INNOMATICS®
RESEARCH LABS

INNOVATION. AUTOMATION. ANALYTICS

Presentation on

EV Market Analysis Project

PRESENTED BY:
A.SUMANTH REDDY
BATCH:436

About the project

OVERVIEW:

This project analyzes global Electric Vehicle (EV) growth using Power BI. It explores how EV adoption has changed over the years, which regions and vehicle categories are leading, and how different technologies like BEVs and PHEVs are evolving. The analysis compares developed and developing countries, identifies top-growing segments, and examines trends in EV stock, sales, registrations, and energy use. Overall, the project provides a clear picture of current EV market trends and highlights the key factors driving future growth.

INNOMATICS RESEARCH LABS

Total EV Value by Region

he dataset shows that EV adoption varies widely across regions. Some regions demonstrate mature EV markets with strong annual growth, while others are in the early stages of adoption. Typically, Asia—especially China—holds the largest share of global EV stock due to large-scale production, government incentives, and expanding charging networks. Europe shows high adoption driven by emissions regulations, while North America displays steady but comparatively moderate growth.

This helps us understand which areas are contributing most to the global shift toward electric mobility

Region With Highest Growth

The region experiencing the fastest EV growth often reflects strong government policies and industry support. In most datasets, China or Europe tends to lead in growth due to aggressive electrification targets, subsidies, and rapid charging infrastructure development.

This insight highlights how policy-driven markets accelerate EV adoption more effectively than markets driven solely by consumer demand.

INNOMATICS RESEARCH LABS

Top 5 Regions Driving EV Adoption

Five regions consistently dominate global EV adoption:

- **China** – Large market size and manufacturing capacity
- **United States** – Strong EV brands and growing consumer interest
- **Germany** – Technology leadership and incentives
- **India** – Rapid expansion in 2-wheelers and public transport
- **United Kingdom** – Strong policy push toward zero emissions

These regions play a major role in shaping global EV demand and technology development.

EV Penetration by Vehicle Category

EV adoption is not uniform across vehicle types:

Cars: Europe and China lead due to favorable policies and extensive model availability.

- **Buses: China dominates as many cities electrify public transport fleets.**
- **Trucks: Growth is emerging in the U.S. and Europe with advancements in long-range batteries.**
- **Two-wheelers: India and China lead with affordable electric scooters and urban usage.**

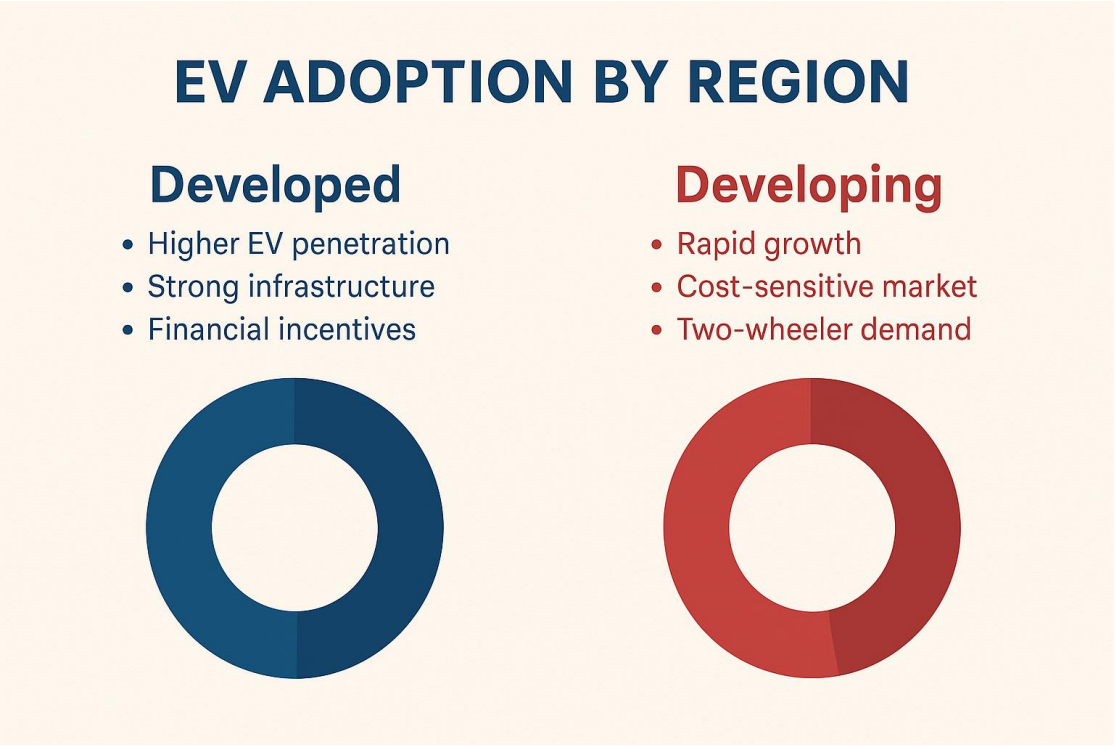
Category-level insights reveal how economic factors and transportation needs influence adoption.

Developed vs. Developing Regions

1..Developed regions show higher EV penetration due to strong infrastructure, financial incentives, and early policy initiatives.

2 .Developing regions are experiencing rapid growth but remain cost-sensitive; adoption is driven mainly by affordable two-wheelers and government-led transportation initiatives.

3.Comparing these groups illustrates how economic maturity affects EV acceptance and the pace of transition.



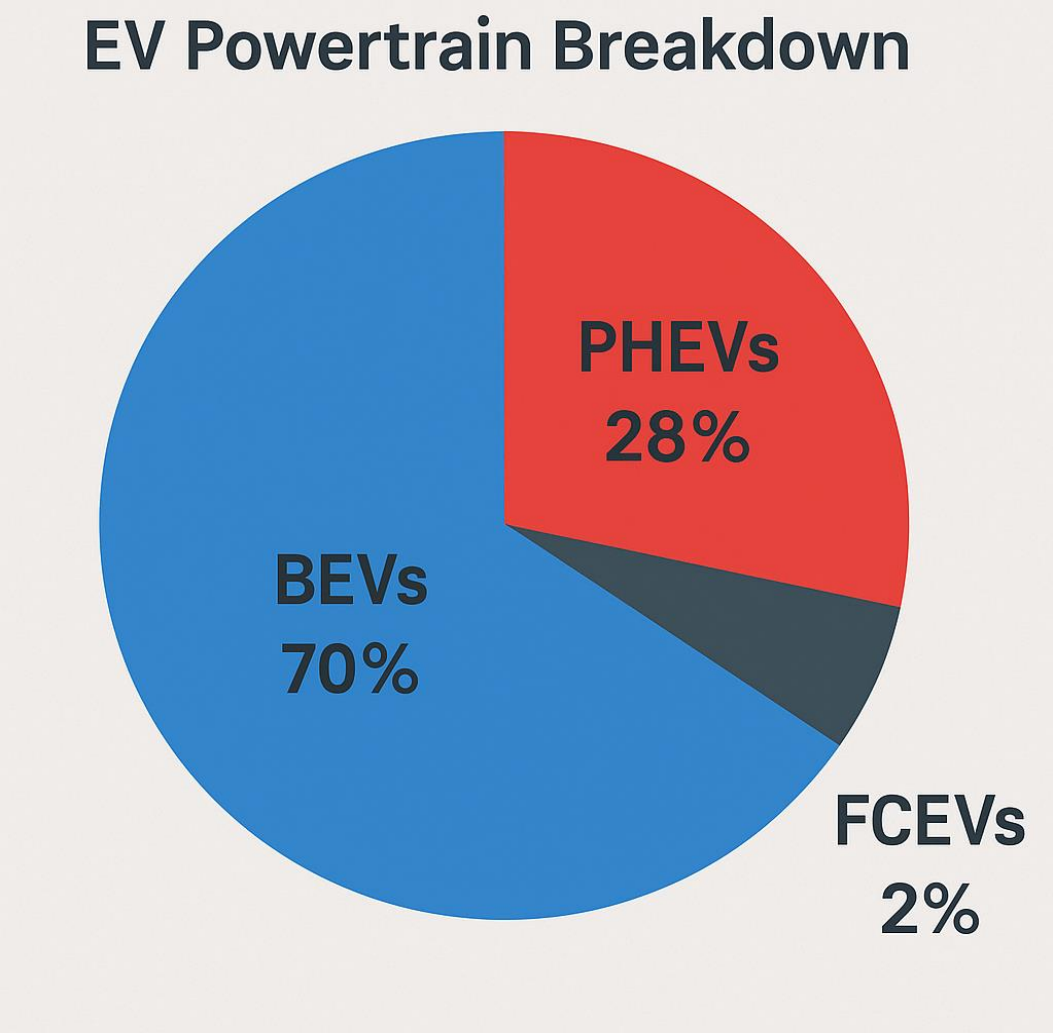
INNOMATICS RESEARCH LABS

Powertrain Distribution

The dataset shows how EVs are split between BEVs, PHEVs, and FCEVs:

- **BEVs (Battery Electric Vehicles)** are rising quickly due to decreasing battery costs and zero-emission policies.
- **PHEVs (Plug-In Hybrid Electric Vehicles)** remain stable but are gradually losing share as BEVs become more capable.
- **FCEVs (Fuel Cell EVs)** remain niche due to limited hydrogen infrastructure.

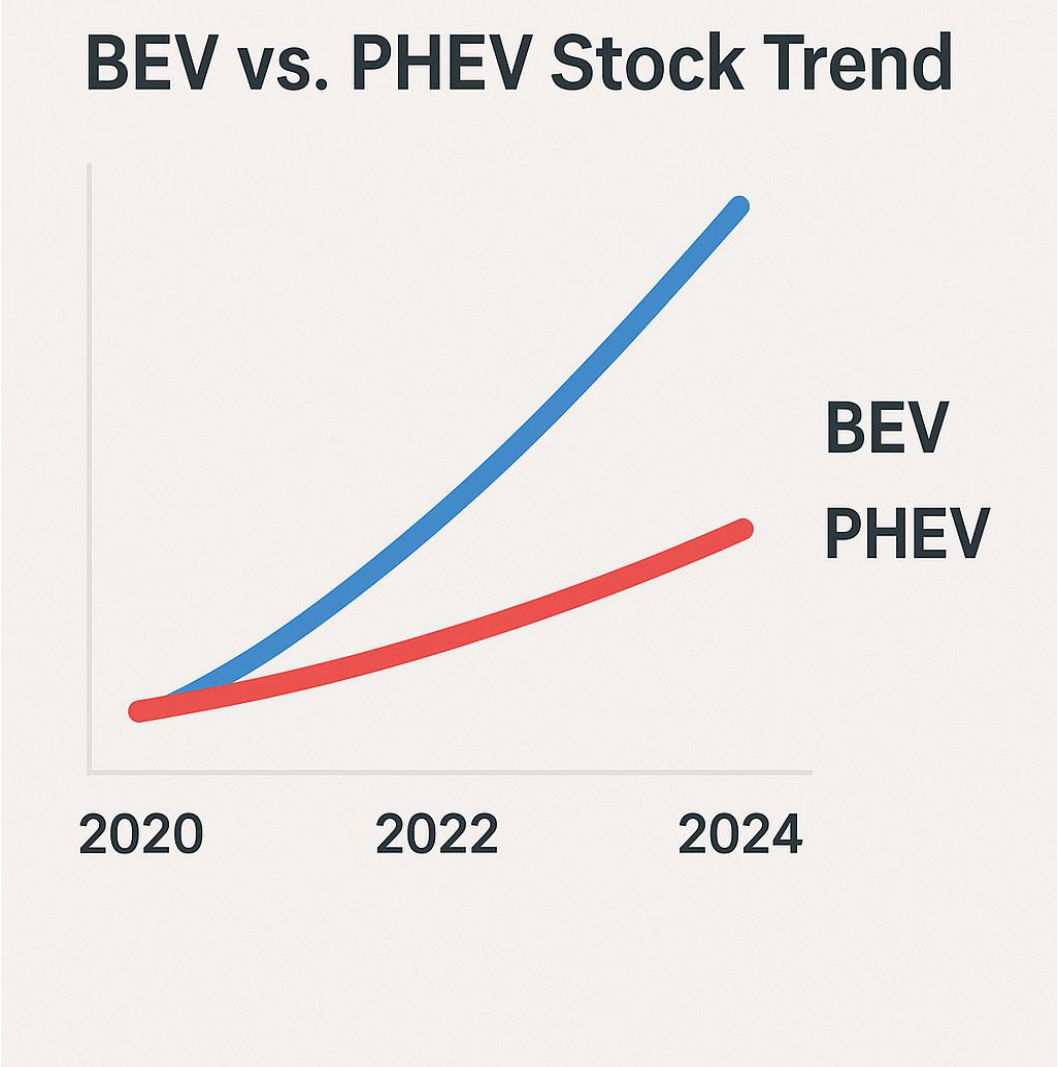
This breakdown explains the technological direction of the global EV market.



INNOMATICS RESEARCH LABS

Fastest Growing Powertrain

BEVs typically show the fastest growth because they are becoming more affordable, efficient, and supported by regulations. From 2020 to 2024, BEVs often experience the steepest increase in both stock and sales, signaling a shift away from hybrids and towards full electrification.



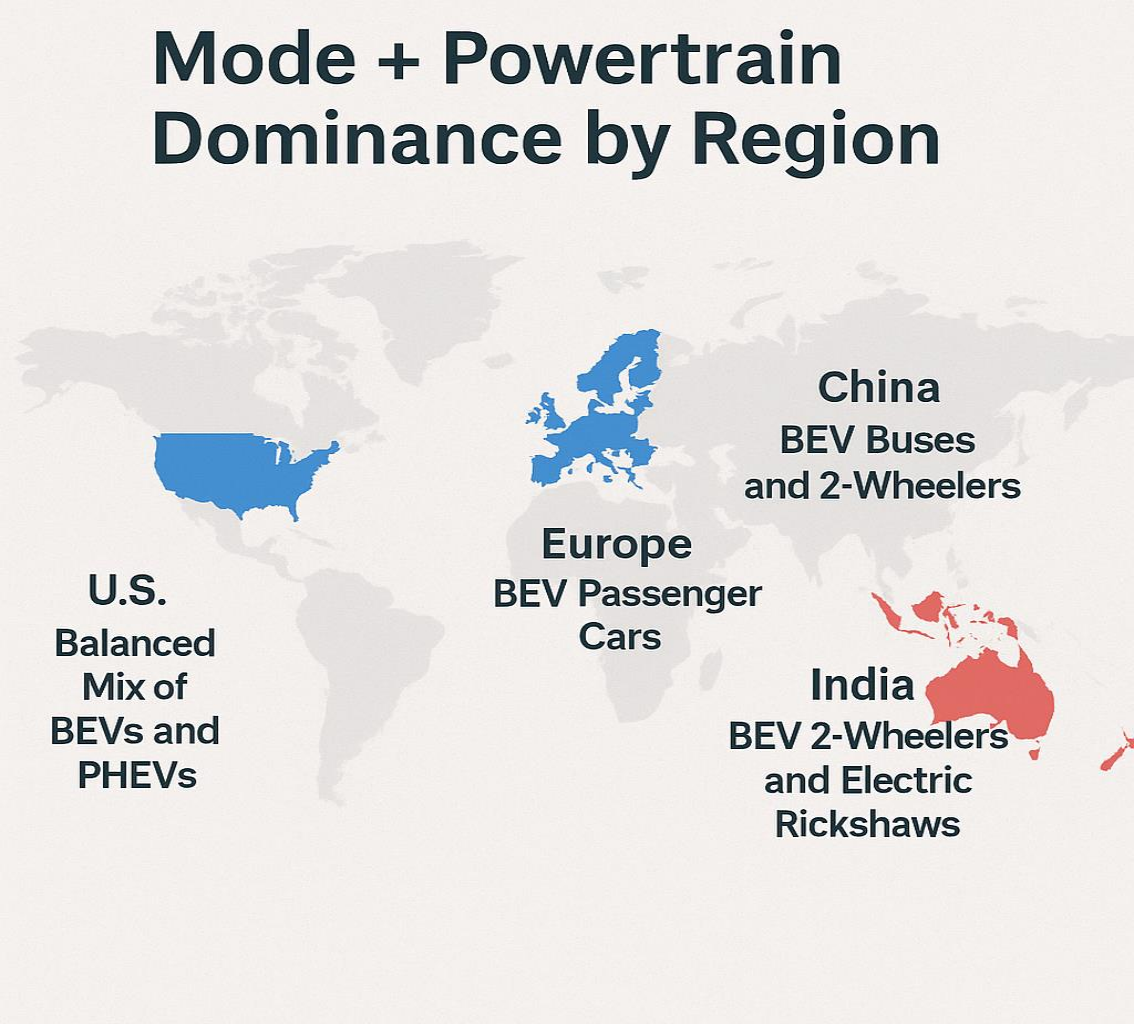
INNOMATICS RESEARCH LABS

Mode + Powertrain Dominance by Region

Each region shows a unique combination of mode and powertrain dominance:

- **China:** BEV buses and 2-wheelers
- **Europe:** BEV passenger cars
- **North America:** Balanced mix of BEVs and PHEVs
- **India:** BEV 2-wheelers and electric rickshaws

These patterns showcase regional priorities and economic differences.



INNOMATICS RESEARCH LABS

Powertrain: 2020 vs. 2024

Between 2020 and 2024, the EV market shifts significantly:

- **BEVs grow rapidly as battery technology improves.**
- **PHEVs plateau as full-electric becomes more appealing.**
- **FCEVs remain limited due to infrastructure barriers.**

This comparison shows how quickly EV technology is evolving.

Trend in EV Powertrain Types

General trend:

Year	BEV	PHEV	FCEV
2020	Moderate	High	Very Low
2024	Very High	Stable/ declining	Low

⚡ Conclusion:

BEVs became the dominant technology.

INNOMATICS RESEARCH LABS

Parameter & Unit Analysis

Understanding these helps measure the scale of EV markets and the impact on national energy systems. Units such as number of vehicles and TWh allow comparisons between technology performance and national energy usage.

Parameters in EV Data

- Stock
- Sales
- Registrations
- Energy Consumption

Units

Number of vehicles

TWh

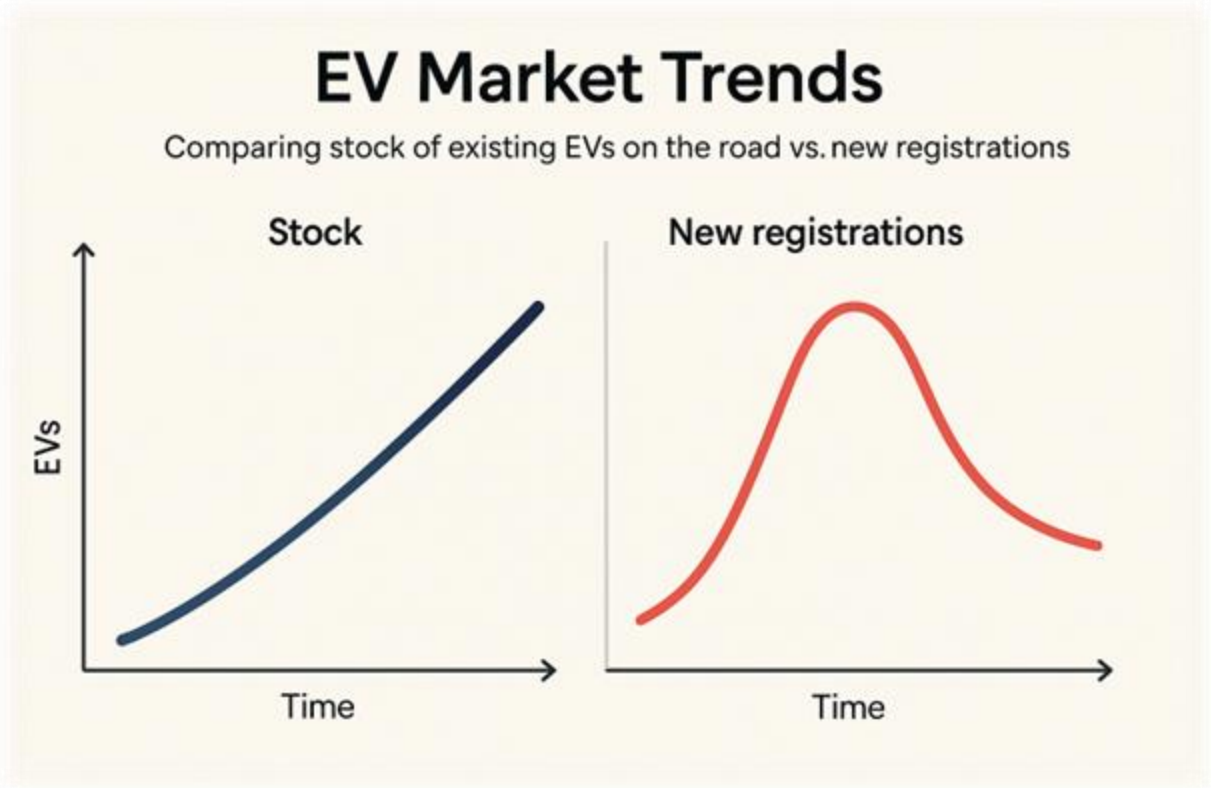
INNOMATICS RESEARCH LABS

Stock s. New Registrations

Comparing stock (existing EVs on the road) with new registrations (new EVs sold in a year) helps identify market behavior:

- **If both rise together → strong, healthy adoption**
- **If registrations drop but stock grows → early signs of market saturation**

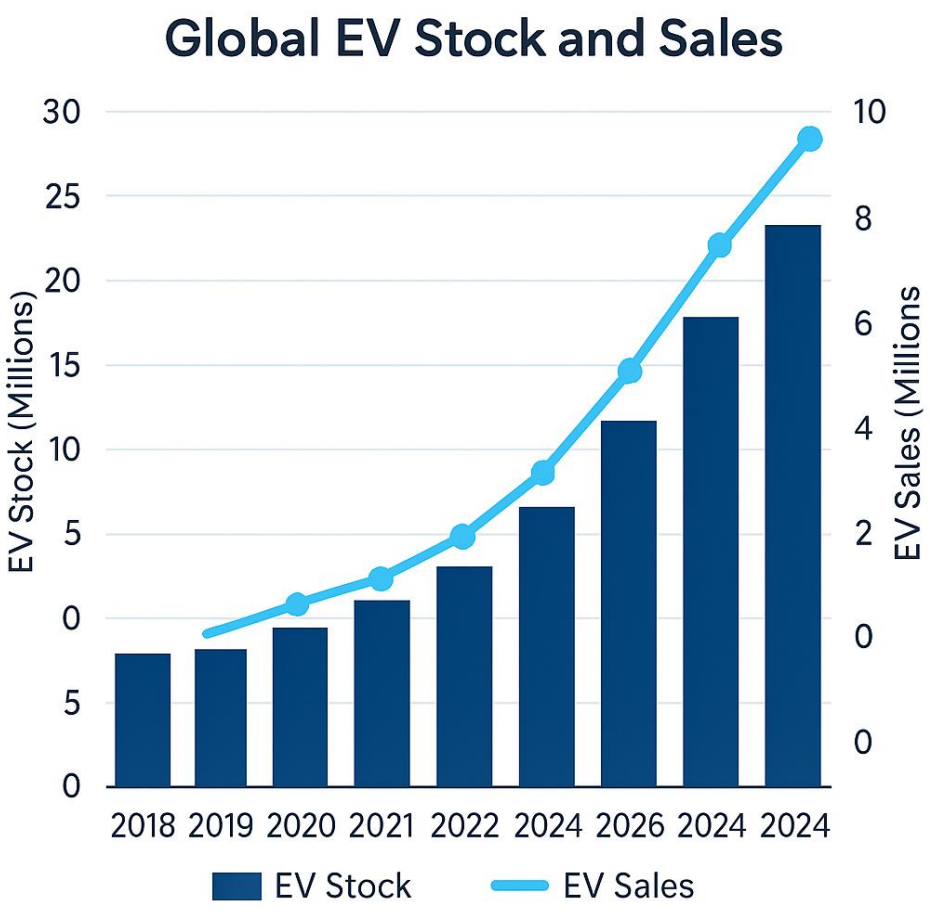
This analysis helps predict future EV market trends



INNOMATICS RESEARCH LABS

Time-Series Trends

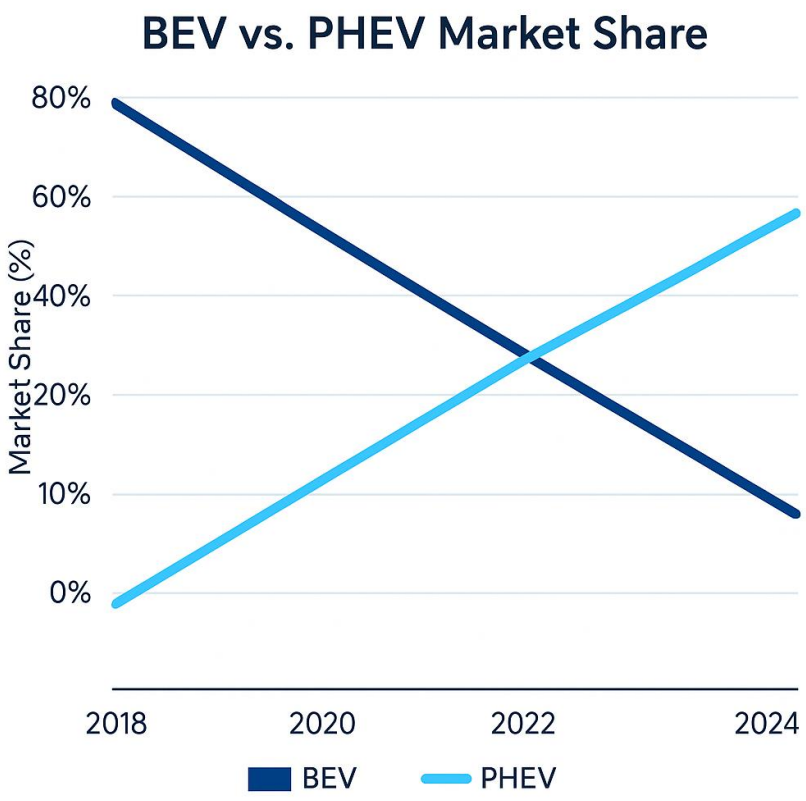
The data highlights a strong global EV adoption curve, with most regions showing exponential growth—especially following major policies and incentives. Time-series analysis clearly illustrates how rapidly the EV market is expanding worldwide.



INNOMATICS RESEARCH LABS

BEVs vs PHEVs Over Time

1 .**Over the years, BEVs gain a larger market share while PHEVs grow slowly or flatten. This shift is driven by better range, more affordable BEV models, and stricter emissions regulations that favor fully electric solutions.**



INNOMATICS RESEARCH LABS

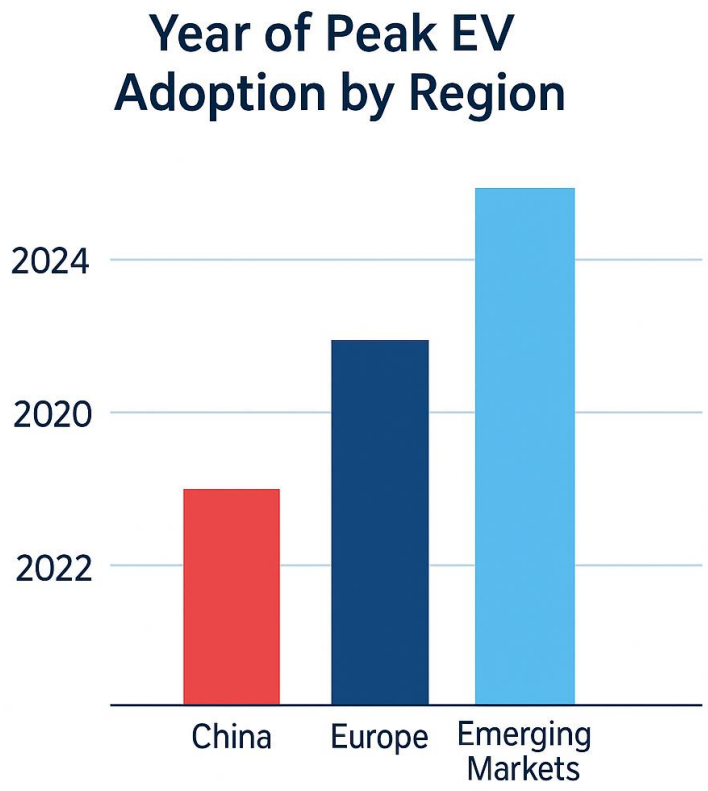
Regional Peak Years

Each region reaches its highest EV stock or sales in different years depending on market maturity and policy timing.

For example:

- **China may peak earlier due to early mass adoption**
- **Europe peaks around major policy deadlines**
- **Emerging markets peak later as adoption increases**

This shows the different stages of the global EV lifecycle.

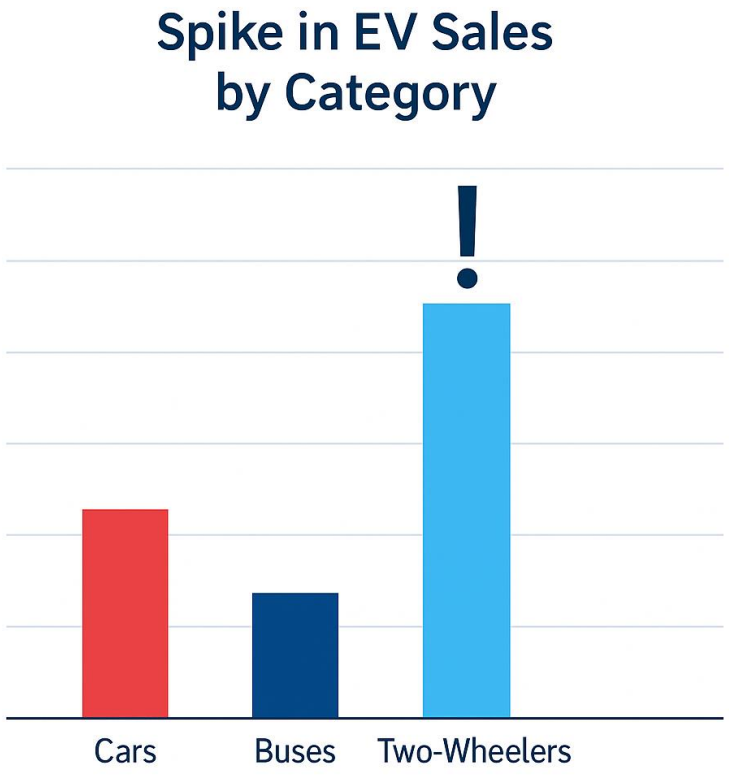


INNOMATICS RESEARCH LABS

Category With the Strongest Spike

Certain categories experience sudden spikes due to policy changes or new technologies.

- Two-wheelers often spike in India and China due to affordability.
- Buses spike when governments push fleet electrification.
- Cars show steady, long-term growth.
  Spikes indicate major turning points in market behavior.



INNOMATICS RESEARCH LABS

Project Conclusion

The global EV market is expanding quickly, but countries are progressing at different rates. Faster adoption depends on collaboration between governments, automakers, and charging providers. The leading regions—China, Europe, and the U.S.—share three key success factors:

1. **Strong government policies that make EVs more appealing and affordable.**
2. **Extensive charging infrastructure that boosts consumer confidence.**
3. **A wide range of affordable EV models, especially small cars and 2-wheelers**

THANK YOU

INNOMATICS
RESEARCH LABS