

# EV Market & Booking Segmentation

## Report – India 2025

### 1. Objective

This report presents a data-driven segmentation analysis of India's electric vehicle (EV) market and online vehicle booking space. The goal is to identify the most promising customer, vehicle, and B2B segments for launching EV products and mobility services (rental, shared rides, logistics), backed by evidence from EV infrastructure, sales data, and booking behavior.

### 2. Fermi Estimation (Problem Breakdown)

- India's total population: ~1.43 billion
- Urban population: ~35% → ~500 million
- Target age group (drivers 18–50): ~300 million
- Potential early EV adopters (Tier 1/2, digital users): ~5% of urban drivers  
→ ~15 million
- Online vehicle booking users (app-based): ~70–100 million
- EV booking market overlap: Estimated ~20% of users are open to booking EVs now

### 3. Data Sources

Dataset	Purpose	Source
ev_cat_01-24.csv	Monthly EV sales by class	Kaggle(India EV Market Data)
ev_sales_by_makers_and_cat_15-24.csv	Sales by brand & vehicle type	Kaggle (India EV Market Data)
Operational PC.csv	Public charging station distribution	Kaggle (India EV Market Data)
Vehicle Class.csv	Total registered vehicles by class	Kaggle (India EV Market Data)
EV Maker by Place.csv	Names of EV makers by Place	Kaggle (India EV Market Data)
Ola Booking (train.csv)	Ride demand & platform behavior	Kaggle(chh-ola) Compitition
Google Trends	Search interest for EVs, bookings	Google Trends

### 4. Data Preprocessing

- Used pandas and numpy for cleaning and transforming data.
- Column standardization and handling mixed datatypes.
- Extracted long-form sales data using pd.melt().
- Created synthetic demand estimates by linking infrastructure to booking data.

### 5. Segment Extraction (ML Techniques)

- KMeans clustering on features: charging\_points, booking\_demand
- Normalized features using StandardScaler
- Generated 3 distinct city/state segments:
  - Segment 0:** Low infra, low demand
  - Segment 1:** High infra, high demand
  - Segment 2:** Mid-range infra and demand

## 6. Profiling of Segments

Segment	Infrastructure	Booking Demand	Strategy
0	Low	Low	Awareness campaigns + rent-to-own EVs
1	High	High	Launch EV ride booking, rental, fleet models
2	Moderate	Moderate	Phase-2 rollout, logistics or delivery models

## 7. Target Segment Selection

- **Segment 1** cities (e.g., Bangalore, Pune, Delhi) have:
  - High EV infra (100+ charging points)
  - Strong EV sales (Hero Electric, Ola Electric)
  - High booking activity (from Ola dataset)

## 8. Customizing the Marketing Mix (4Ps)

Element	Strategy
Product	EV 2W/3W/4W tailored to commuters and delivery agents
Price	₹85K–₹1.2L for 2W, rental: ₹3/km or ₹500/day
Place	Tier-1 cities first, Tier-2 by year 2
Promotion	Digital-first, green branding, ride incentives, referral bonuses

## 9. Early Market Estimation

Example (Bangalore):

- Estimated early adopters: 50,000 users
- Avg profit per ride/day: ₹15
- Monthly profit:  $50,000 \times ₹15 \times 30 = ₹2.25 \text{ Cr/month}$
- EV sales:  $5,000 \text{ units} \times ₹20,000 \text{ profit margin} = ₹10 \text{ Cr}$

## 10. Optimal Segments to Enter

**Primary:** Bangalore, Pune, Delhi – High EV readiness & booking demand

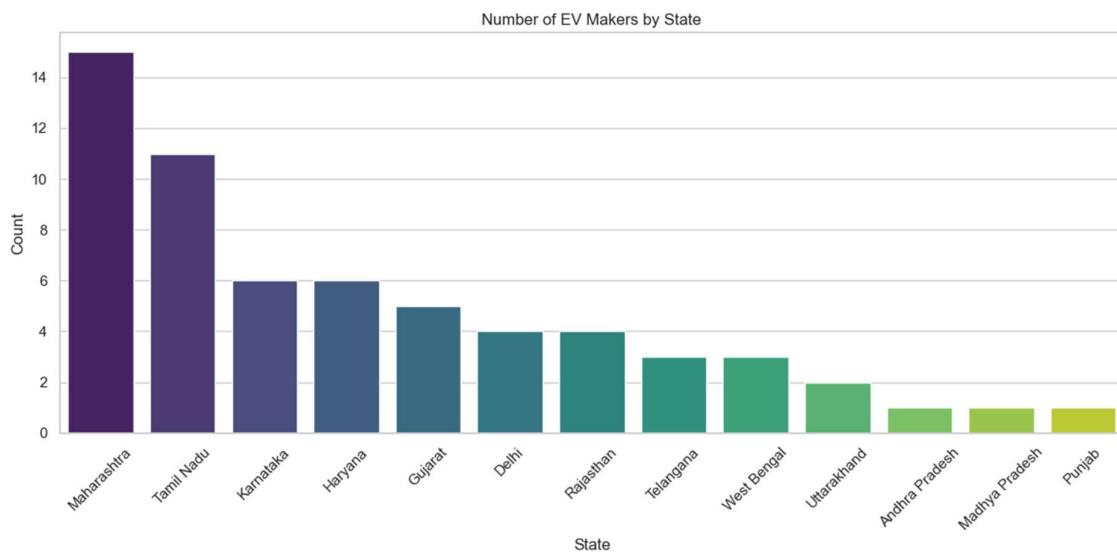
**Secondary:** Indore, Ahmedabad, Jaipur – Mid-tier cities with growing potential

**Tertiary:** Lucknow, Bhopal – Pilot rent-to-own and EV delivery programs

## 11. Key Visual Insights

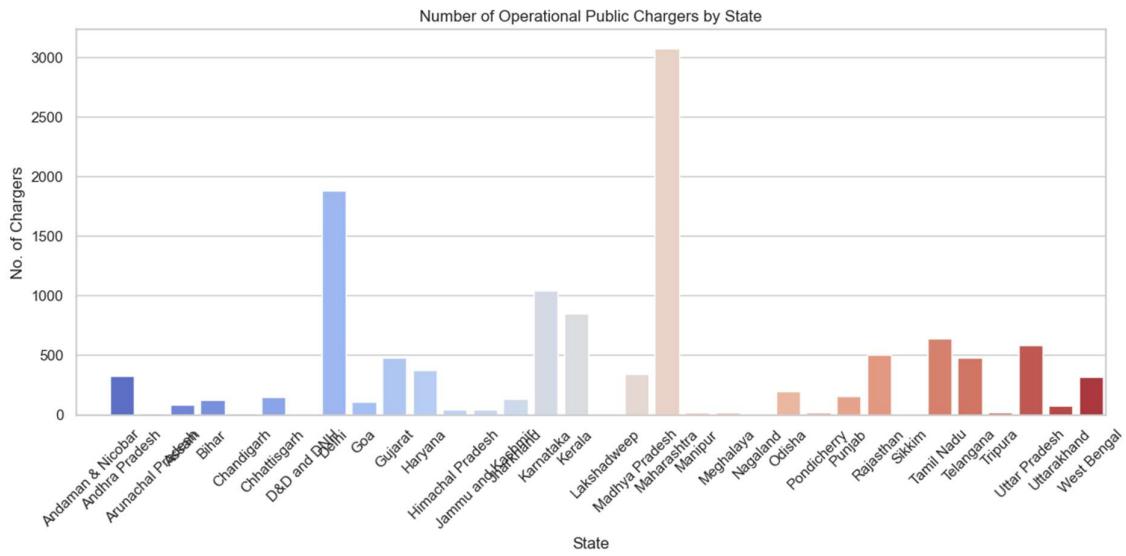
**Figure 1: Number of EV Makers by State**

Shows geographic manufacturing distribution.



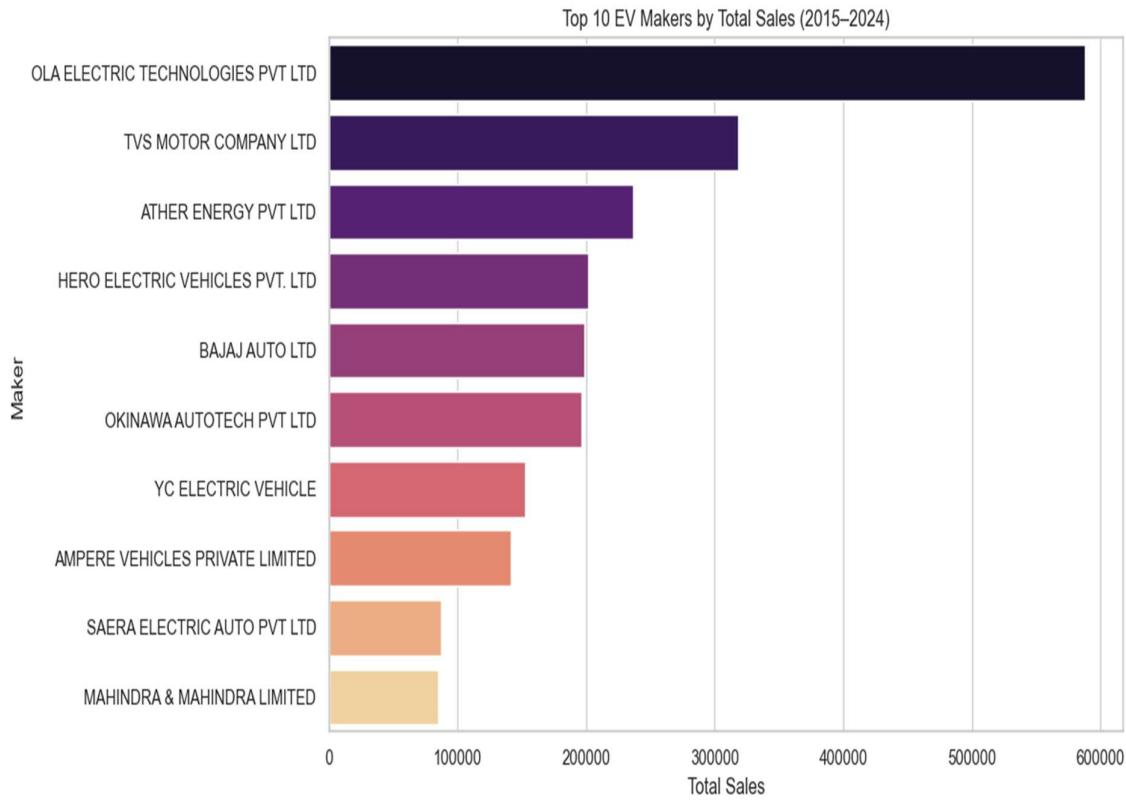
## Figure 2: Number of Operational Public Charging Stations (OPC) by State

Reflects EV infra density for market prioritization.



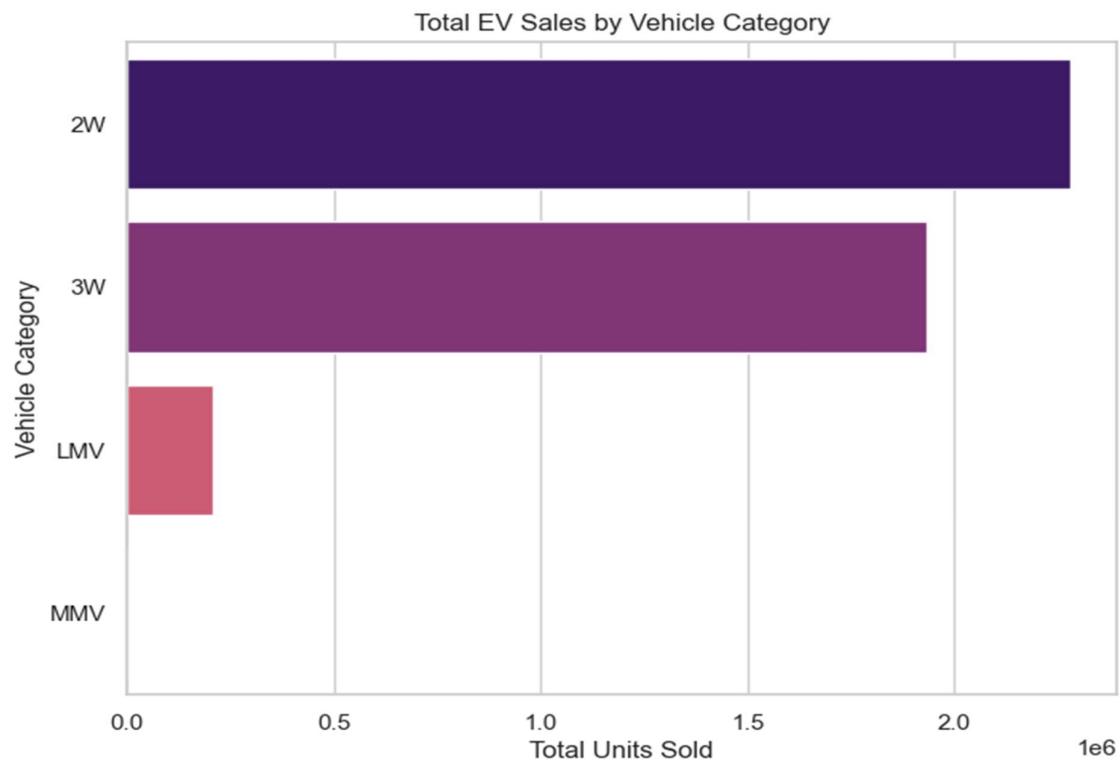
## Figure 3: Top 10 EV Makers by Sales (2015–2024)

Reveals market leaders in EV manufacturing.



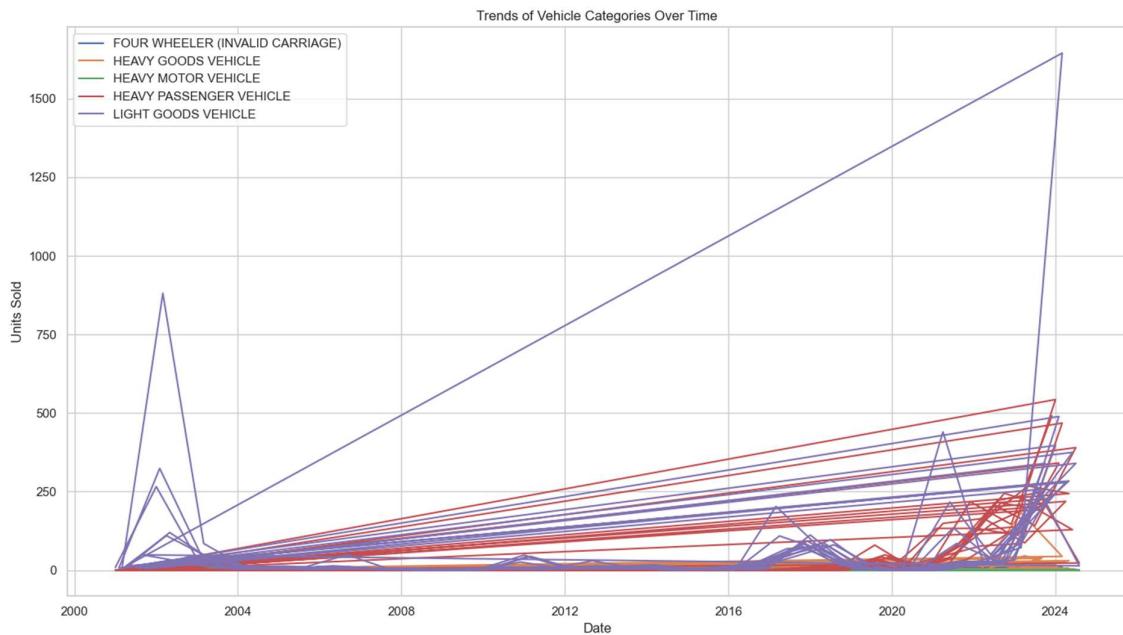
**Figure 4: Total EV Sales by Vehicle Category**

Highlights demand for 2W, 3W, and 4W.



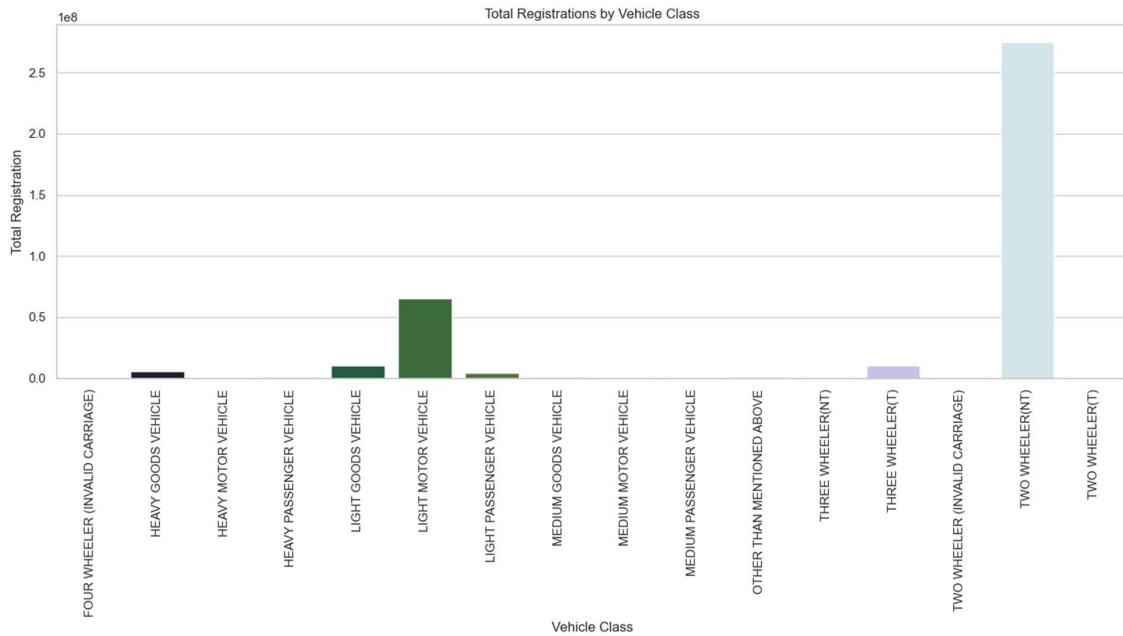
**Figure 5: Vehicle Category Trends Over Time**

Tracks how vehicle type preferences have evolved.



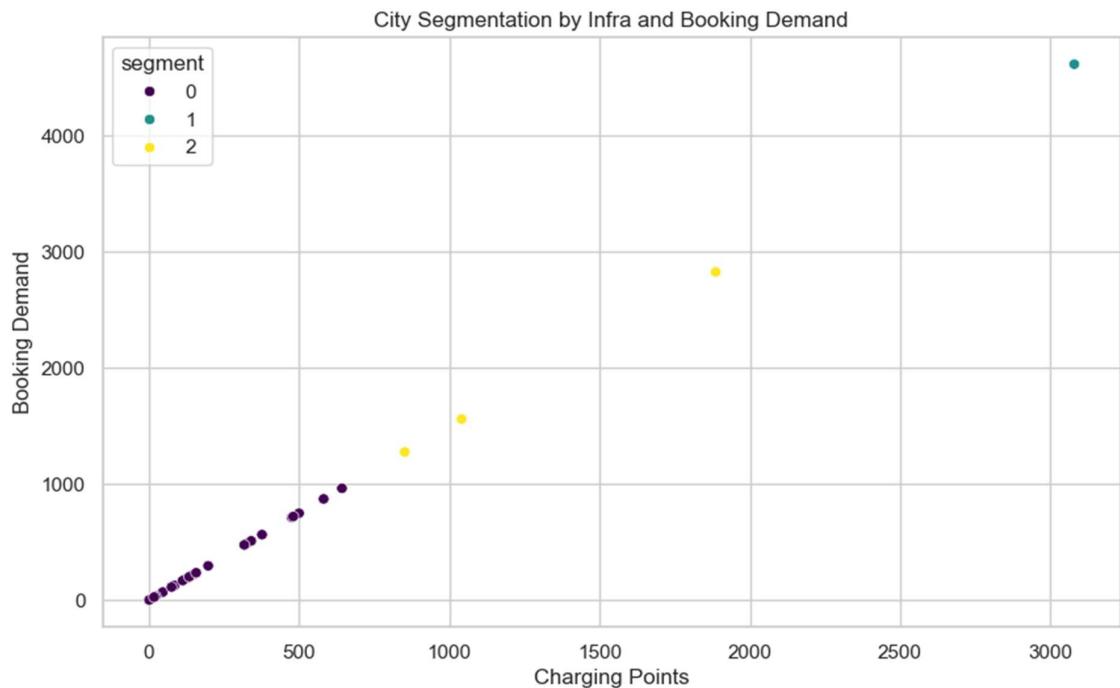
**Figure 6: Total Registration by Vehicle Class**

Maps total vehicle growth, supporting infrastructure scale.



**Figure 7: Clustering of States by Infra + Booking Demand**

Final segmentation map used to identify Segment 0, 1, 2.



💡 All graphs used in analysis are saved in /output and included in final report.

## **12. Contributors**

- Vishal Gorule

## **13. GitHub Repository**

<https://github.com/VisionExpo/EV-Market-Segmentation>

## **14. Conclusion**

This study provides a comprehensive approach to segmenting and entering the Indian EV and mobility market. With strong backing from public charging infrastructure and vehicle sales data, our team identified geographic and behavioral segments most ready for EV adoption. KMeans clustering and visual analysis reinforced the viability of Tier-1 cities for EV ride and rental solutions, while secondary cities present growth opportunities for B2B logistics and phased launches. Strategic alignment with customer needs, pricing, and infrastructure maturity ensures a practical roadmap to scale and profitability.

By combining data analytics with market insights, this report delivers a launch-ready framework for EV-first startups to succeed in India's rapidly evolving mobility ecosystem.