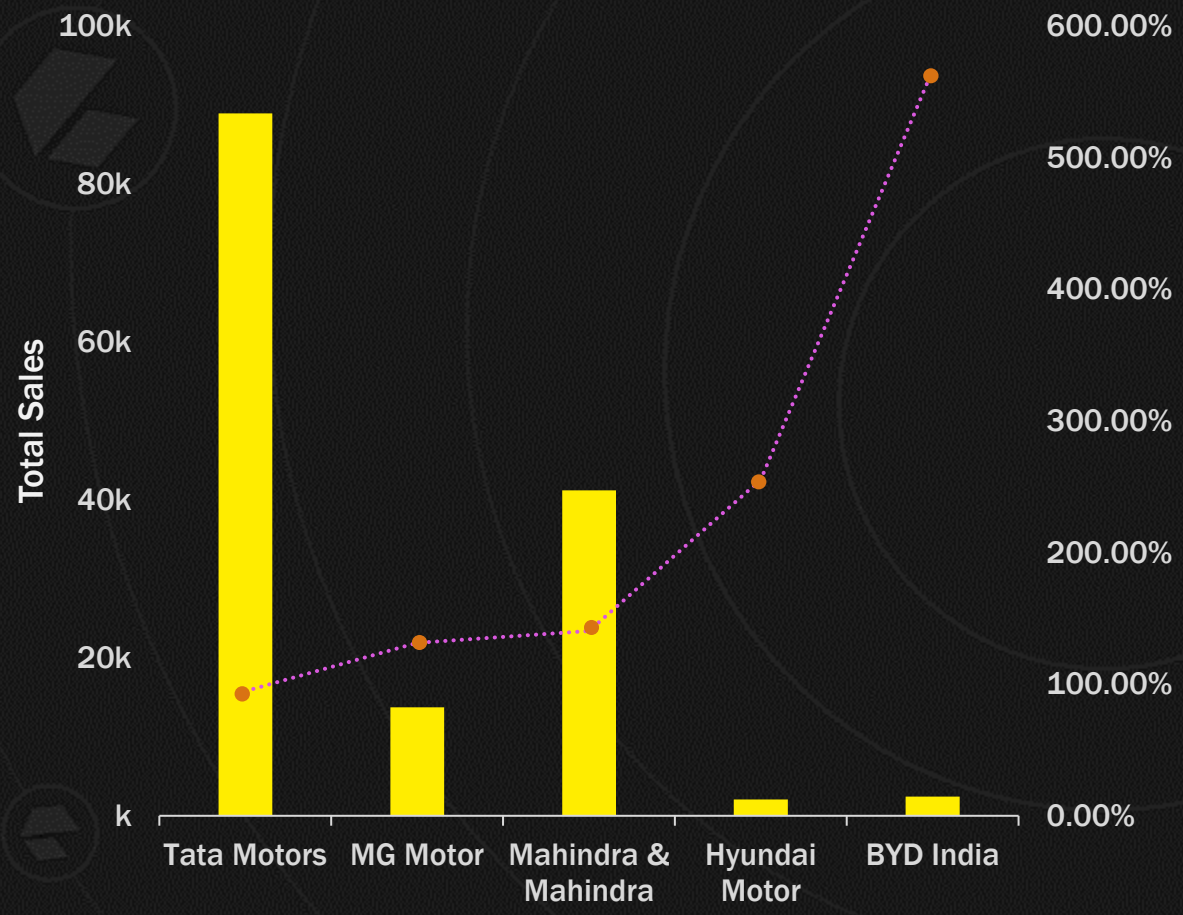
- Karnataka should be a key focus area for continued market expansion and investment, given its high sales volume and penetration rate.
- Delhi presents an opportunity for growth, especially if barriers to higher adoption can be identified and addressed.

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

CAGR for the Top 5 Makers in 4 – Wheeler Segment from 2022-2024

Maker	CAGR	Total EV SOLD (2022-24)
Tata Motors	94.71%	88935
MG Motor	131.53%	13753
Mahindra & Mahindra	140.33%	41193
Hyundai Motor	255.48%	2076
BYD India	566.52%	2419

- Tata Motors' dominant sales figures reflect its strong market position, likely due to a well-established product lineup and distribution network. In contrast, BYD and Hyundai's lower sales but higher growth rates indicate they are newer entrants or are aggressively expanding their market presence.



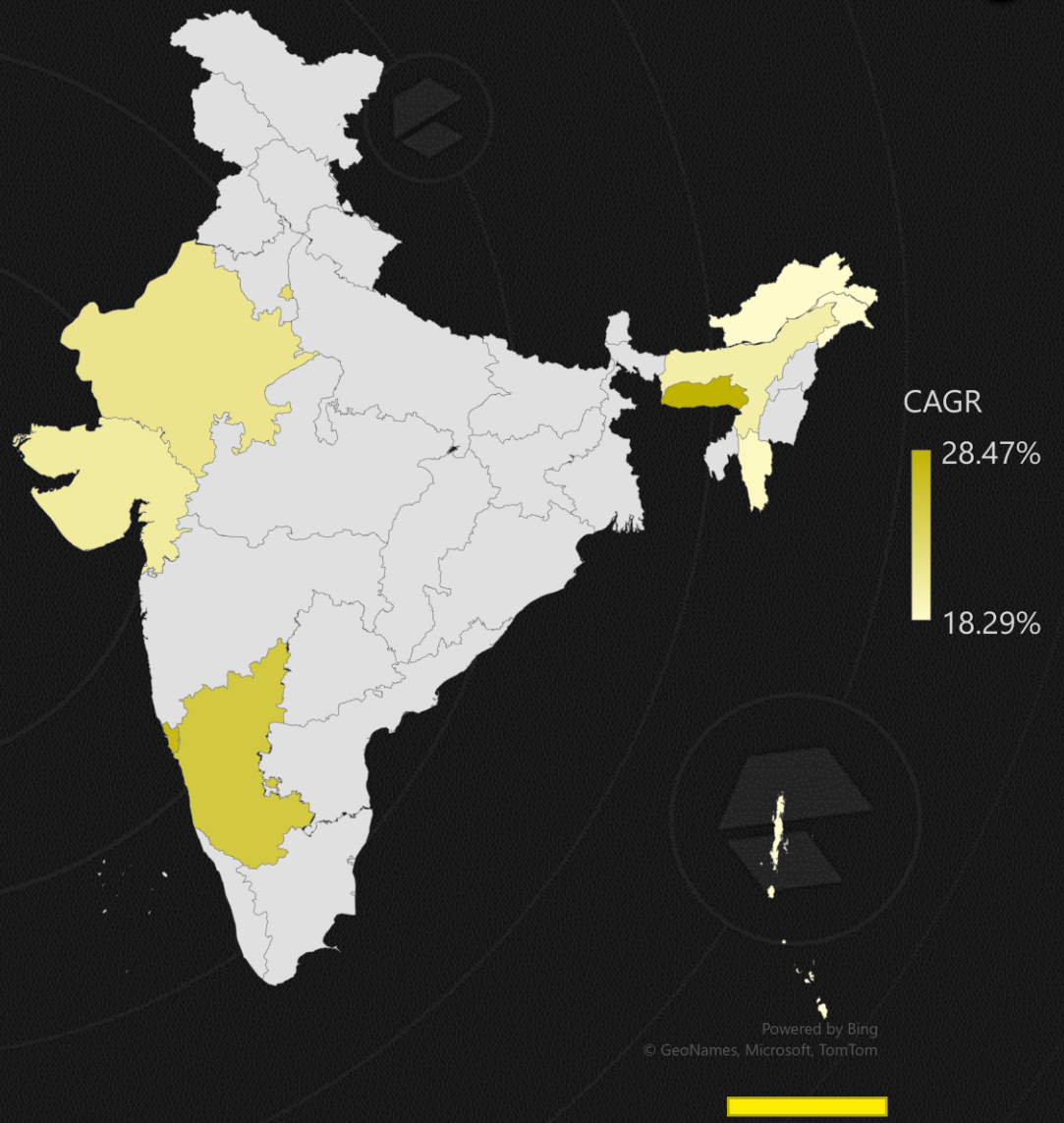
- BYD and Hyundai are expanding rapidly but from a smaller base, indicating aggressive market entry or expansion strategies.

- Tata Motors, with a more modest growth rate, is likely focusing on maintaining and expanding its already dominant market position.

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

Top 10 states that had the highest CAGR from 2022 to 2024 in total vehicles sold.

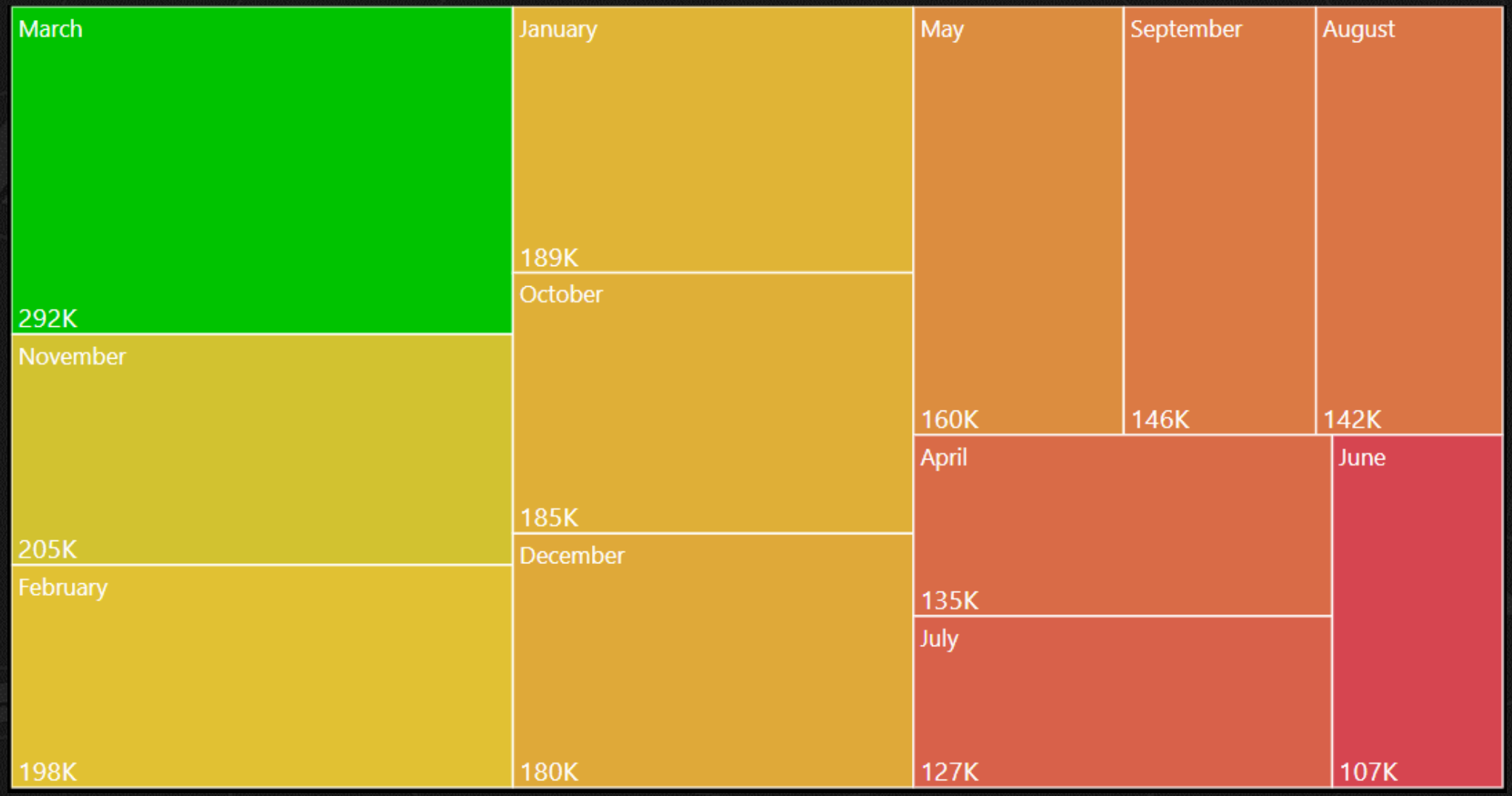
State	Total Vehicle Sold (22)	Total Vehicle Sold (24)	CAGR
Meghalaya	22193	36628	28.47%
Goa	48372	78524	27.41%
Karnataka	1007894	1581988	25.28%
Delhi	401540	606348	22.88%
Rajasthan	880985	1300476	21.50%
Gujarat	1094872	1590987	20.55%
Assam	379450	547626	20.13%
Mizoram	19439	27422	18.77%
Arunachal Pradesh	19929	27892	18.30%
Andaman & Nicobar Island	5148	7203	18.29%



•States with higher CAGRs, like Meghalaya and Goa, could be experiencing increased economic activity, rising incomes, or better infrastructure, leading to higher vehicle sales
.
•For states with moderate growth, there might be potential for market expansion if barriers such as infrastructure or purchasing power are addressed.

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

Peak and low season months for EV sales based on the data from 2022 to 2024



Q) What is the projected number of EV sales (including 2-wheelers and 4-wheelers) for the top 10 states by penetration rate in 2030, based on the CAGR from previous years?

Projected number of EV sales for the top 10 states by Penetration rate in 2030, based on the CAGR from previous years

State	Penetration Rate	EV SOLD (2024)	CAGR(%)	Projected Sales (2030)
Goa	7.51	10.8K	146.45	2.42 M
Kerala	6.86	73.9K	132.83	11.78 M
Delhi	5.63	46.7K	68.1	1.05 M
Karnataka	5.43	161.0K	93.24	8.38 M
Maharashtra	4.76	197.2K	101.89	13.35 M
Chandigarh	4.64	2.9K	164.58	0.99 M
Rajasthan	3.22	66.4K	81.87	2.40 M
Gujarat	3.14	84.4K	116.33	8.65 M
Tamil Nadu	3.06	94.3K	59.95	1.58 M
Odisha	2.9	39.1K	102.94	2.73 M

The variation in CAGR across these states shows that while some like Chandigarh and Goa are growing rapidly from a smaller base, others like Maharashtra and Kerala are expanding robustly from a larger base.

With a projected 13.35 million EVs sold by 2030, Maharashtra is expected to lead the states, largely due to its strong CAGR of 101.89% and the highest current sales volume of 197.2K in 2024.

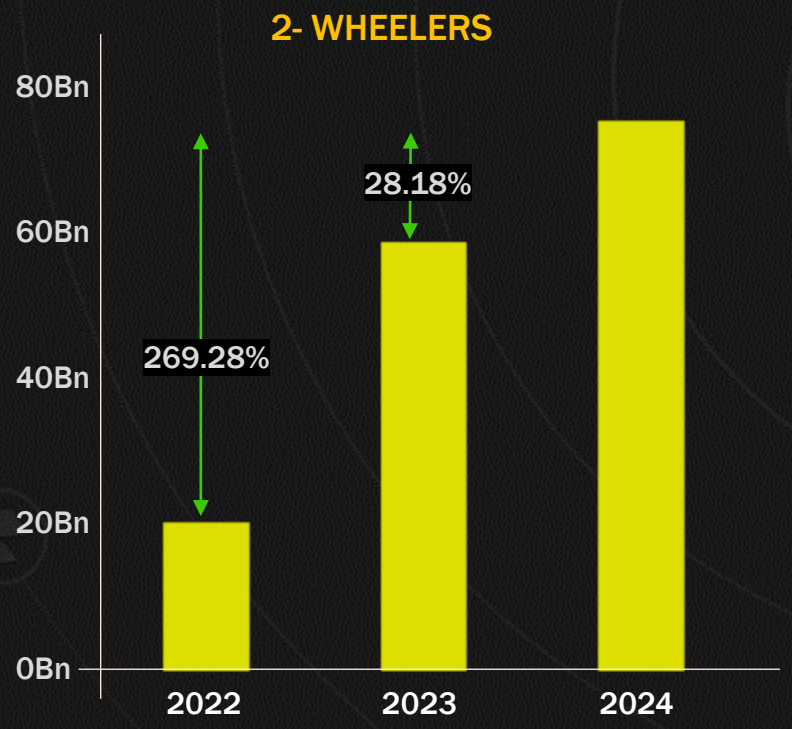
Q) Estimate the revenue growth rate of 4-wheeler and 2-wheelers EVs in India for 2022 vs 2024 and 2023 vs 2024, assuming an average unit price.

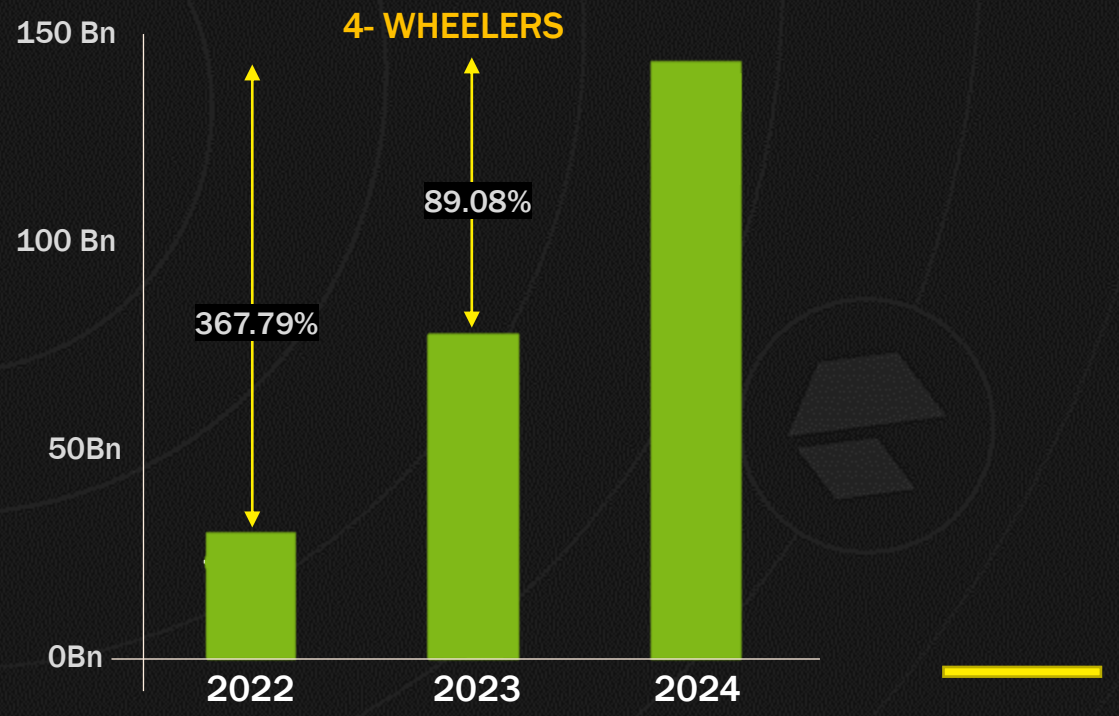
VEHICLE CATEGORY	AVG PRICE
2-WHEELER	Rs 85,000
4-WHEELER	Rs 15,00,000

Revenue Growth Rate of 4-wheeler and 2-wheelers EVs in India for 2022 vs 2024 and 2023 vs 2024.

Revenue	Fiscal Year
21.47B	2022
61.87B	2023
79.28B	2024

Revenue	Fiscal Year
27.87B	2022
71.20B	2023
130.35B	2024





SECONDARY QUESTIONS

Q) What are the primary reasons for customers choosing 4-wheeler EVs in 2023 and 2024 (cost savings, environmental concerns, government incentives)?

Primary reasons for customers choosing 4-wheeler Evs:

Cost savings

- Fuel efficiency
- Reduced maintenance costs

Environmental Concerns

- Zero tailpipe emissions
- Reduced carbon footprint
- Contribution to addressing climate change

Government Incentives

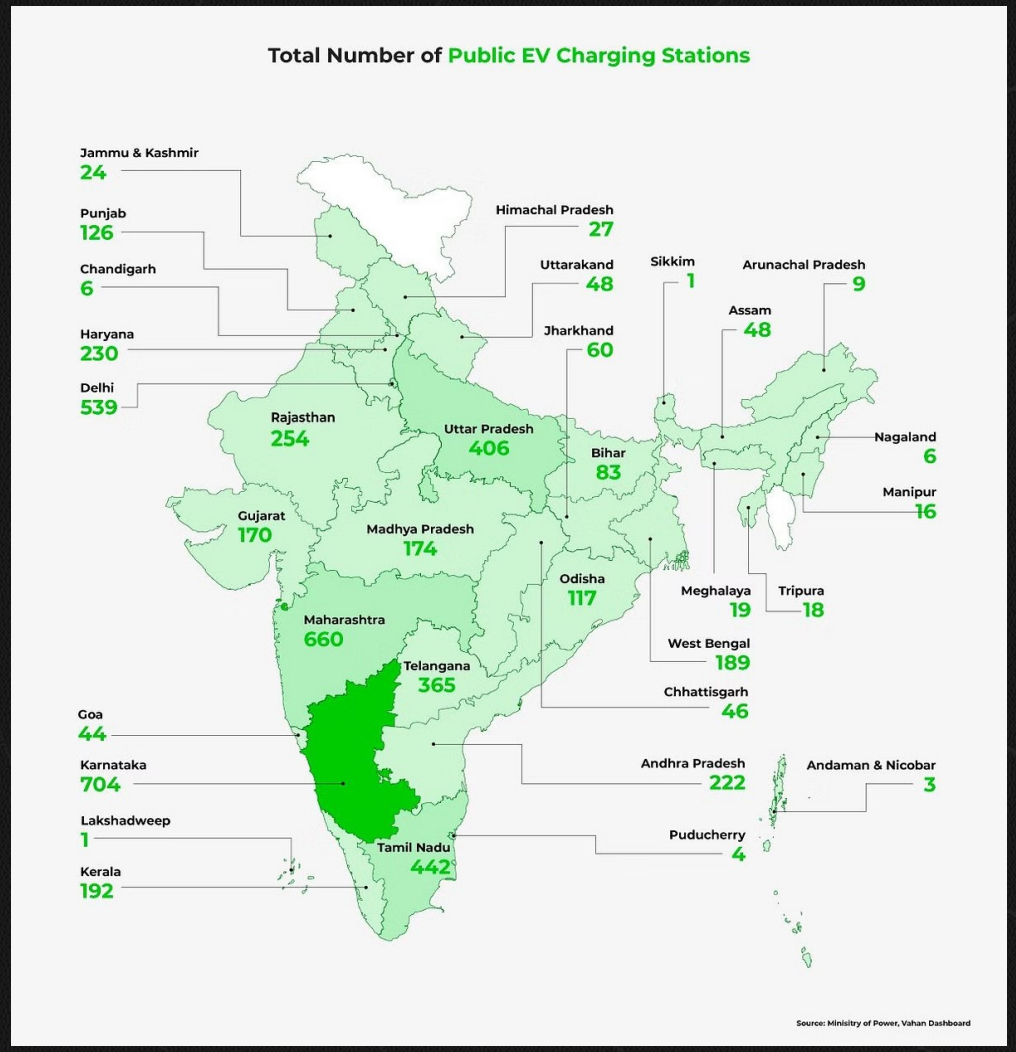
- Subsidies and tax benefits
- Charging infrastructure development

Other Factors

- Technological Advancements
- Rising Fuel Prices
- Growing Awareness

Q) How does the availability of charging stations infrastructure correlate with the EV sales and penetration rates in the top 5 states

Correlation Between Charging Stations and EV Adoption



1 **Availability**

More public charging stations make EV ownership more viable for consumers.

2 **Confidence**

Visible charging infrastructure builds consumer confidence in switching to EVs.

3 **Adoption**

EV sales and market share rise as charging networks expand across cities.

Q) Who should be the brand ambassador if AtliQ Motors launches their EV/Hybrid vehicles in India and why ?

Sachin Tendulkar: The Ideal EV Ambassador for AtliQ Motors

As AtliQ Motors prepares to launch its innovative EV and hybrid lineup in India, there is no better brand ambassador than the legendary cricketer Sachin Tendulkar. Revered for his integrity, expertise, and commitment to environmental causes, Tendulkar's endorsement will captivate consumers and drive adoption of AtliQ's eco-friendly vehicles.

Trusted Icon

Sachin Tendulkar is a beloved national hero whose name and image carry immense trust and credibility with Indian consumers.

Massive Reach

As one of the most recognized personalities in India, Tendulkar's endorsement can captivate millions of fans and potential EV buyers.

Proven Track Record

Tendulkar has successfully endorsed socially conscious brands and causes, making him the ideal fit for AtliQ's sustainable vehicles.

Q) Your top 3 recommendations for AtliQ Motors

Manufacturing in India: Unleashing AtliQ's Strategic Advantages

1 Cost-Effective Production

By leveraging India's abundant, skilled labor force and lower material costs, AtliQ can manufacture its electric vehicles at a significantly reduce cost compared to overseas production.

2 Government Incentives and Support

The Indian government's production-linked incentive (PLI) scheme and the FAME India initiative offer substantial financial benefits that will help AtliQ expand its local manufacturing capabilities and further drive down operational expenses.

3 Streamlined Supply Chain

Localizing the supply chain will minimize AtliQ's reliance on imported components, leading to faster delivery times, lower transportation costs, and reduced risk of supply chain disruptions that could impact production.

4 Quality and Customization Advantages

By manufacturing in India, AtliQ will have greater control over the production process, enabling enhanced quality assurance and the ability to rapidly adapt its 3-wheeler designs to address specific regional customer preferences and demands.

Log9 Materials is an advanced battery technology company based in India, specializing in the development of innovative energy storage solutions. The company focuses on creating sustainable and efficient batteries, particularly for electric vehicles (EVs), by leveraging its proprietary Rapid Charging Battery technology.

Strategic Partnership: Collaboration with Log9 Materials

1

Rapid Charging Solutions

Log9's fast-charging technology can significantly reduce charging time, enhancing vehicle usability and customer satisfaction.

2

Customized Battery Solutions

Tailored battery solutions can optimize performance, range, and cost for AtliQ's diverse vehicle lineup.

3

Sustainable Battery Chemistry

Log9's innovative battery chemistries like aluminum-air and zinc-air offer longer ranges and lower weight, increasing efficiency and sustainability.

4

Enhanced Market Positioning

Partnering with Log9 differentiates AtliQ's products and enhances brand reputation, attracting environmentally conscious customers.

Indian EV Industry - FY23

EV 2-wheeler	62.00%
EV 3-wheeler	34.00%
EV 4-wheeler	4.00%
EV Buses	0.16%

Source: Backstage with Millionaires

Expanding Into the 3-wheeler Market: Unlocking India’s Urban Mobility Potential

Capturing a Rapidly Growing Market

India's 3-wheeler market is expected to grow at a CAGR of 12% over the next 5 years, driven by rising demand for affordable and efficient urban transportation solutions. AtliQ Motors is poised to capitalize on this opportunity and capture a significant share of this expanding market.

Addressing the Needs of India's Cities

3-wheelers offer an ideal solution for last-mile connectivity and urban logistics in India's crowded cities. Their compact size, maneuverability, and cost-effectiveness make them a popular choice for personal mobility and delivery services.

Leveraging AtliQ's EV Expertise

AtliQ Motors can leverage its existing expertise in electric vehicle technology and manufacturing to develop a competitive 3-wheeler model that delivers superior performance, reliability, and cost-efficiency to customers.

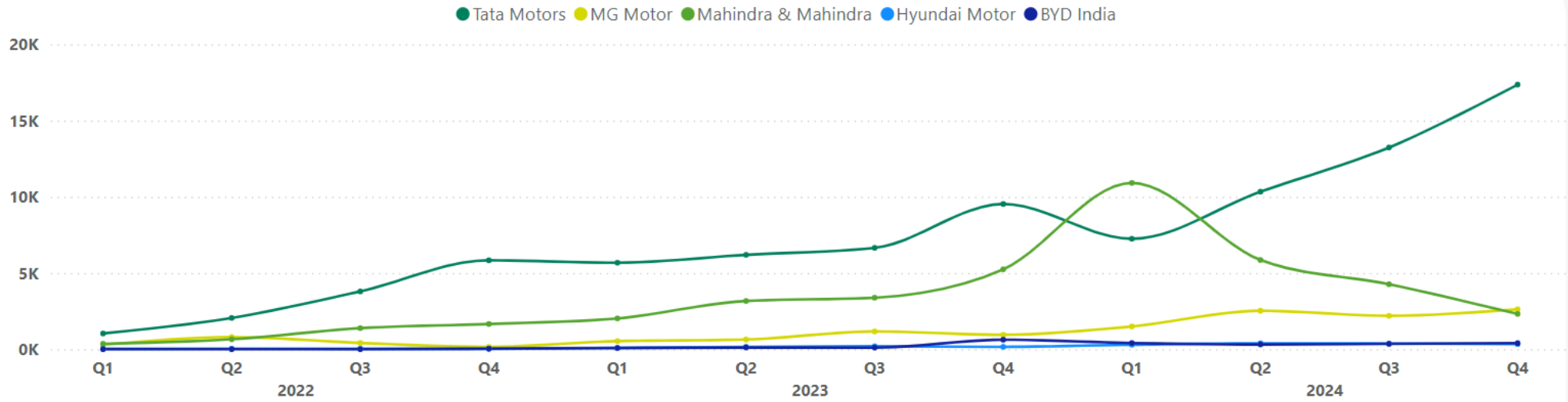
POWER BI DASHBOARD

Landing Page

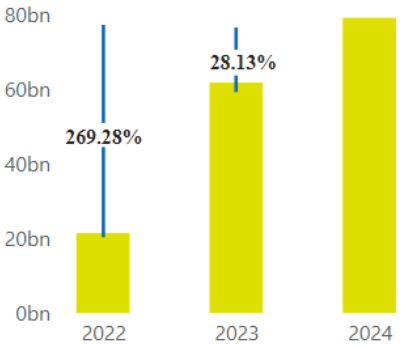
EV SALES BY MAKER

Revenue Generated	Total EV Sold	Total Vehicle Sold	Penetration Rate	Fiscal Year	Maker	Vehicle Category
392.03bn	2.07M	57.22M	3.61%	All	All	All

Quarterly Trends based on sales volume for the top 5 EV makers (4-wheelers) from 2022 to 2024



Revenue Growth Rate of 2-wheelers EVs in India



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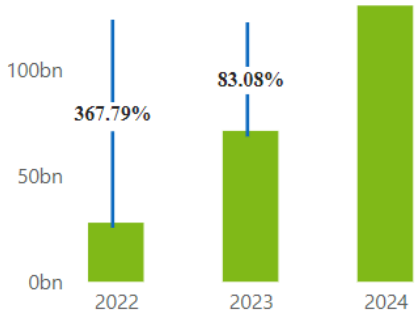


CAGR for the top 5 makers from 2022 to 2024

Maker	Total EV SOLD (2022-24)	CAGR
OLA ELECTRIC	489473	373.22%
TVS	272575	330.80%
ATHER	204449	132.04%
HERO ELECTRIC	170394	-58.52%
AMPERE	167274	46.01%

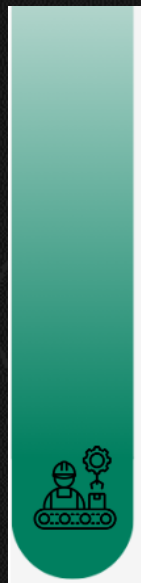
Top 3 Makers for FY 2023-24 (2-Wheelers)

Maker	EV SOLD (2023-24)
ATHER	184473
OLA ELECTRIC	475072
TVS	262836

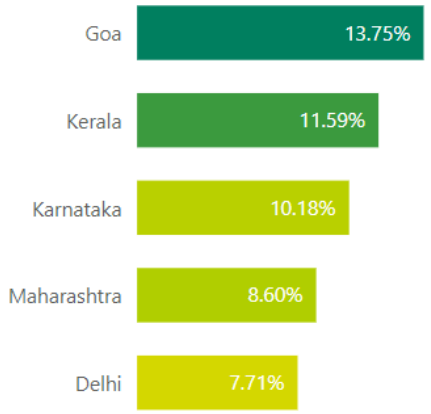
Bottom 3 Makers for FY 2023-24 (2-Wheelers)

Maker	EV SOLD (2023-24)
Volvo Auto India	564
KIA Motors	557
Mercedes -Benz AG	362

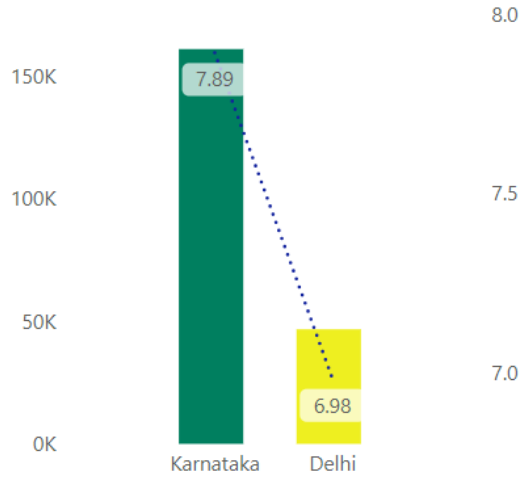
EV SALES BY STATE



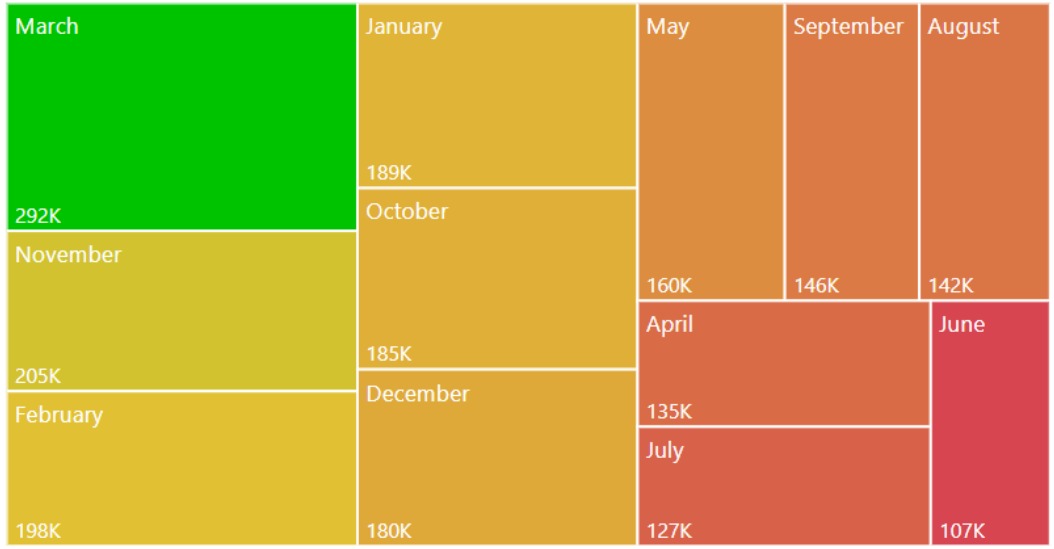
Top 5 states with the highest penetration rate in EV sales in FY 2024



EV sales and penetration rates in Delhi compare to Karnataka for 2024



Peak and low season months for EV sales



Fiscal Year: 2024 | State: All | Vehicle Category: All

State with -ve Penetration in EV Sales from 2022-24

State	Penetration Change
Andaman & Nicobar Island	-0.06
Ladakh	-0.62

Top 10 states having highest CAGR in total vehicles sold.

State	Total Vehicle Sold (22)	Total Vehicle Sold (24)	CAGR
Meghalaya	22.2K	36.63K	28.47%
Goa	48.4K	78.52K	27.41%
Karnataka	1007.9K	1581.99K	25.28%
Delhi	401.5K	606.35K	22.88%
Rajasthan	881.0K	1300.48K	21.50%
Gujarat	1094.9K	1590.99K	20.55%
Assam	379.5K	547.63K	20.13%
Mizoram	19.4K	27.42K	18.77%
Arunachal Pradesh	19.9K	27.89K	18.30%
Andaman & Nicobar Island	5.1K	7.20K	18.29%

Projected number of EV sales for the top 10 states for 2030

State	Penetration Rate	EV SOLD (2024)	CAGR(%)	Projected Sales (2030)
Goa	7.51	10.80K	146.45	2.42M
Kerala	6.86	73.94K	132.83	11.78M
Delhi	5.63	46.72K	68.10	1.05M
Karnataka	5.43	160.99K	93.24	8.38M
Maharashtra	4.76	197.17K	101.89	13.35M
Chandigarh	4.64	2.88K	164.58	0.99M
Rajasthan	3.22	66.44K	81.87	2.40M
Gujarat	3.14	84.36K	116.33	8.65M
Tamil Nadu	3.06	94.31K	59.95	1.58M
Odisha	2.90	39.12K	102.94	2.73M

CUSTOM REPORT

State	EV Sold 2022	EV Sold 2023	EV Sold 2024	Total EV SOLD	Total Vehicle SOLD	Penetration Rate	CAGR
Andaman & Nicobar Island	22	23	35	80	19K	0.42%	26.13%
Andhra Pradesh	13928	30311	33183	77422	2284K	3.39%	54.35%
Arunachal Pradesh	0	2	31	33	72K	0.05%	-100.00%
Assam	730	2191	3497	6418	1403K	0.46%	118.87%
Bihar	4829	11121	15069	31019	3048K	1.02%	76.65%
Chandigarh	411	1991	2877	5279	131K	4.04%	164.58%
Chhattisgarh	4534	20730	28540	53804	1335K	4.03%	150.89%
Delhi	16535	44053	46724	107312	1588K	6.76%	68.10%
DNH and DD	35	122	198	355	43K	0.82%	137.85%
Goa	1778	7107	10799	19684	200K	9.84%	146.45%
Gujarat	18026	79004	84359	181389	4126K	4.40%	116.33%
Haryana	5926	13078	11793	30797	1903K	1.62%	41.07%
Himachal Pradesh	443	1104	1048	2595	325K	0.80%	53.81%
Jammu and Kashmir	1434	2254	2283	5971	415K	1.44%	26.18%
Jharkhand	2713	7918	7830	18461	1365K	1.35%	69.89%
Karnataka	43111	108895	160989	312995	3994K	7.84%	93.24%
Kerala	13639	49483	73938	137060	2065K	6.64%	132.83%
Ladakh	12	25	31	68	10K	0.65%	60.73%
Madhya Pradesh	7916	27840	43223	78979	3499K	2.26%	133.67%
Maharashtra	48374	150502	197169	396045	6101K	6.49%	101.89%
Manipur	25	148	126	299	105K	0.29%	124.50%
Meghalaya	4	40	133	177	90K	0.20%	476.63%
Mizoram	0	65	275	340	71K	0.48%	-100.00%
Nagaland	1	3	9	13	44K	0.03%	200.00%
Odisha	9498	29651	39118	78267	1689K	4.63%	102.94%
Puducherry	734	1704	3098	5536	151K	3.67%	105.44%
Punjab	4528	8107	11198	23833	1544K	1.54%	57.26%
Rajasthan	20087	63835	66444	150366	3308K	4.55%	81.87%
Sikkim	0	0	0	0	29K	0.00%	-100.00%
Tamil Nadu	36863	68885	94314	200062	4652K	4.30%	59.95%
Tripura	28	230	304	562	125K	0.45%	229.50%
Uttar Pradesh	10222	27223	57758	95203	8127K	1.17%	137.70%
Uttarakhand	2079	6712	6336	15127	623K	2.43%	74.57%
West Bengal	2685	11011	16864	30560	2736K	1.12%	150.62%

Rows

State

Fiscal Year

Values

Deselect all

EV Sold 2022

EV Sold 2023

EV Sold 2024

Total EV SOLD

Total Vehicle SOLD

Penetration Rate

CAGR

Thank You

Dhaval Patel

Aka Peter Pandey

Codebasics Team

Aka Helpers for the Aspirants

Hemanand Vadivel

Aka Tony Sharma

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