RESUME CHALLENGE 12 - CODEBASICS

E V Market in INDIA

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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%.

DATA

Dim_date

- date
- Fiscal_year
- quarter

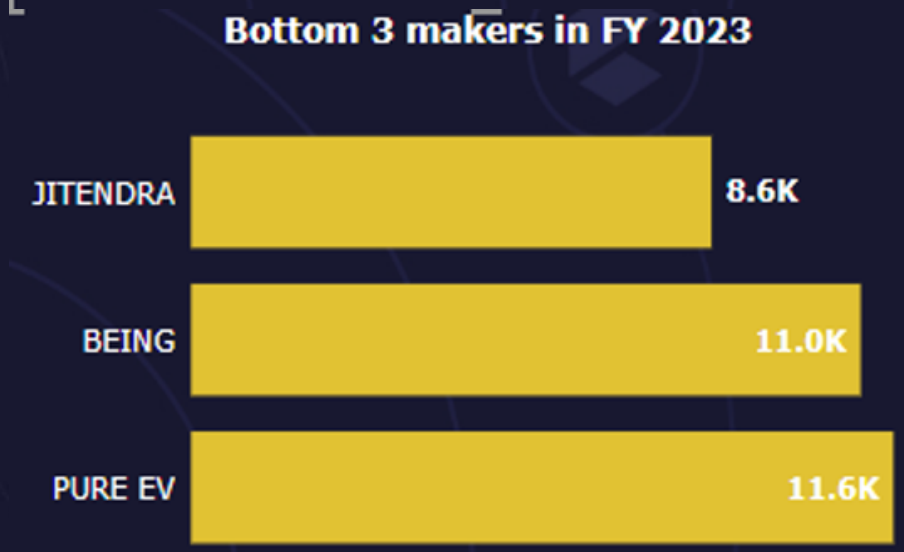
Maker_table

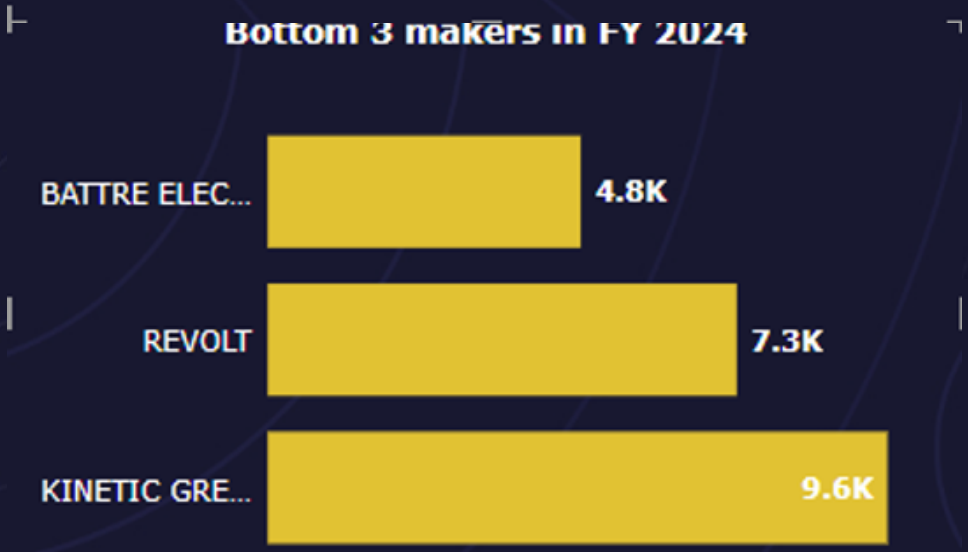
- date
- Vehicle_category
- Maker
- Electric_vehicles sold

State_table

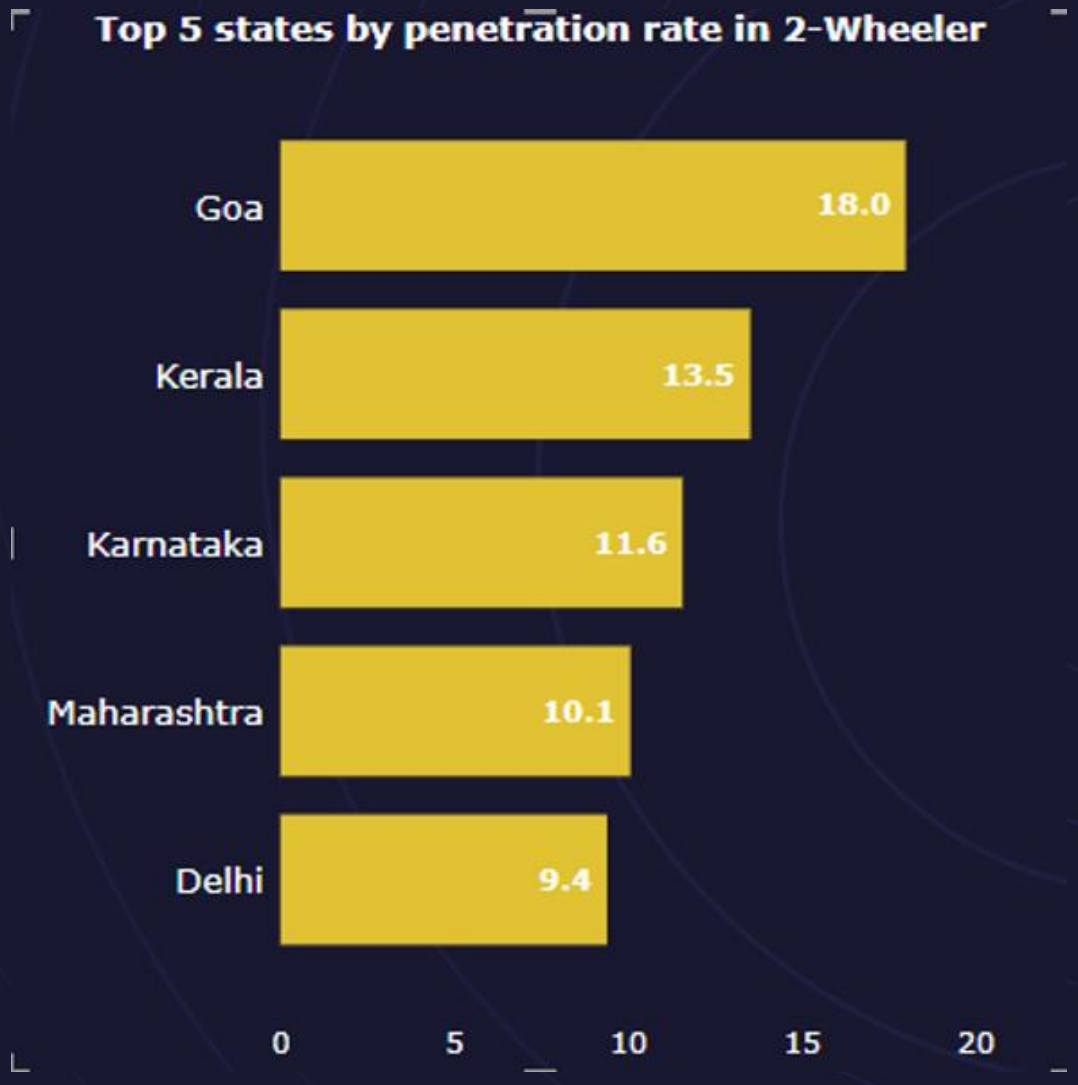
- Date
- State
- Vehicle_category
- Electric_vehicles sold
- Total_vehicles_sold

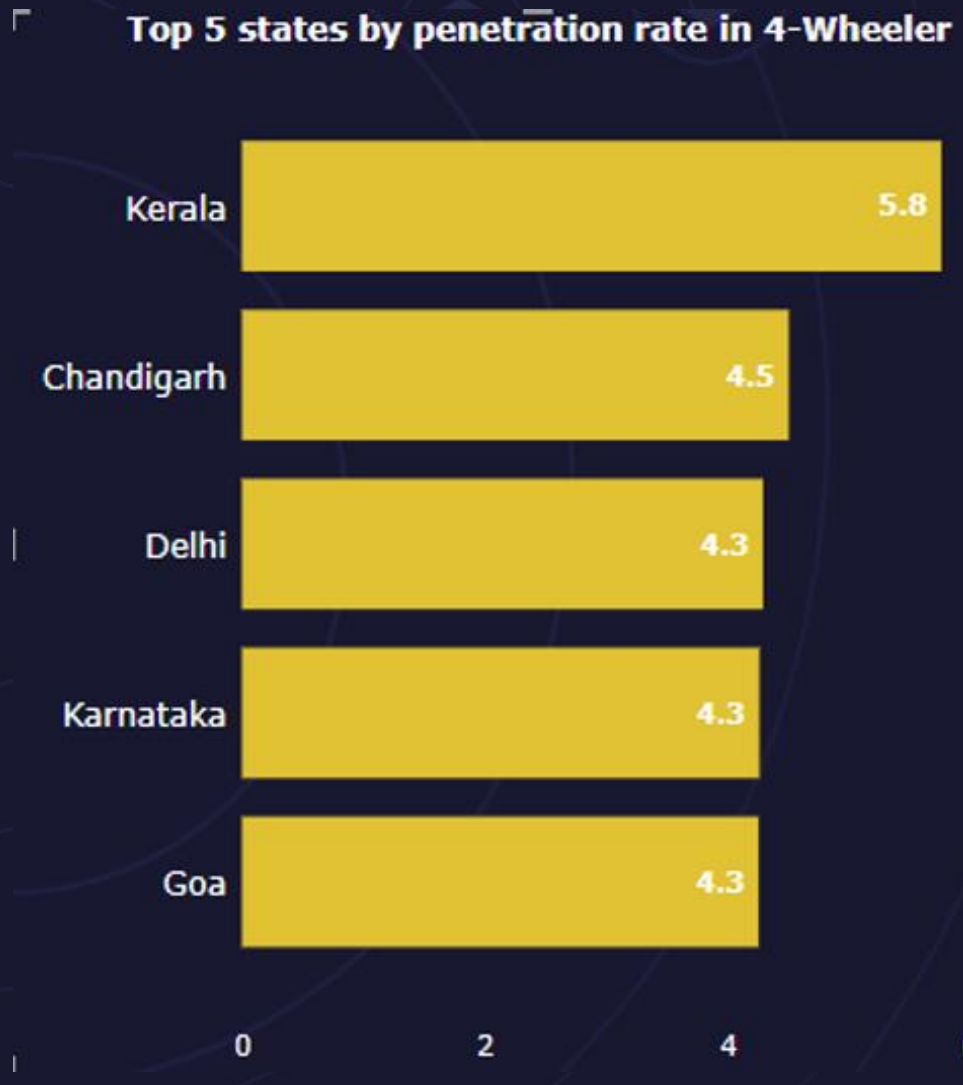
Question 1. List the top 3 and bottom 3 makers for the fiscal years 2023 and 2024 in terms of the number of 2-wheelers sold.





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





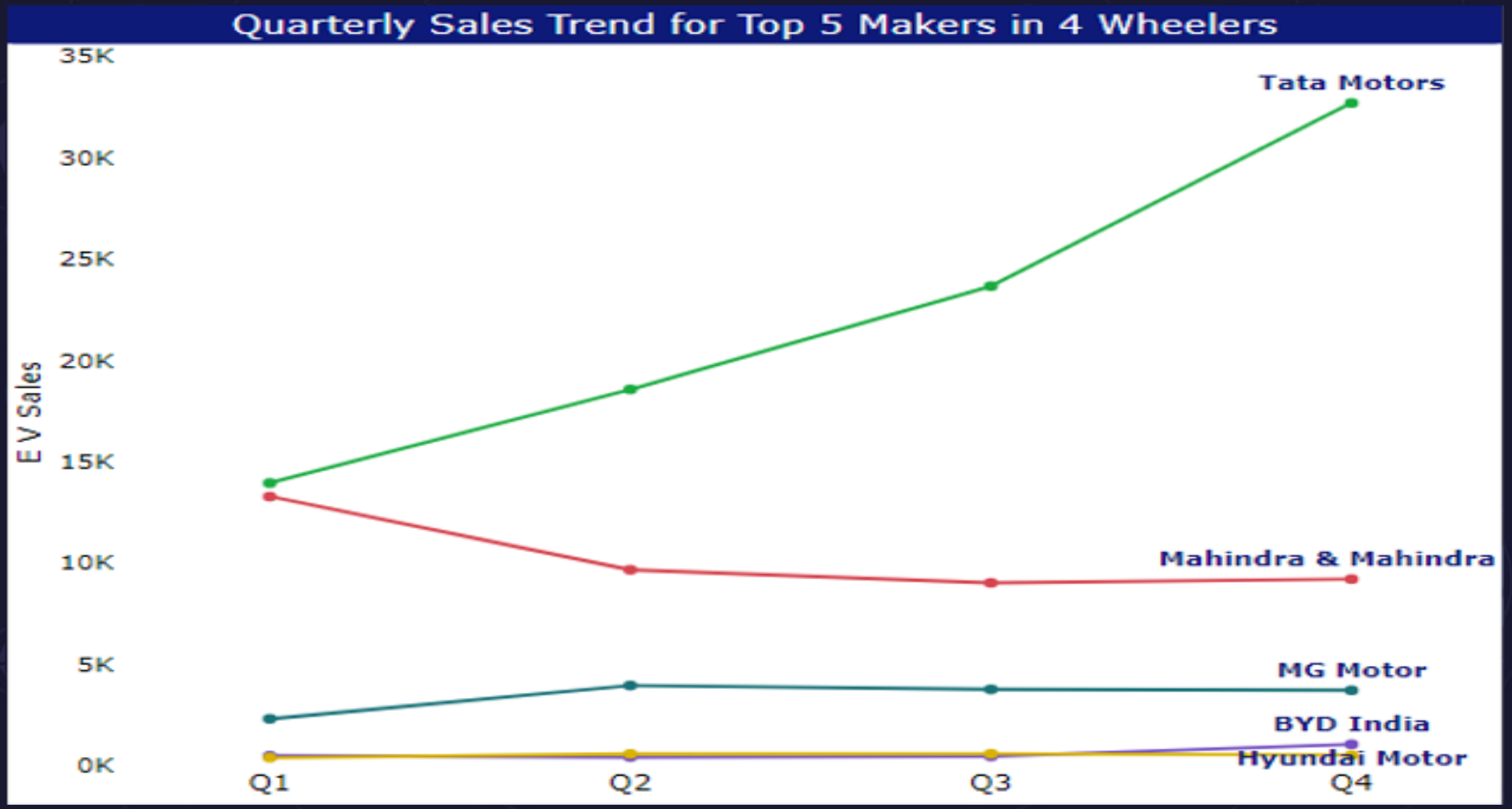
Question 3. List the states with negative penetration (decline) in EV sales from 2022 to 2024?

Statewise Total EV Sales Comparison from FY 2022 to FY 2024

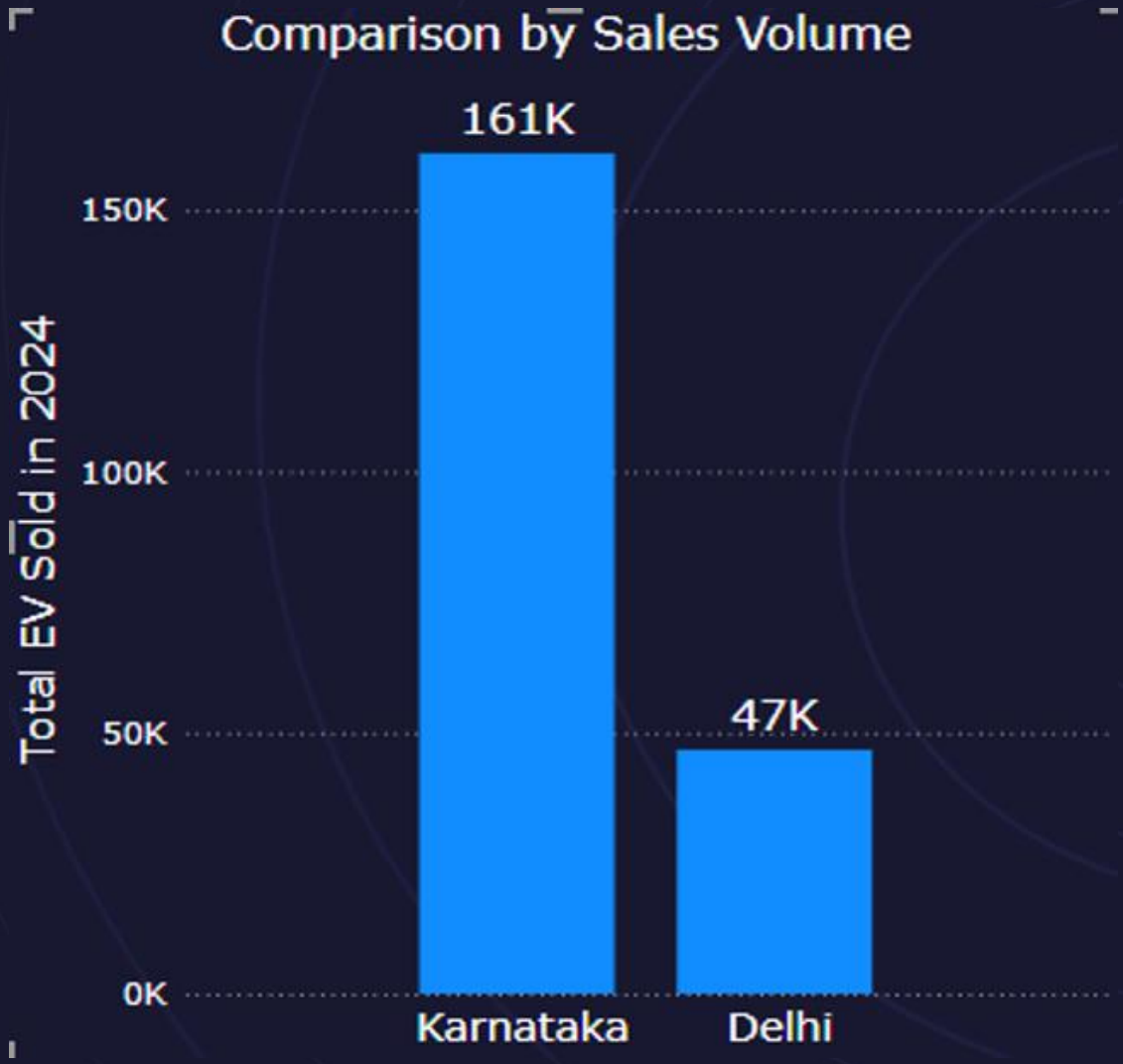
State	FY 2022	FY 2024	Change
Andaman & Nicobar Island	22	35	13
Andhra Pradesh	13928	33183	19255
Arunachal Pradesh	0	31	31
Assam	730	3497	2767
Bihar	4829	15069	10240
Chandigarh	411	2877	2466
Chhattisgarh	4534	28540	24006
Delhi	16535	46724	30189
DNH and DD	35	198	163
Goa	1778	10799	9021
Gujarat	18026	84359	66333
Haryana	5926	11793	5867
Himachal Pradesh	443	1048	605
Jammu and Kashmir	1434	2283	849
Jharkhand	2713	7830	5117
Karnataka	43111	160989	117878
Kerala	13639	73938	60299

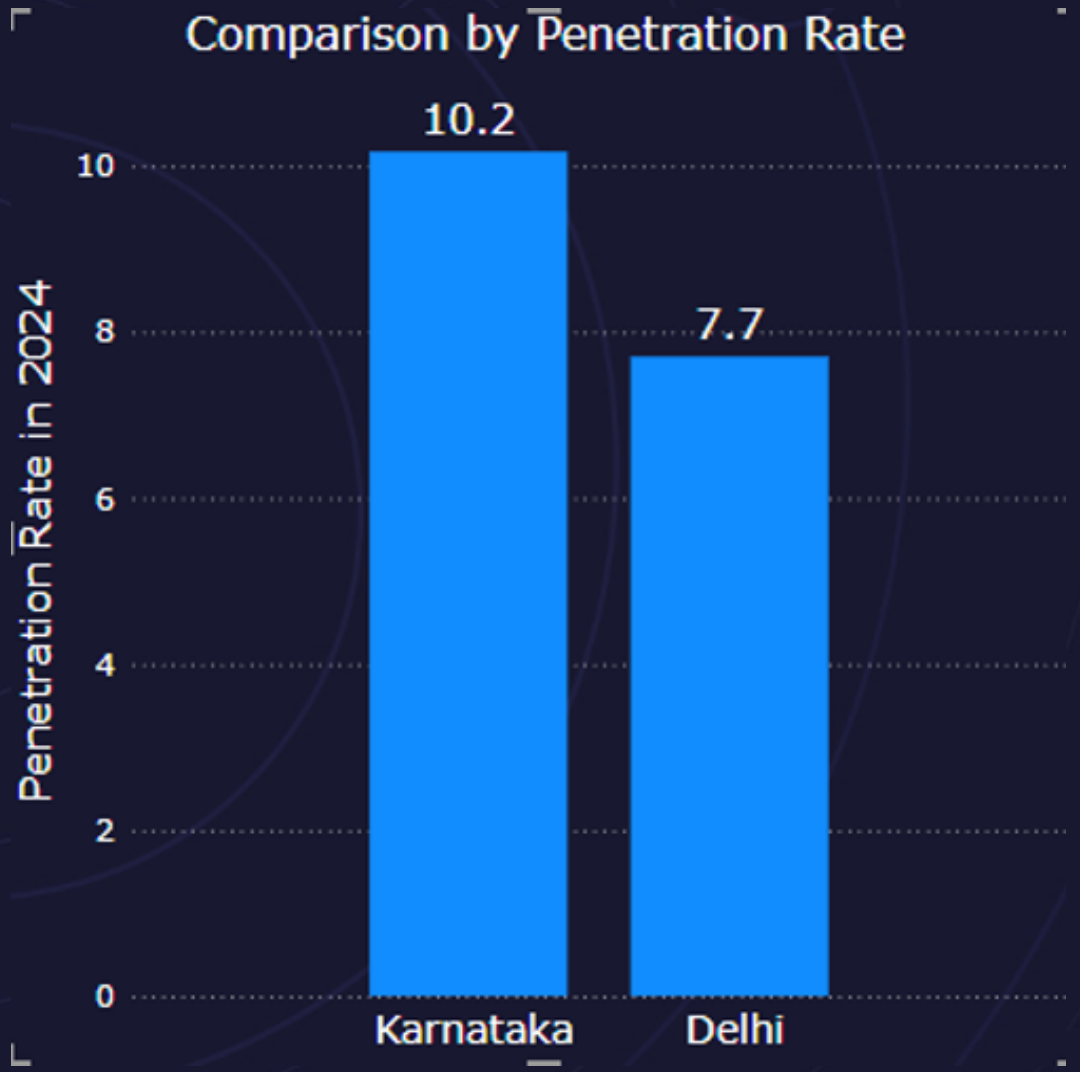
State	FY - 2022	FY - 2024	Change
Ladakh	12	31	19
Madhya Pradesh	7916	43223	35307
Maharashtra	48374	197169	148795
Manipur	25	126	101
Meghalaya	4	133	129
Mizoram	0	275	275
Nagaland	1	9	8
Odisha	9498	39118	29620
Puducherry	734	3098	2364
Punjab	4528	11198	6670
Rajasthan	20087	66444	46357
Sikkim	0	0	0
Tamil Nadu	36863	94314	57451
Tripura	28	304	276
Uttar Pradesh	10222	57758	47536
Uttarakhand	2079	6336	4257
West Bengal	2685	16864	14179

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



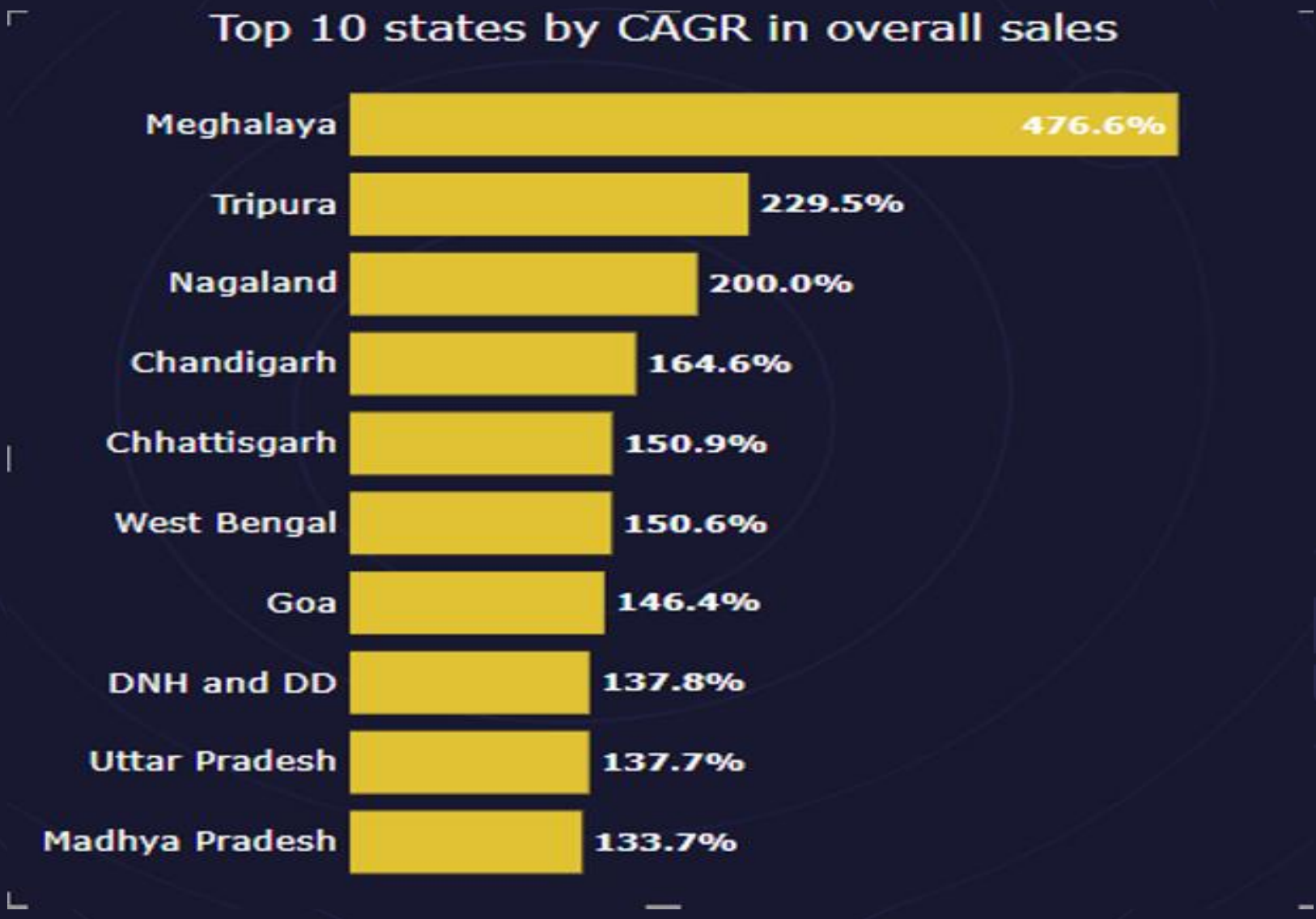
Question 5. How do the EV sales and penetration rates in Delhi compare to Karnataka for 2024?



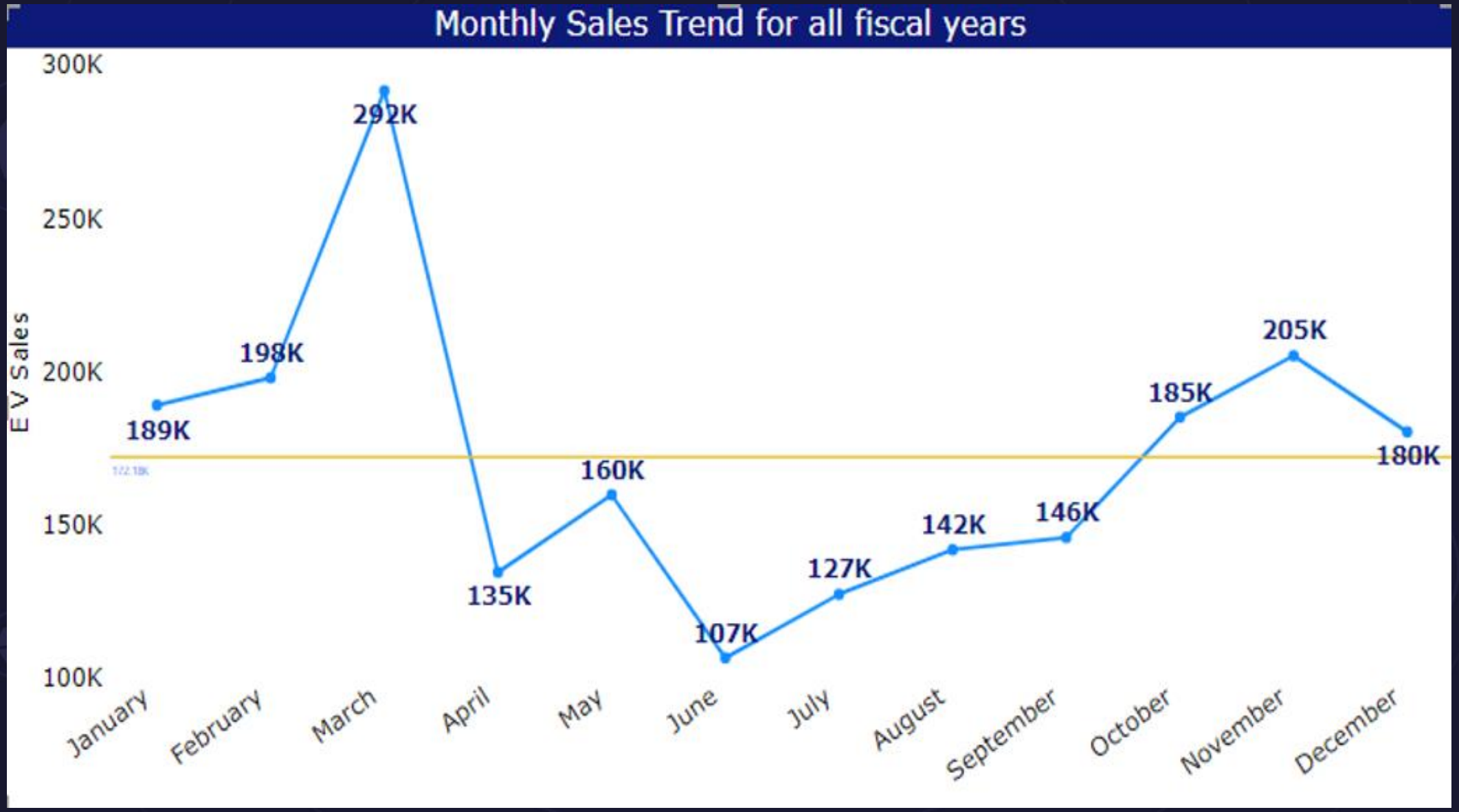


Question 6. List down the compounded annual growth rate (CAGR) in 4-wheeler units for the top 5 makers from 2022 to 2024.

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



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

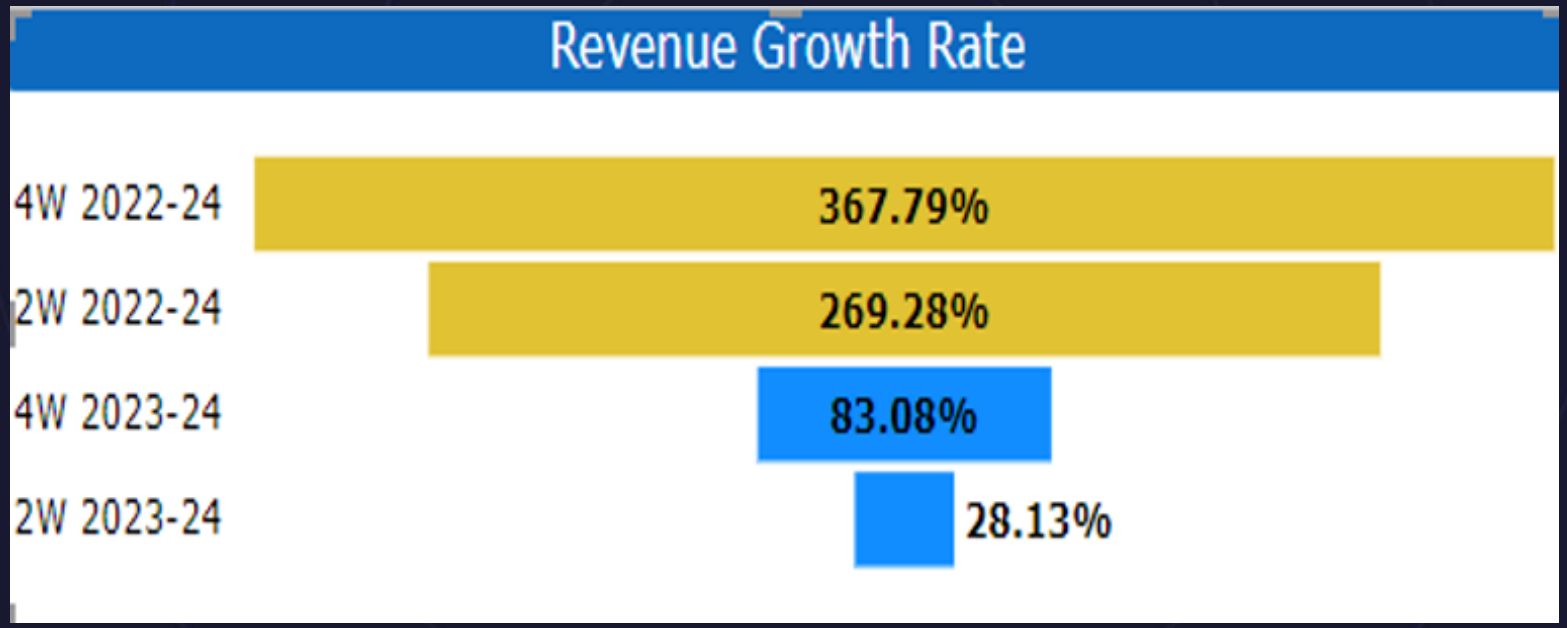


Question 9. What is the projected number of EV sales (including 2-wheelers and 4-wheelers) for the top 10 states by penetration rate in 2030, based on the compounded annual growth rate (CAGR) from previous years?

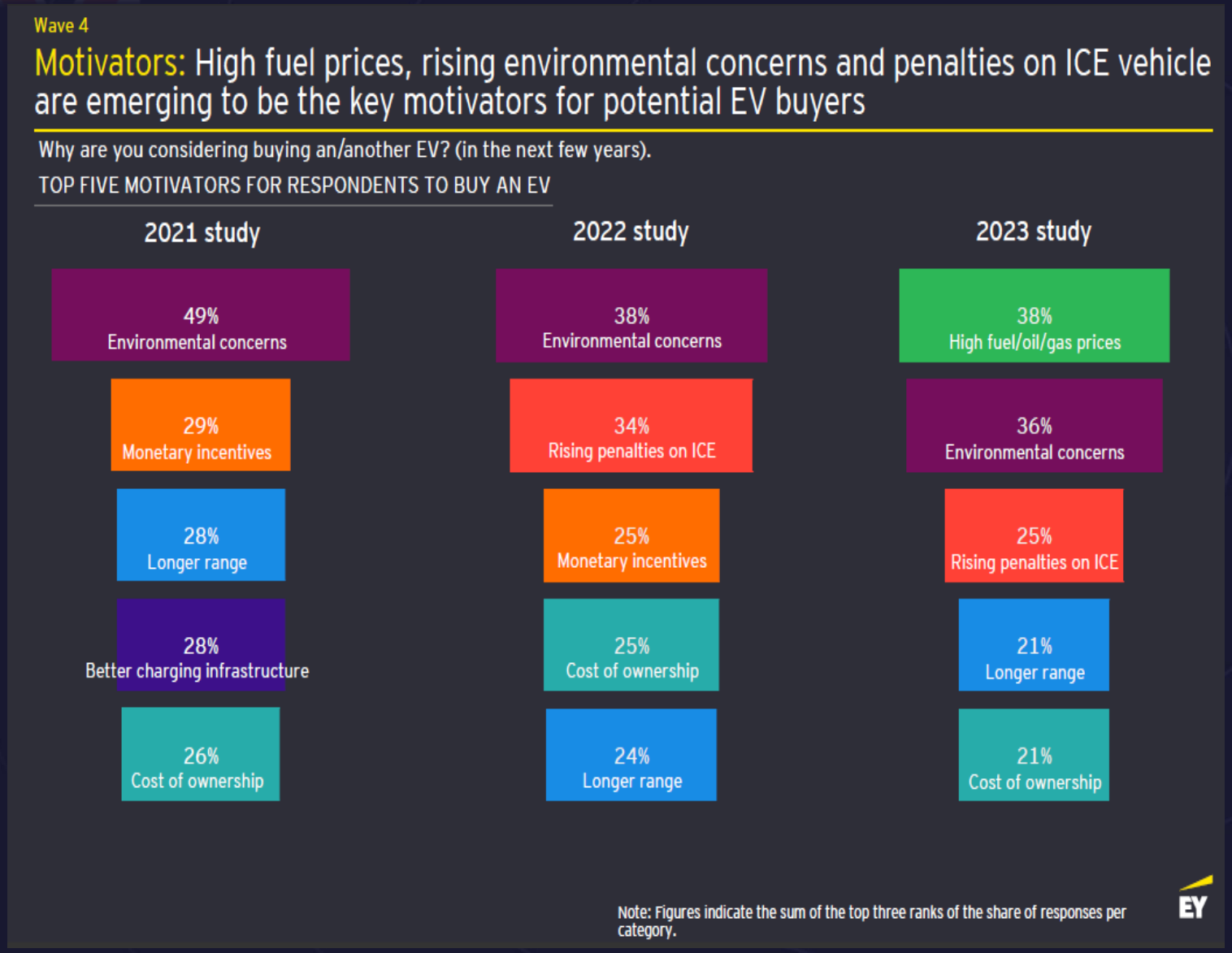
State	Projected Sales for 2030
Maharashtra	13.41M
Kerala	11.85M
Gujarat	8.54M
Karnataka	8.30M
Odisha	2.74M
Rajasthan	2.42M
Goa	2.38M
Tamil Nadu	1.58M
Delhi	1.05M
Chandigarh	1.00M

Question 10. 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	Average_Price
2 - Wheeler	Rs. 85000
4 - Wheeler	Rs. 150000



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



Cost Savings: EVs have lower fuel and maintenance costs, saving owners $800 to $1,000 annually. Deloitte predicts many EVs will reach cost parity with ICE vehicles by 2023-2024 due to decreasing battery prices and lower operating costs.

Environmental Concerns: EVs can reduce CO2 emissions by about 50%, according to the IEA. McKinsey found 45% of consumers consider environmental impact a key factor in EV purchases.

Government Incentives: Financial incentives, like the U.S. federal tax credit up to $7,500, and global policies such as the EU's Fit for 55 plan, encourage EV adoption by reducing costs and promoting sustainability.

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

Impact on Adoption Rates

1.Reduction in Upfront Cost:

- **2-Wheelers:** Subsidies reduce the cost of electric 2-wheelers, making them more affordable than ICE counterparts. Even small subsidies can significantly influence consumer decisions.
- **4-Wheelers:** Substantial subsidies and tax incentives help bridge the price gap between electric 4-wheelers and ICE vehicles, making EVs more competitive and attractive.

2.Total Cost of Ownership (TCO):

- **2-Wheelers:** Incentives lower the TCO by reducing purchase prices and offering benefits like free charging and tax exemptions, making electric 2-wheelers more economical.
- **4-Wheelers:** Similar incentives for 4-wheelers, including rebates, reduced fees, and cheaper running costs, make the TCO of EVs more appealing, encouraging adoption.

Case Studies and Examples –

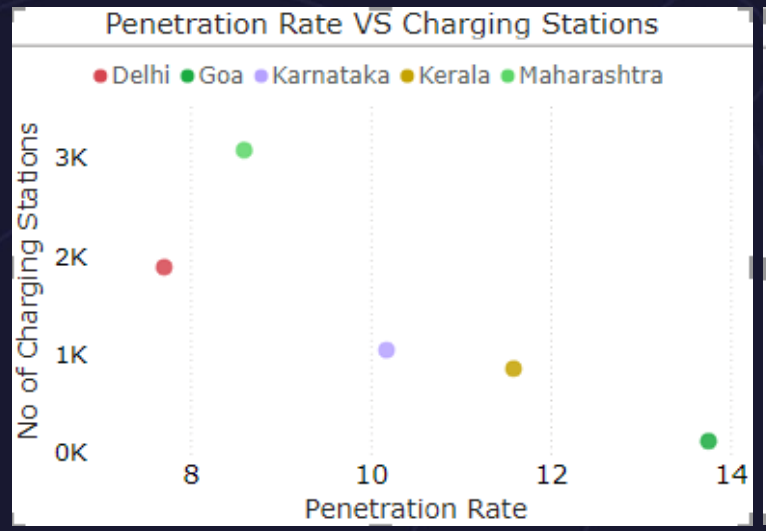
Norway: Norway offers substantial tax exemptions and incentives for EVs, resulting in one of the highest per capita EV adoption rates in the world. EVs, including 2-wheelers and 4-wheelers, benefit from no purchase taxes, lower road taxes, free public parking, and access to bus lanes.

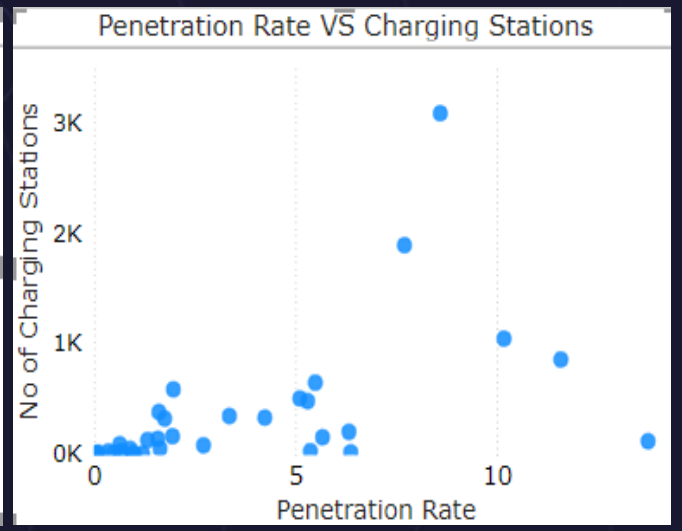
India: The Indian government's Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme provides direct subsidies for electric 2-wheelers and 4-wheelers, significantly reducing their purchase price and encouraging adoption. Additionally, state-level incentives and tax exemptions further support the EV market.

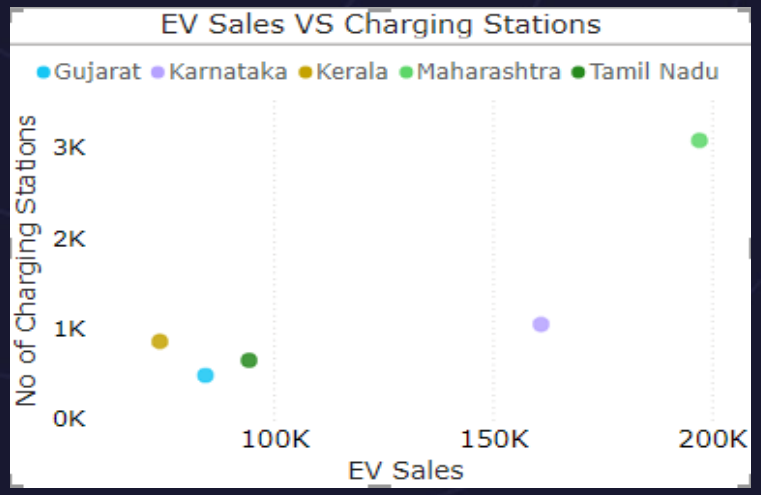
China: China offers generous subsidies and incentives for both electric 2-wheelers and 4-wheelers, coupled with massive investments in charging infrastructure. This has led to a rapid increase in EV adoption, making China the largest EV market globally.

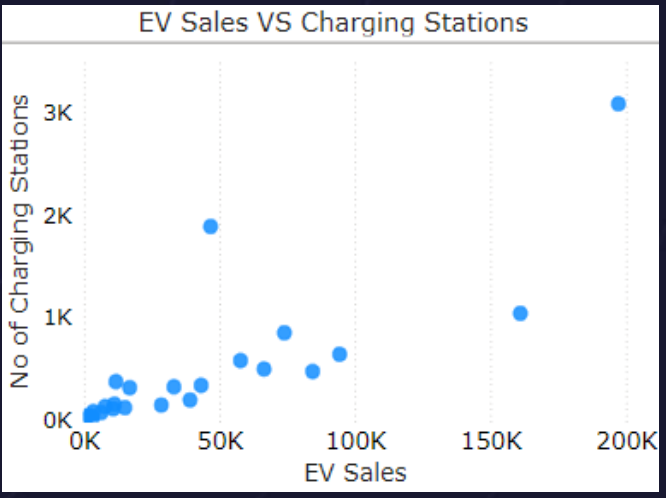
How does the availability of charging stations infrastructure correlate with the EV sales and penetration rates in the top 5 states?

- ✓ There is a positive correlation between the availability of charging stations and the penetration rates in most cases. States with better charging infrastructure tend to have higher penetration rates.
- ✓ The actual EV sales numbers appear to be influenced by a combination of factors, including but not limited to the availability of charging stations.
- ✓ Enhancing charging infrastructure can potentially boost both EV sales and penetration rates, as seen in Maharashtra and Kerala.









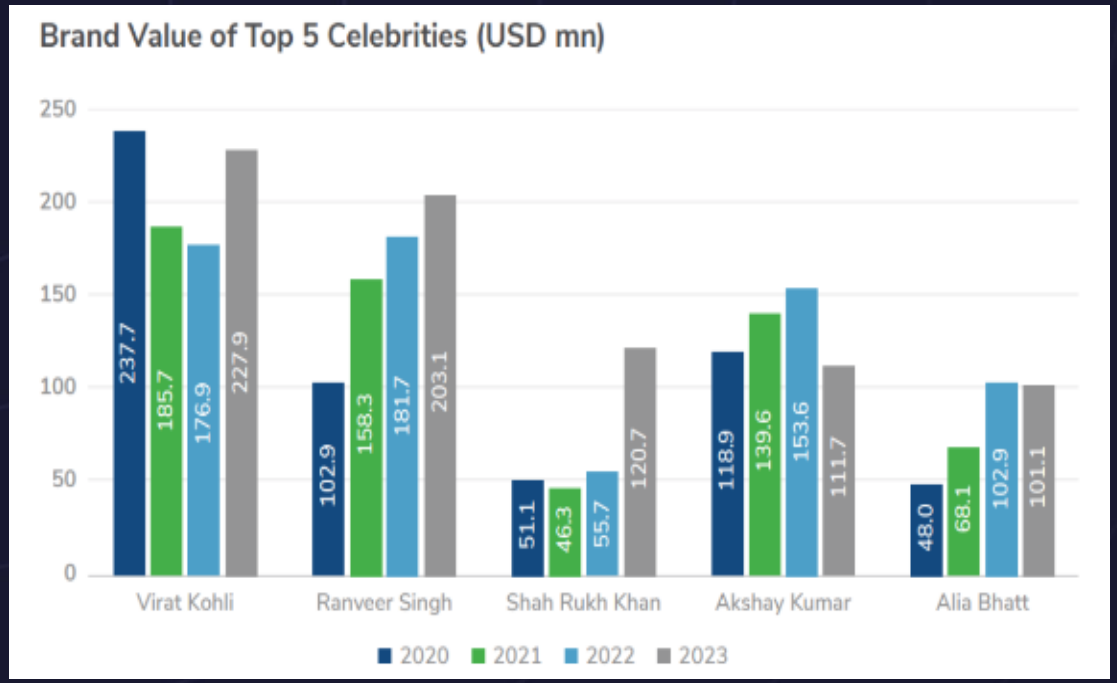
Who should be the brand ambassador if AtliQ Motors launches their EV/Hybrid vehicles in India and why?

Virat Kohli

Wide Reach and Influence: As one of the most popular and influential sports personalities in India, Virat Kohli has a massive following across social media platforms. He has over 250 million followers on Instagram, making him a powerful figure to reach a broad and diverse audience .

Environmental Advocacy: Virat Kohli has been vocal about environmental issues and sustainable living. His endorsement can align well with the eco-friendly message of EVs and hybrids, resonating with environmentally conscious consumers .

Youth Appeal: As a cricket icon, Kohli appeals to the younger generation, who are increasingly becoming key consumers of innovative and sustainable technologies. His association can help attract younger customers who are more likely to adopt new technologies like EVs and hybrids .



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

Ideal State to Start Manufacturing Unit:

1.Tamil Nadu: Offers a comprehensive package of incentives including a 15% capital subsidy on eligible investments over 10 years, a special 20% capital subsidy for EV battery manufacturing, 100% electricity duty exemption, 15% land subsidy, and 100% stamp duty exemption. It also provides an employment incentive and a 6% interest subvention for EV components and charging manufacturing.

2.Gujarat: Known for its favorable business environment, it aligns with the Gujarat Industrial Policy 2020, providing capital subsidies, 100% electricity duty exemption, land conversion fee subsidies, and 100% SGST reimbursement. Gujarat also offers 100% stamp duty exemption and substantial interest subvention.

3.Telangana: Provides a 20% capital investment subsidy up to INR 30 crore, 100% electricity duty exemption, a 25% power tariff discount, and a substantial SGST reimbursement. The state also offers a 100% stamp duty exemption and an interest subvention of 5.25% over 5 years.

Considering these incentives, **Tamil Nadu** emerges as the ideal state due to its extensive subsidies, tax exemptions, and additional benefits specific to EV manufacturing.

Your top 3 recommendations for AtliQ Motors.

1. **Leverage Government Incentives and Policies:**
   - Utilize Subsidies and Tax Benefits: Maximize Indian government subsidies and tax incentives under the FAME scheme to lower consumer costs and enhance AtliQ's market competitiveness. Highlight these benefits in marketing campaigns.
   - Align with National Policies: Ensure AtliQ’s vehicles comply with India's EV policies on emissions and fuel efficiency to position the brand as compliant and forward-thinking.

2. **Focus on Affordability and Localized Features:**
   - Offer Competitive Pricing: Introduce budget-friendly models alongside premium offerings to attract a broader customer base in India's price-sensitive market.
   - Local Customization: Tailor vehicle features for Indian conditions, such as robust suspension, efficient air conditioning, and advanced infotainment systems.

3. **Expand Charging Infrastructure and After-Sales Service:**
   - Partnerships for Charging Stations: Collaborate with local entities to expand charging infrastructure, reducing range anxiety and enhancing EV practicality.
   - Strengthen After-Sales Service Network : Build a strong after-sales service network with trained technicians and service centers across key regions to improve customer satisfaction and loyalty.

Power BI Dashboard

Power BI Dashboard : Electric Vehicle Sales In India

Thankyou