



January 19, 2022  
Shanghai



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# China's Automotive Industry: Look Back & A Look Ahead 2022

*Presentation by  
Bill Russo, Founder & CEO, Automobility Ltd. &  
Chairman of AmCham Shanghai Automotive Committee*



**Connect with  
Bill Russo:**



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## **A Look Back: China Auto Industry Status in 2021**

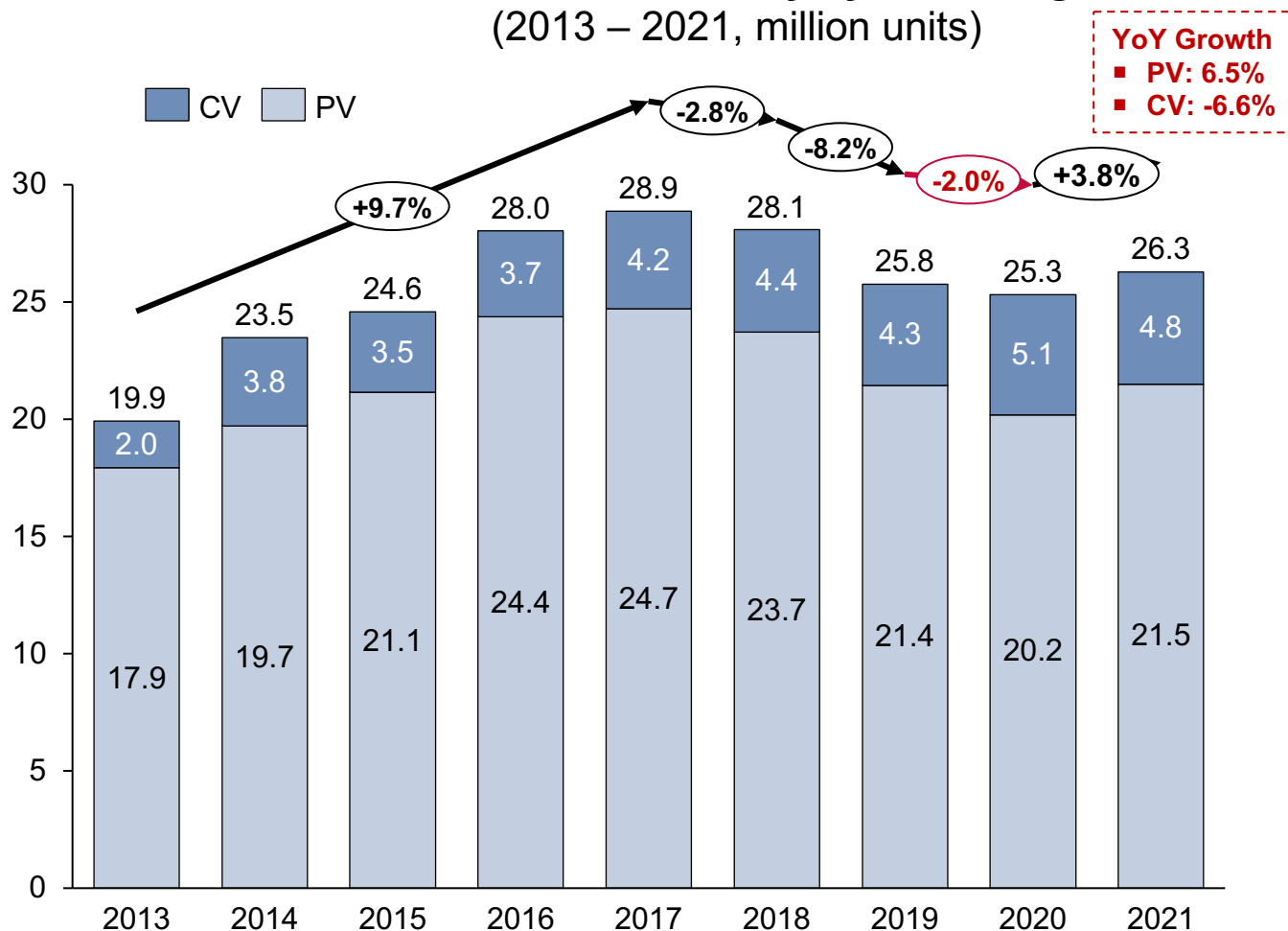
Competitive Landscape in the New Game

A Look Ahead: CES 2022 Highlights

Panel Discussion

# Overall sales volumes have slightly recovered to pre-2019 levels, boosted by the rise of new energy vehicles

Overall China Auto Industry by Sales Segments  
(2013 – 2021, million units)

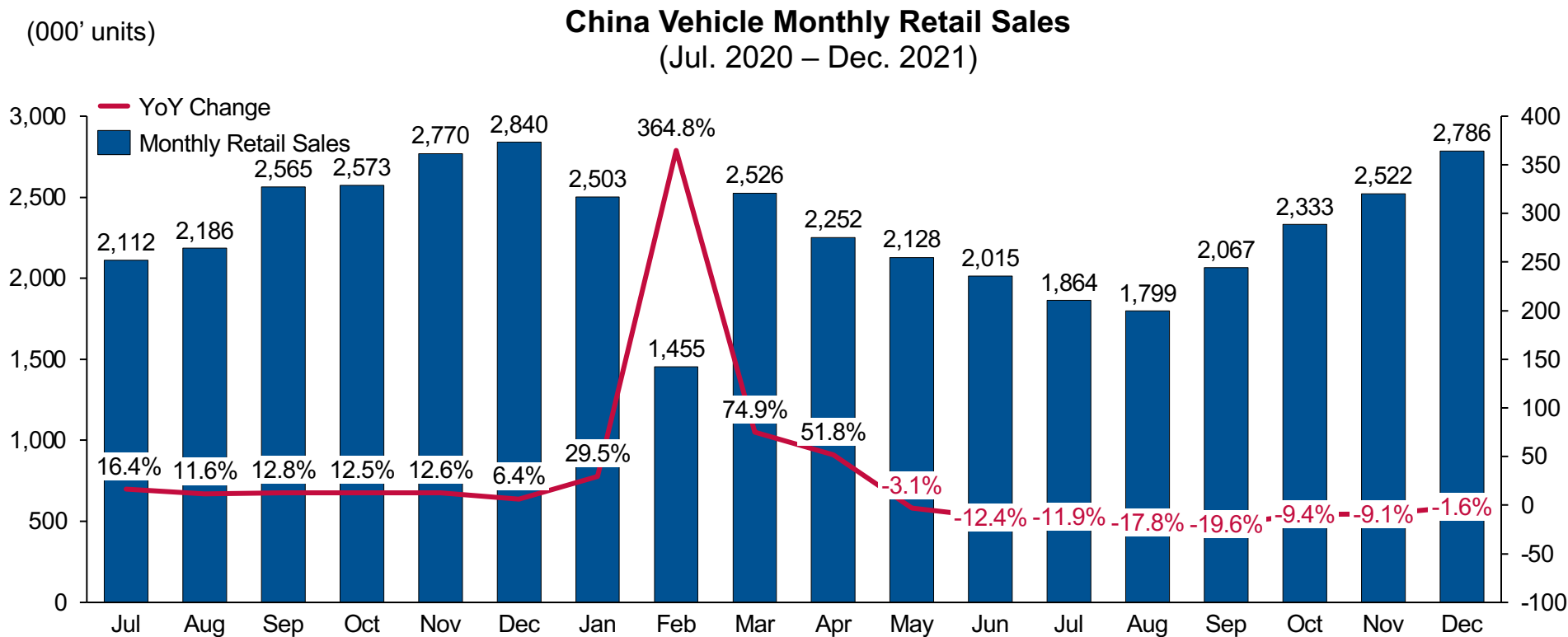


## Comments

- China's overall auto sales were up **3.8% thru 2021** with 26.28mn units sold
- ~3.52mn NEVs were sold nationwide in 2021, **around 2.6 times** as many as in 2020
- In 2021, China new car sales volume has increased again after it fell for 3 consecutive years. The country is leading **the global automobile industry's rebound from the COVID-19 pandemic**

Source: CAAM (China Association of Automobile Manufacturers), Automobility analysis

# After a full year of post-COVID strength, year-over-year new car demand has declined for 8 consecutive months



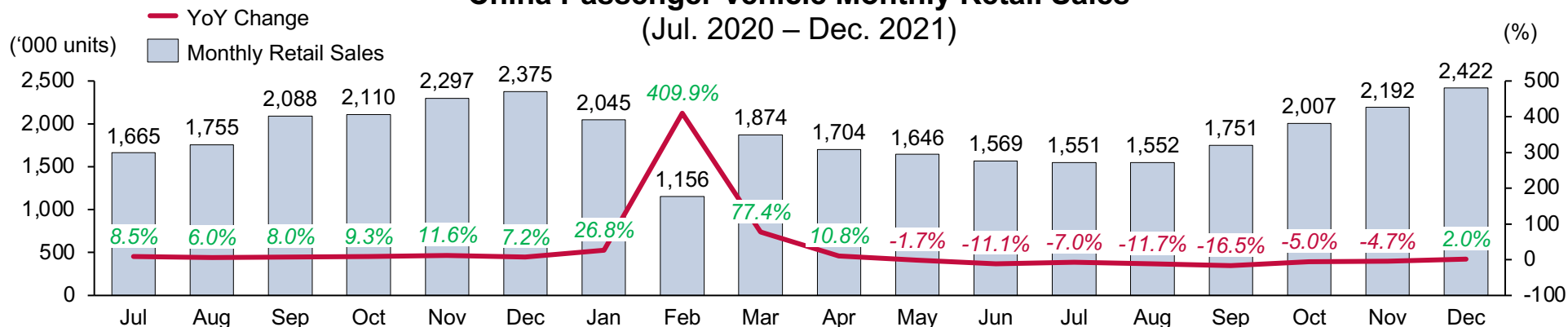
## Comments

- Post-COVID demand bump has ended
- Government's demand stimulus measures and dealer promotions "pulled ahead" demand from 2021, this is particularly evident in the CV segment
- Semiconductor supply constraints are impacting production volumes

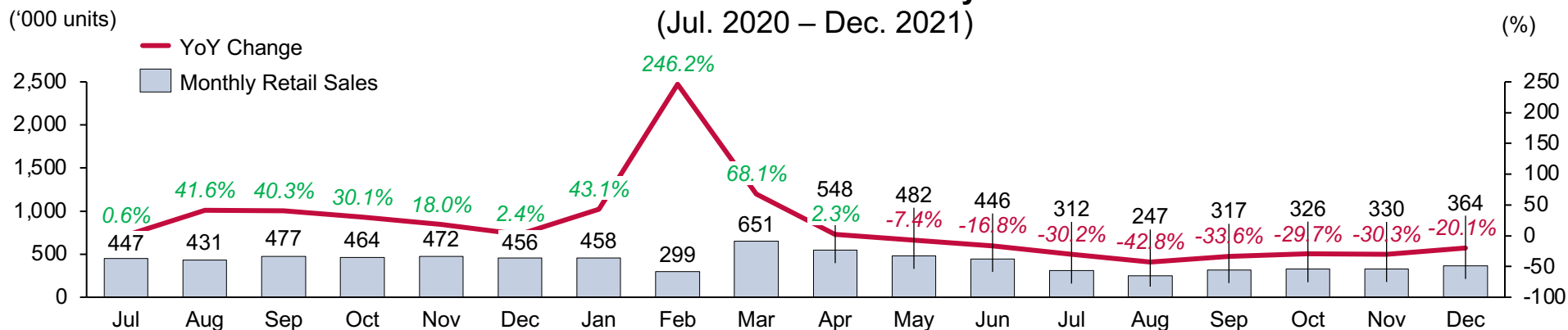
Source: CAAM, Automobility analysis

# An improving trend in recent months is largely attributable to the exponential growth in electric vehicle sales

### China Passenger Vehicle Monthly Retail Sales (Jul. 2020 – Dec. 2021)



### China Commercial Vehicle Monthly Retail Sales (Jul. 2020 – Dec. 2021)

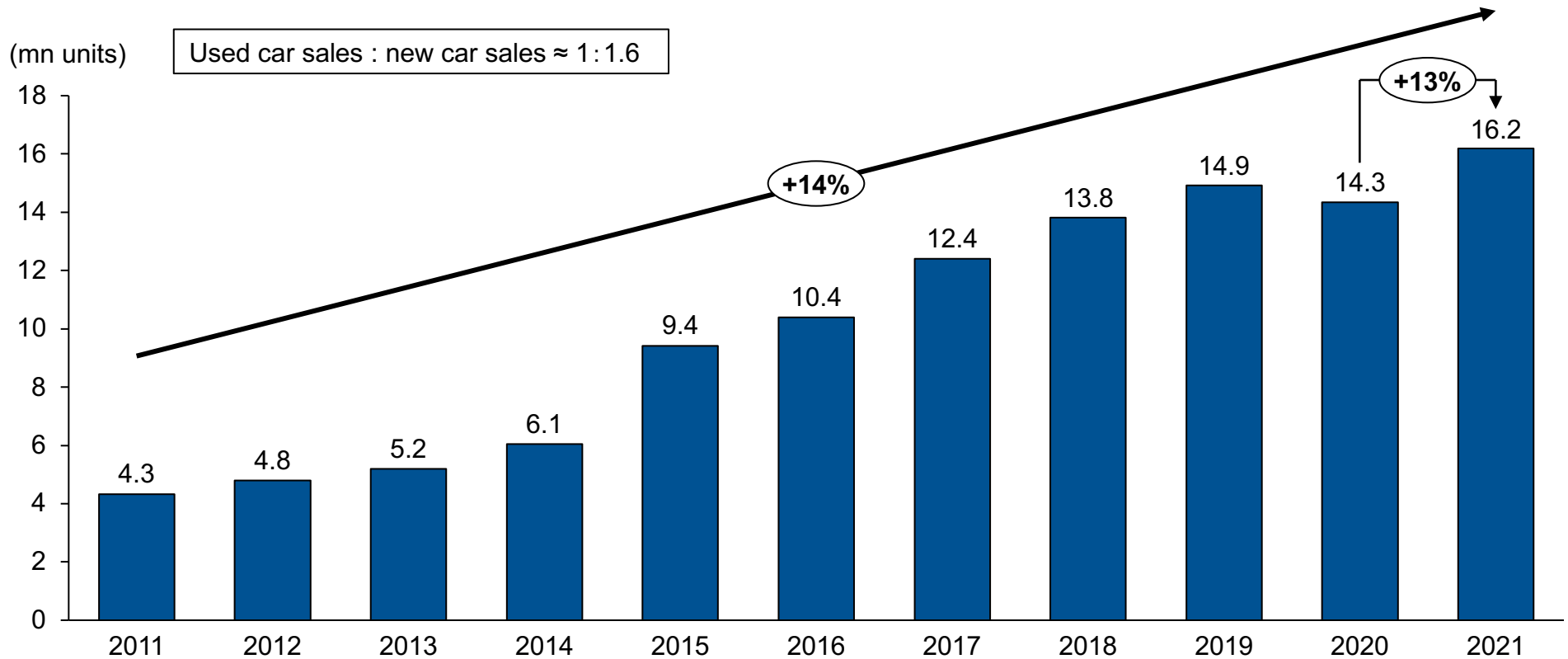


Both PV&CV segments have experienced decline since May 2021, especially CV, compared with its strong performance in prior months

Source: CAAM, Automobility analysis

# At the same time, used car sales experienced a record-breaking year in 2021, rising 13.4%

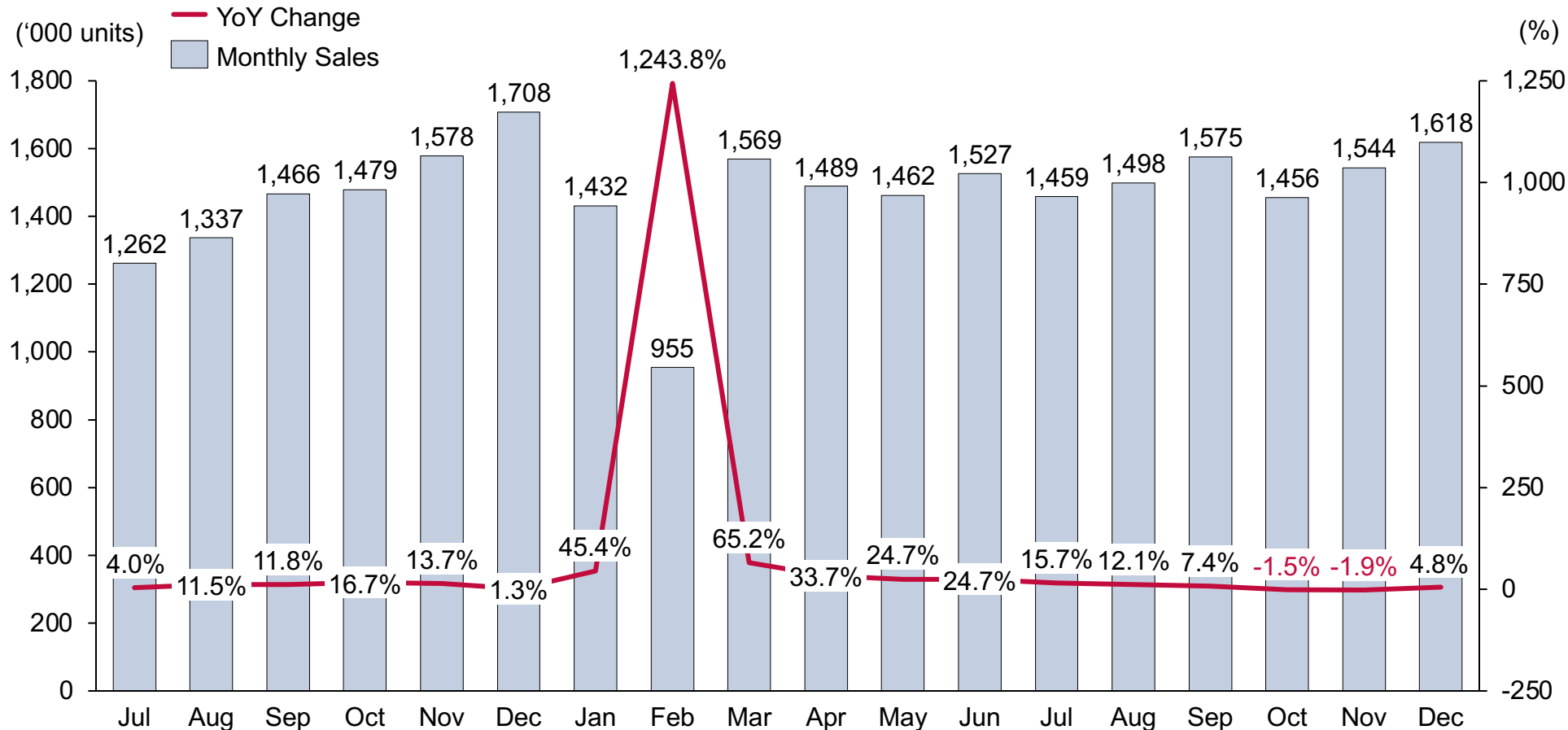
### China Used Car Sales (2011 – 2021)



Source: China Automobile Dealers Association, Auto.sina.com, Automobility analysis

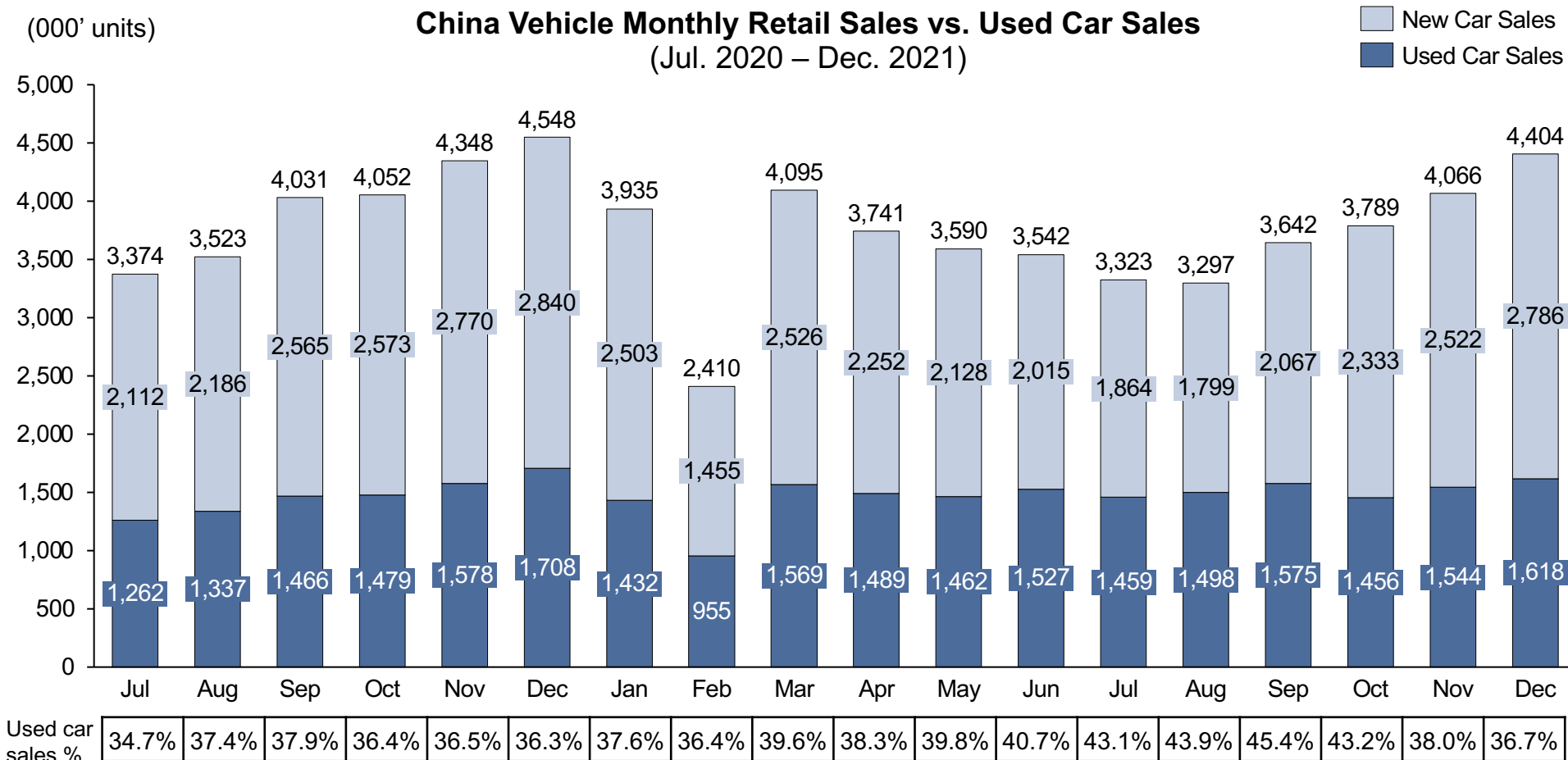
# Used car transactions have outpaced new car sales in 2021...

**China Used Car Sales**  
(Jul. 2020 – Dec. 2021)



Source: China Automobile Dealers Association, Automobility analysis

# ...which indicates that the Chinese automotive market is maturing and evolving with used car sales share growing



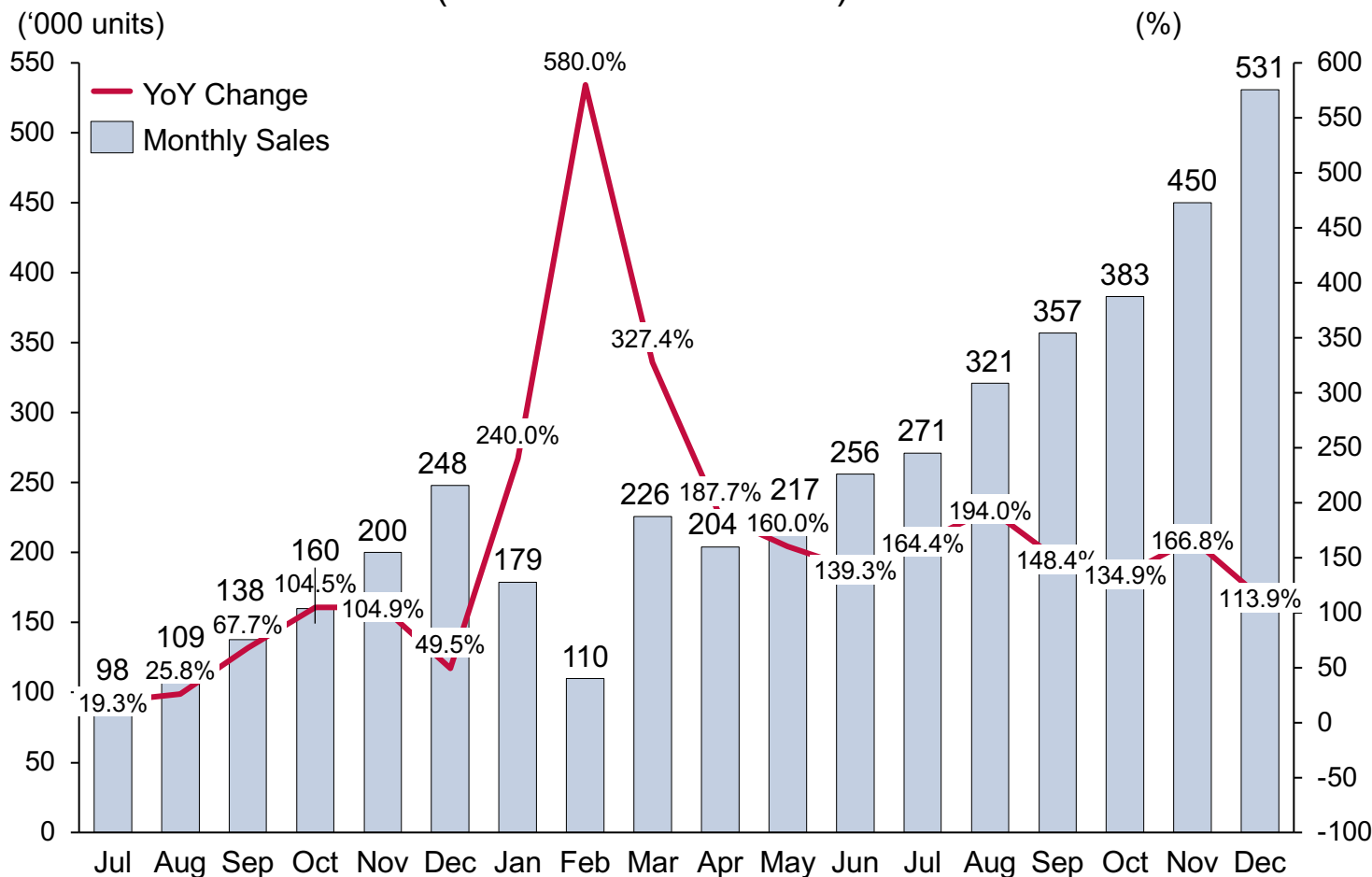
- The share of used car sales remains between a third to almost half of the total sales, while in mature market like the US, the ration of used car sales vs. new car sales is 2.5
- Besides the shortage of chip supply, Chinese consumers are also shifting their mobility needs

Source: China Automobile Dealers Association, Automobility analysis



# New energy vehicle sales continue their exponential rise, reaching an overall 13.4 percent share of the market in 2021

**NEV Monthly Sales in China**  
(Jul. 2020 – Dec. 2021)



## Comments

- Demand for new energy vehicle rebounded for the whole year in 2021, driven by government **subsidies** and volumes contributed by **new NEV models**
- **EV startups account for ~19%** of the passenger EV market, incl. NIO, Xpeng, Lixiang, WM, etc.
- **BYD, SGMW, Tesla**, were the top 3 brands by units sold in 2021
- **Wuling Hongguang MINI EV, BYD Qin & Tesla Model Y** were the top 3 models by units sold in 2021

Source: CAAM, CPCA, Automobility analysis

# Local brands show competitive advantages in China NEV sales landscape

No.	Brand	2021 Sales	12/2021 Sales	No.	Model	2021 Sales	12/2021 Sales
1	BYD	584,020	92,775	1	Hongguang Mini EV	395,451	50,561
2	SAIC GM Wuling	431,130	54,632	2	BYD Qin	187,227	25,940
3	Tesla	320,743	70,602	3	Tesla Model Y	169,853	40,500
4	Great Wall	133,997	20,723	4	Tesla Model 3	150,890	30,102
5	GAC Aion	126,962	16,675	5	BYD Han	117,323	13,701
6	SAIC PV	110,065	7,680	6	BYD Song	104,244	19,142
7	XPeng	98,155	16,000	7	Li ONE	90,491	14,087
8	Chery NEV	97,625	20,355	8	Chery eQ	76,987	10,141
9	NIO	91,429	10,489	9	Benben EV	76,381	10,404
10	Li Auto	90,491	14,087	10	Aion S	73,853	7,807

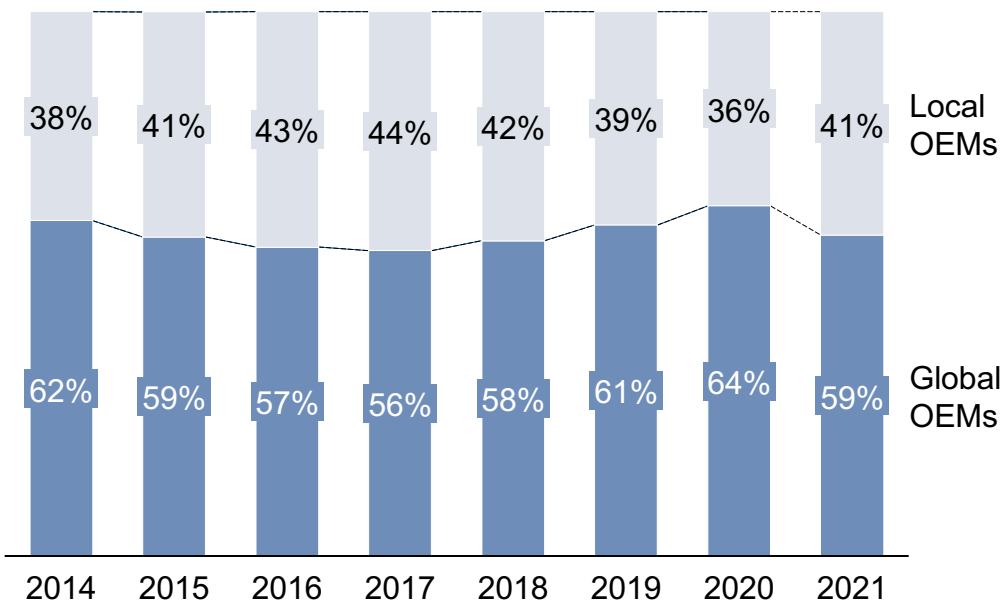
- Among the top 10 NEV sales brands in 2021, only Tesla makes the top 10 list and with Model Y & 3 rank No. 3 & 4 in best selling EV models
- While 3 startups remain on the top 10 list (XPeng, NIO and Li Auto), local nameplates are gaining traction

*\*Number of new car traffic compulsory insurance purchases*

*Source: Automobility analysis*

# Chinese brands were gaining market share until 2017, but global OEMs are recovering some of their lost share

**China PV Sales by Brand Origin**  
(2014 – 2021, % in terms of sales volume)



**China PV Sales by Brand Origin**  
(1-11/2021)

Brand Origin	Total Sales Volume (units, 1-11/2021)	YoY
Local	7,349,077	22.9%
USA	1,735,129	8.5%
Japanese	4,072,964	-0.8%
German	4,104,674	-7.2%
Korean	490,841	-23.3%
French	72,858	60.4%
Others	215,016	1.2%

- Global mass-market brands are losing their recent gains, and Korean brands have been hit the hardest
- As a result, Korean carmakers are reducing their manufacturing footprint in China

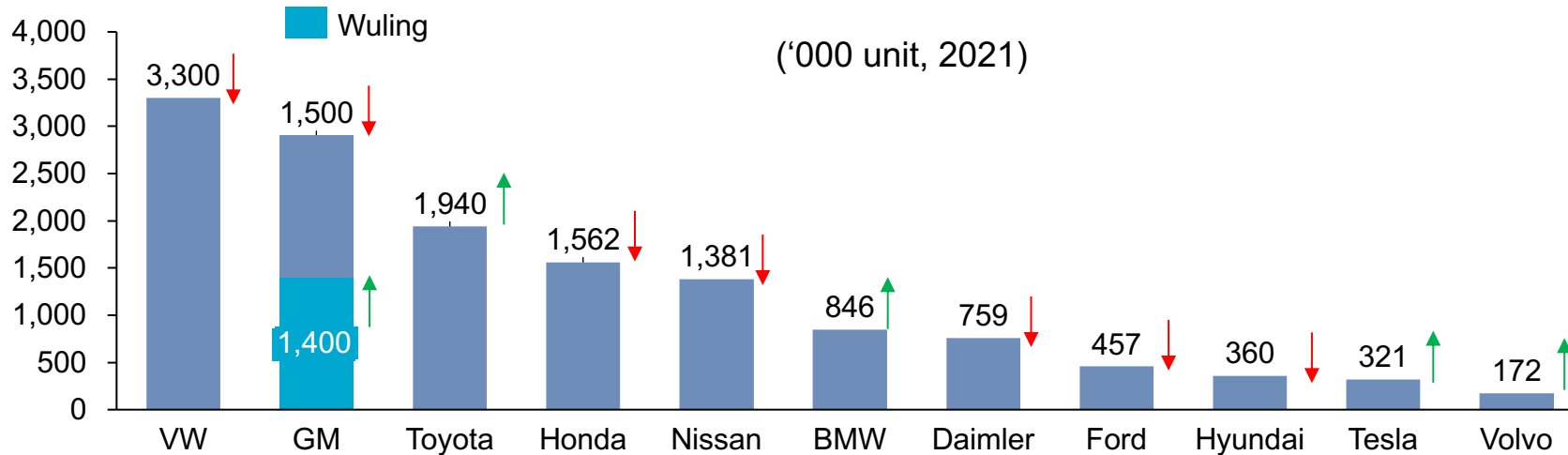
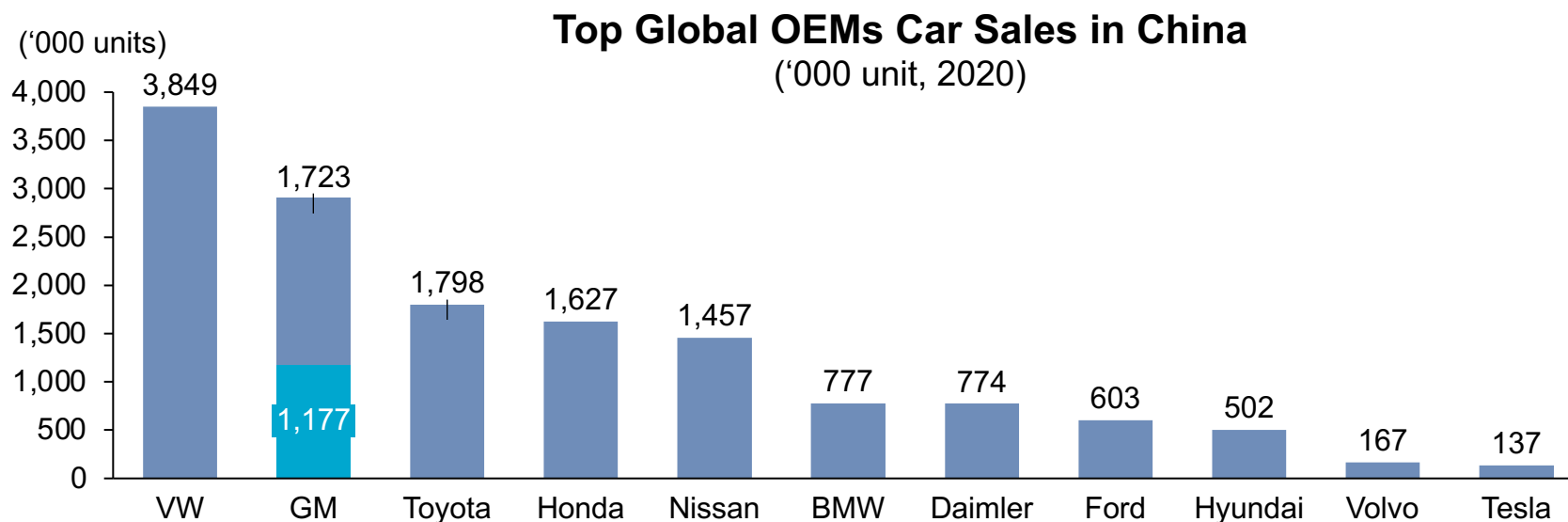
May 28, 2021  
4:50 PM CST  
Last Updated 3 months ago

**Autos & Transportation**

**Hyundai Motor considers selling one of its Beijing factory sites - Yonhap**

Source: CPCA, desktop research, Automobility analysis

# China is a significant market for global auto makers



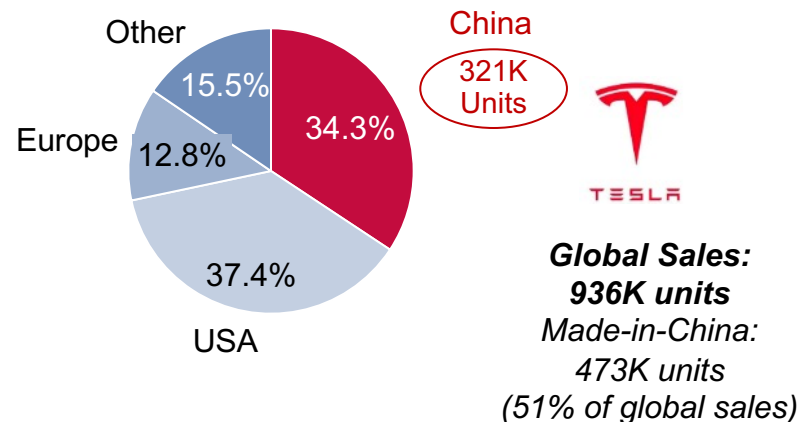
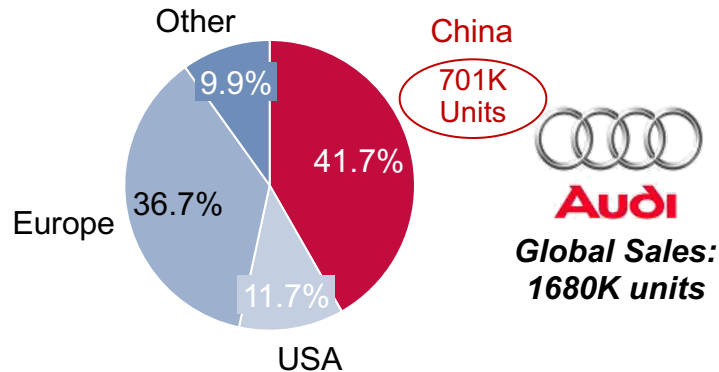
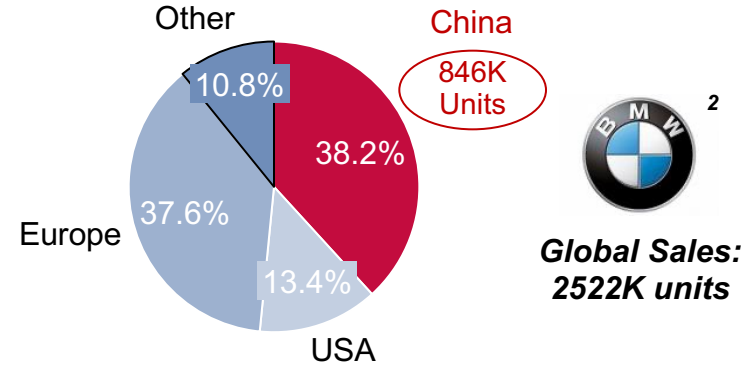
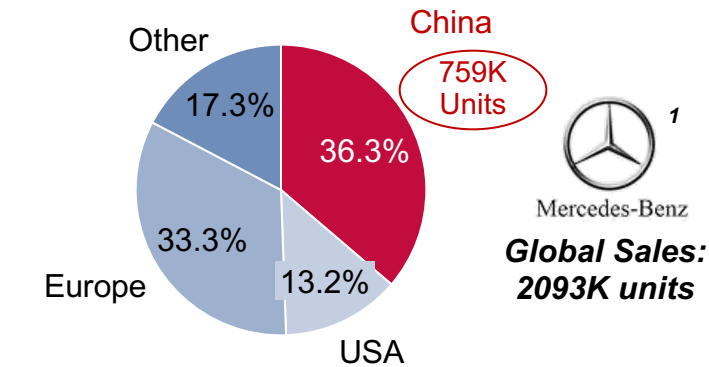
Notes: \* Indicates sales through November.

GM sales volume includes Wuling and Baojun brands manufactured by SGMW (44% owned by GM)

Source: CPCA, company announcements, Automobility analysis

# Tesla opened the door to premium being associated with Smart EV technology

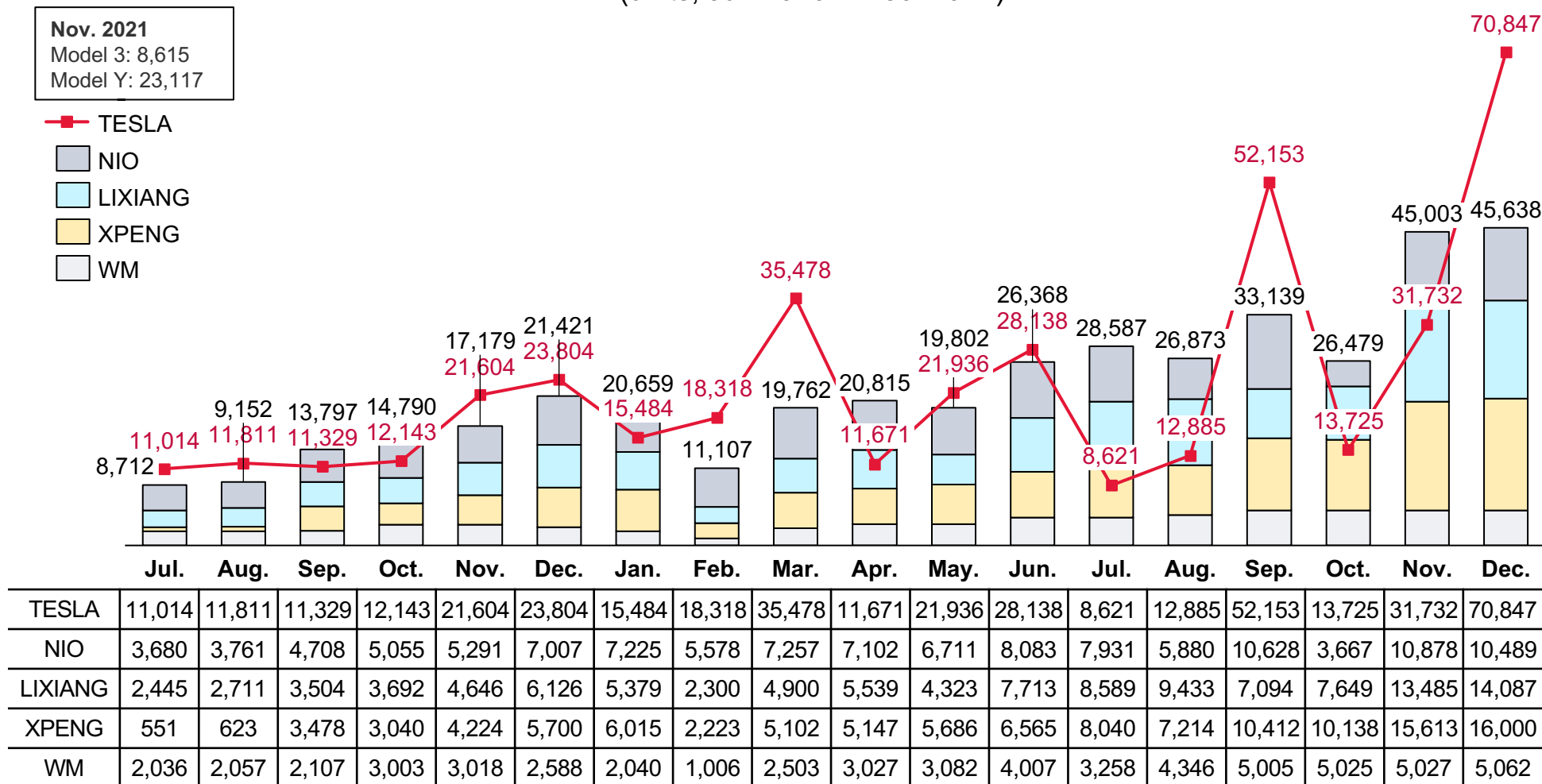
## Market Sales Share of Major Luxury Brands (2021)



Note: 1 - incl. Mercedes-Benz, smart, 2 - incl. Mini, Rolls-Royce  
 Source: Company announcements, Automobility analysis

# Chinese Smart EV startups gain acceptance while Tesla manages its growth quarterly with a split Europe/China mix

Top Chinese EV Startups Vs. Tesla Sales Volume  
(units, Jul. 2020 – Dec. 2021)



Source: CAAM, Sohu.com, Desktop research, Automobility analysis

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**Competing in the New Game**

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# The Age of Disruption brings challenges across the entire value chain

## Automotive Industry Value Chain



## KEY CHALLENGES

### Coping with supply chain disruptions

- (2019) Supply chain disruptions resulting from tariff & trade issues
- (2020) COVID-19 pandemic
- (2021) Chip shortage

### Becoming a smart EV/ICV company

- *Secular shift* in buying preference toward electric vehicles
- *Generational shift* of buyer preference in favor of smart connectivity

### Future of automotive retail

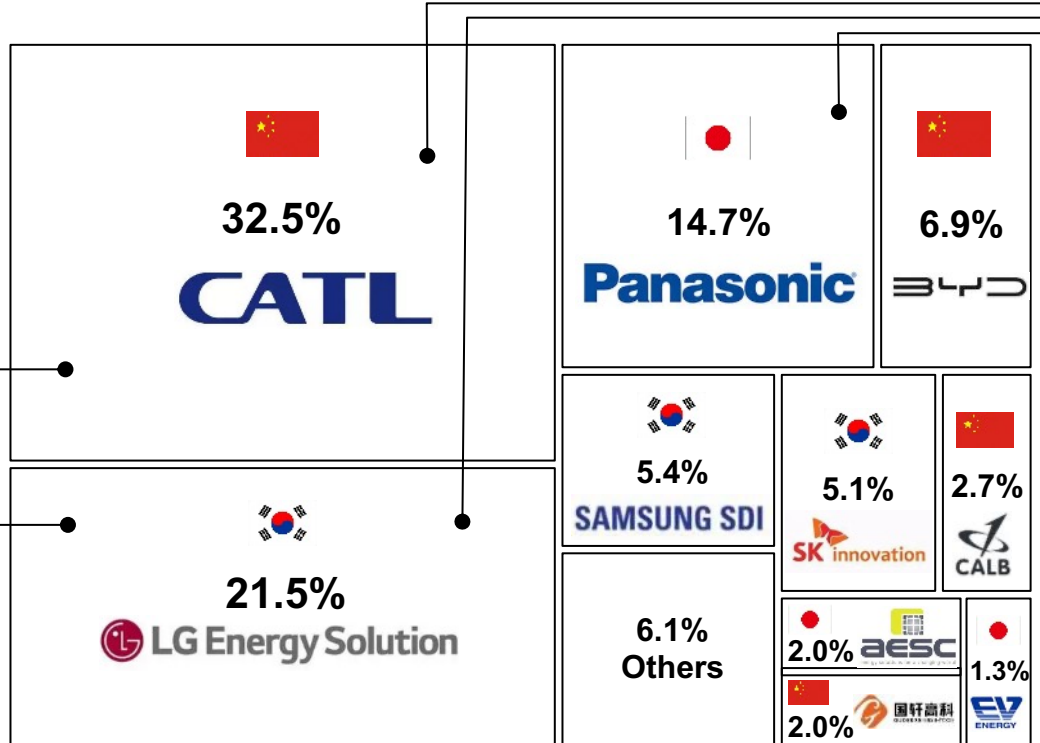
- Franchised dealerships and 4S shops
- Online vs. offline
- Smart device brands and the new retail format



# The top 10 EV battery manufacturers are all headquartered in Asia

The world's top battery supplier was founded in 2011 and provides lithium iron phosphate (LFP) batteries to **Tesla, Peugeot, Hyundai, Honda, BMW, Toyota, Volkswagen** and **Volvo**.

LG pouch cells are used in EVs from **Jaguar, Audi, Porsche, Ford** and **GM**.



Three companies make up almost **70% of the EV battery manufacturing market**.

 The top 10 EV battery manufacturers are all headquartered in Asia, concentrated in China, Japan, and South Korea.

Source: desktop research, Automobility analysis

# Carmakers have been hit hard by a global chip shortage

Automobiles + Add to myFT

FINANCIAL TIMES

## Global chip shortage puts car supply chain under the microscope

Severe shortage of crucial supplies risks becoming recurring crisis for auto industry



AUTOS

## How Covid led to a \$60 billion global chip shortage for the auto industry

PUBLISHED THU, FEB 11 2021 7:17 AM EST

Automotive News

February 26, 2021 09:24 AM

## Hyundai bought chips when rivals didn't; its assembly lines are still rolling

Auto News / Latest Auto News / Auto Components

## Chip shortages could slow automotive production, VW and suppliers say

German auto suppliers Continental, Bosch and Volkswagen, the world's largest carmaker, warned about the shortage of semiconductor components.

December 07, 2020, 08:19 IST



< Automotive Research & Analysis

16 February 2021 | Mark Fulthorpe | Phil Amsrud



## Semiconductor shortage update: Nearly one million vehicles delayed

## Semiconductor Stocks Appear Set to Head Higher



By CASEY MURPHY | Updated Feb 2, 2021

AUTOS JANUARY 25, 2021 / 4:47 AM / UPDATED A MONTH AGO



## Exclusive: Taiwan ministry says TSMC will prioritise auto chips if possible

## Why We're in the Midst of a Global Semiconductor Shortage

by Bindiya Vakil and Tom Linton

February 26, 2021



## Is Taiwan a Ticking Time Bomb in the Semiconductor Supply Chain?

The overwhelming reliance on Taiwan for critical supply elements creates a combustible situation for the global economy.

By Kevin Curran  
February 27, 2021



Automotive News

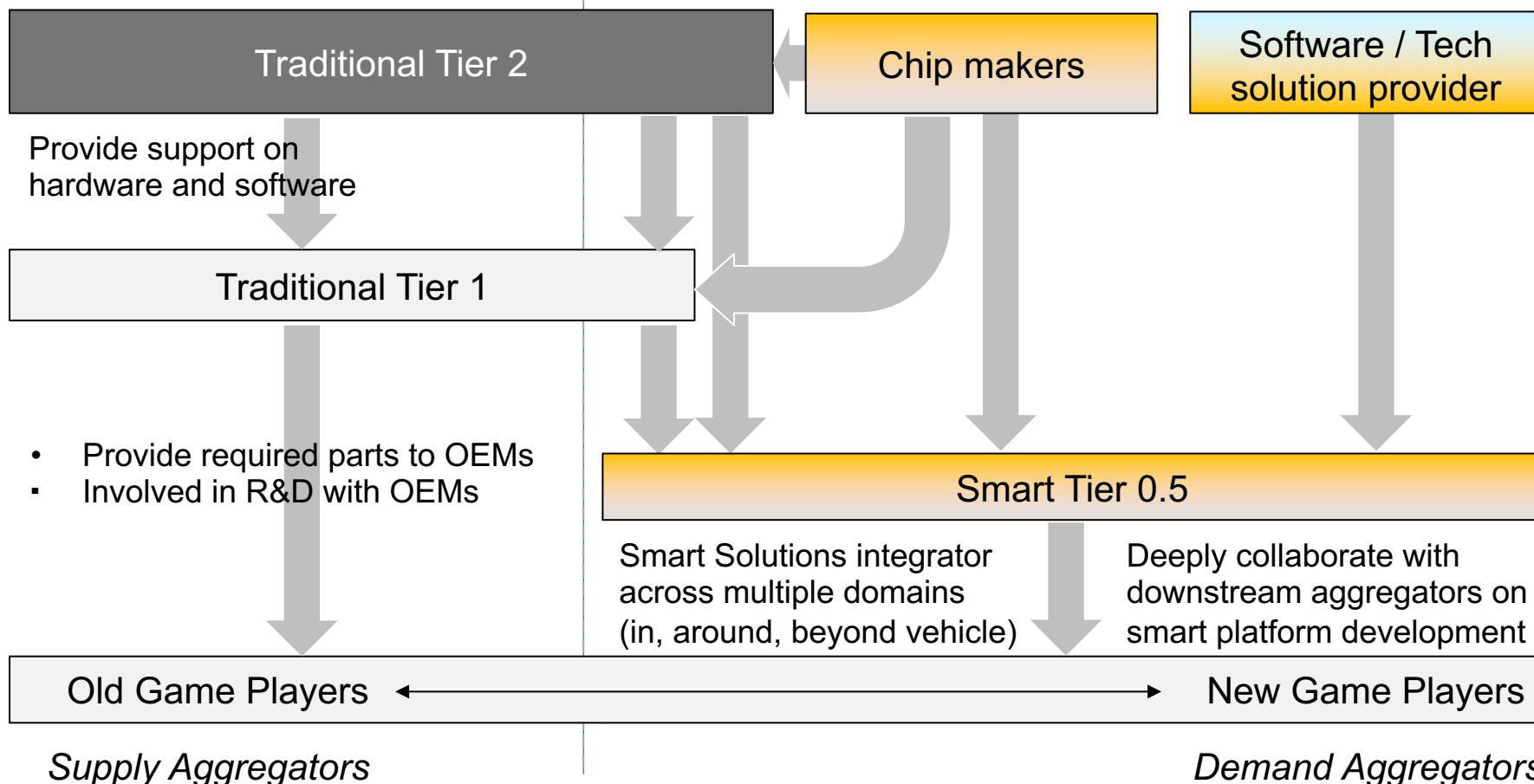
March 03, 2021 09:40 AM

## GM extends vehicle production cuts due to chip shortage

# The Traditional Automotive supply chain is facing disruption from emerging Tier 0.5 integrators as vehicles get smarter

## Traditional Supply Chain

## Smart Supply Chain



# Non-Traditional Players are Investing Massively in the New Game

NOT EXHAUSTIVE

## “New Game” Players

### Smart EV Makers



**XPeng Signs Agreement for Zhaoqing Smart EV Manufacturing Base Phase Two Expansion Project, Boosting Annual Design Production Capacity from 100,000 to 200,000 Units**

- XPeng today kicks off Phase Two expansion project for Zhaoqing Smart EV
- Planned annual production capacity for Zhaoqing Base to reach 200,000 units

**NIO begins ES8 test drives in Norway**

**Tesla expands legal, external relations workforce in China**

### Smart Device Makers

SKYWORTH 创维



**Xiaomi officially registers its electric vehicle company, co-founder Lei Jun announces**

MARCIA SEKHOSE | SEP 1, 2021, 11

**Apple reportedly in talks with car maker Toyota for its car production**

IAN S | SEP 3, 2021, 11:58 IST

### Tier 0.5 suppliers

- Traditional companies expand coverage to digital solutions



ECARX

**Chinese smart car supplier Banma raises \$460 million from Alibaba, SAIC Motor, others**

Fargo, ND, USA / The Mighty 790 KFGO | KFGO  
Thomson Reuters  
Jul 14, 2021 | 2:59 AM

**Alibaba-backed Banma, GAC NIO to team up on in-car mini programs, voice interaction**

Monika From Gasgoo | November 23, 2020



TECHNOLOGY NEWS | MARCH 23, 2021 / 6:14 PM / UPDATED 5 MONTHS AGO

**Volvo Cars to launch joint venture with ECARX to develop smart car software systems**

By Reuters Staff

**Geely's New SUV to Include Smart Cockpit System Developed Partly by Ecarx**

By Ding Yi / Jun 24, 2021 07:05 PM / Business & Tech

Source: *Automobility analysis*


# We group the competitive landscape in China into two distinct types and five sub-categories

NOT EXHAUSTIVE

## Hardware Players

**1. Foreign OEMs**


- Successful in the old game (with a driver-centric mindset)
- Slow in response to the new game
- Rich global resources




**2. Local OEMs**

- Followers in the old game
- Agile in the new game
- Support from government


**2a. Central SOEs**



**2b. Local SOEs**



**2c. POEs**



**3. EV Disruptors**

- Hardware innovation
- Vertical integration



## Smart EV/Device Players

**4. Smart EV Makers**

- Digitally-native DNA
- Disruptors and pioneers in the new game



**5. Smart Device Makers**

- Experienced smart device makers getting in the smart EV game



Source: *Automobility analysis*

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# Key facts and technology trends of CES 2022



**Attendees in person** 40,000

**Exhibition venues**

11 (indoor & outdoor)

**Global media** 1,800

**Origins of attendees**

30% outside the US  
representing 119  
countries

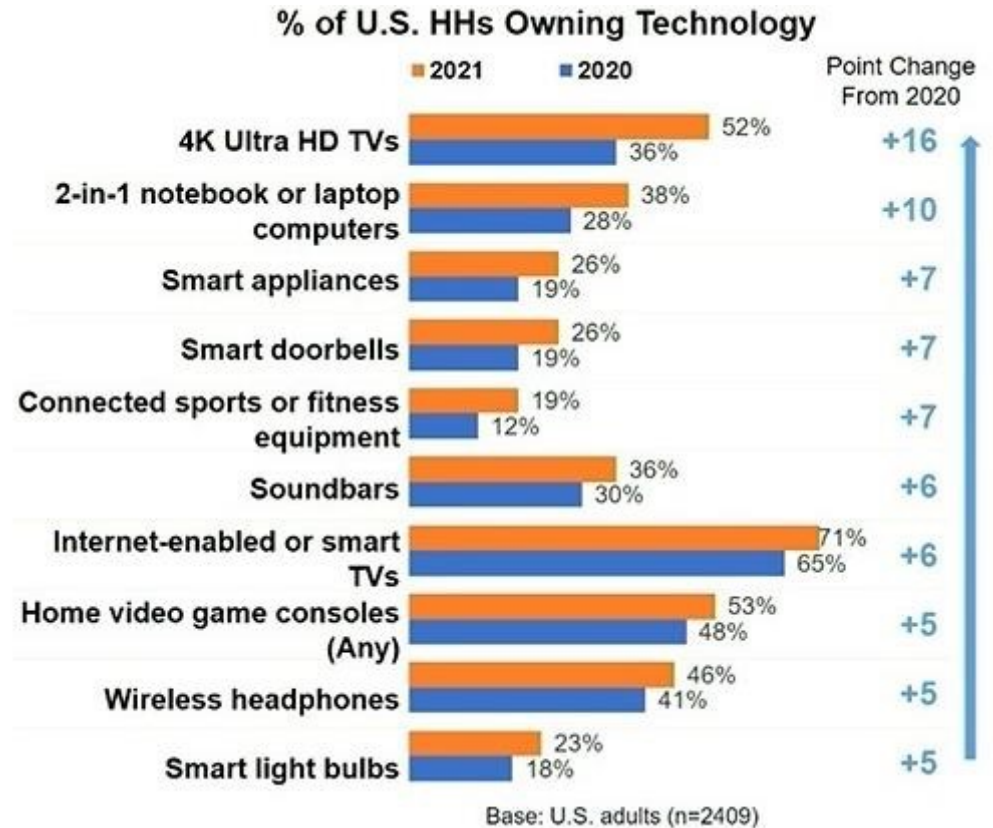
## Technology Trends at CES 2022

The show featured a plethora of exhibitors advancing two of the most compelling technology megatrends of the future: **intelligent automation** and **the evolution of the metaverse**.



Source: Desktop research, Automobility analysis

# Consumers level-up their tech in Covid era



Source: CTA 23<sup>rd</sup> Annual Consumer Technology Ownership & Market Potential Study



# Global high performance chipsets remain the “Gold Standard” in the New Smart Supply Chain



- The tech giant’s **Snapdragon** Digital Chassis offers automakers a platter of cloud-connected “platforms” consisting of systems on a chip (SoC) and software that can be adopted in full or à la carte
- The tech giant’s **Snapdragon** Digital Chassis offers automakers a platter of cloud-connected “platforms” consisting of systems on a chip (SoC) and software that can be adopted in full or à la carte.



- **Nvidia** Drive Orin SoC is a central computer for intelligent vehicles that’s made specifically for autonomous applications



- Intel’s **Mobileye** announced plans to bring a new supercomputer to market designed to give passenger cars, trucks and SUVs autonomous driving powers

Source: Desktop research, Automobility analysis

# Global ADAS/AD integrators are collaborating with high performance chip suppliers to deliver Smart EVs



**gm**  
**ULTRA CRUISE**

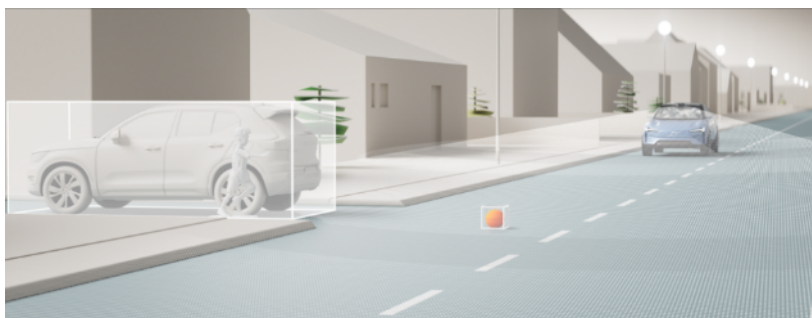
**95%** OF DRIVING SCENARIOS  
on public paved roads in U.S.

**MORE SENSORS**  
than other ADAS

**2 MILLION ROADS**  
in the U.S. & Canada, with 100% of a network paved roads covered over time

- Ultra Cruise Dynamic Display
- Full 360-degree perception
- Sensor Fusion of cameras, radar, & lidar
- Developed by Israel, U.S., Canada & Ireland
- Launching in 2023
- The goal is to cover every public paved road in U.S. & Canada
- Level 2 Advanced Driver Assistance System (ADAS)
- Powered by a 5-nanometer scalable architecture

- GM's new Ultra Cruise hands-free ADAS system will be powered by Qualcomm's Snapdragon SoC
- Ultra Cruise, which is coming to the new electric Cadillac Celestiq in 2023, will rely on sensors like cameras, radar and lidar (not just lidar map data) to feed data to GM's software that will then output decisions



- Volvo's Ride Pilot, shared plans to work with lidar company Luminar and AD software company Zenseact to introduce Ride Pilot as an add-on subscription



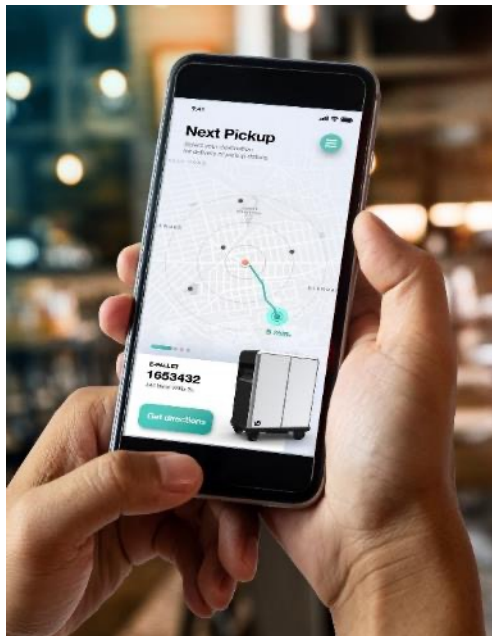
- Baidu and JiDU Automotive announced that JiDU's first production vehicle model will be powered by the NVIDIA DRIVE Orin SoC and Snapdragon Ride Platform

Source: Desktop research, *Automobility analysis*

# GM's BrightDrop represents a pivot toward purpose-built forms and ancillary services



- BrightDrop is a key piece in GM's \$27 pivot towards the future of mobility
- Offering includes 4 models for different last-mile delivery scenarios
- The dedicated electrified pallet and delivery van EV600 has 17 cubic meters of cargo space and a 400km range
- Vehicles feature a mobile fleet management platform that enables customers to track the location of each pallet, remote lock and unlock pallets, monitor battery status, conduct remote diagnostics as well as predictive maintenance
- FedEx and Walmart are among the first large scale customers, ordering over 7,000 vans in total



Source: GM, Automobility analysis

# Hyundai aims at deploying mobility solutions with purpose-built vehicles and deep technology



- Hyundai Mobis introduced two concepts of autonomous pods at CES 2022, both equipped with 90-degree turning wheels fuel cell drives
- Smartphones can be connected via an instrument cluster
- First batch of mobility solution for purpose-built vehicles will be ready for delivery by 2025



- Hyundai is also introducing a Plug & Drive modular platform that enables inanimate objects to become mobile
- A variety of models such as cargo containers and vending machines will enable a “space-on-demand” service
- Hyundai’s joint venture with Aptiv, Motional, will launch an autonomous delivery service by partnering with Uber
- The Robotaxi will be based on the Hyundai IONIQ 5 model



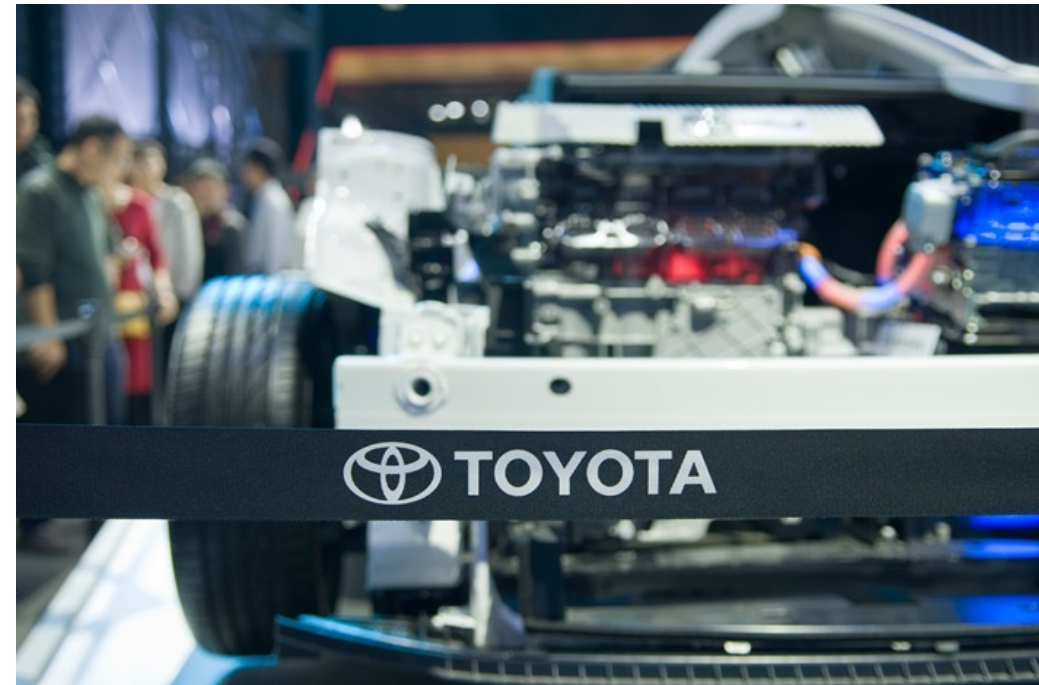
- Hyundai sends Boston Dynamics' Spot robot into the metaverse

Source: Hyundai, Automobility analysis

# Toyota is launching its own operating system to set the standards for the next generation vehicle software



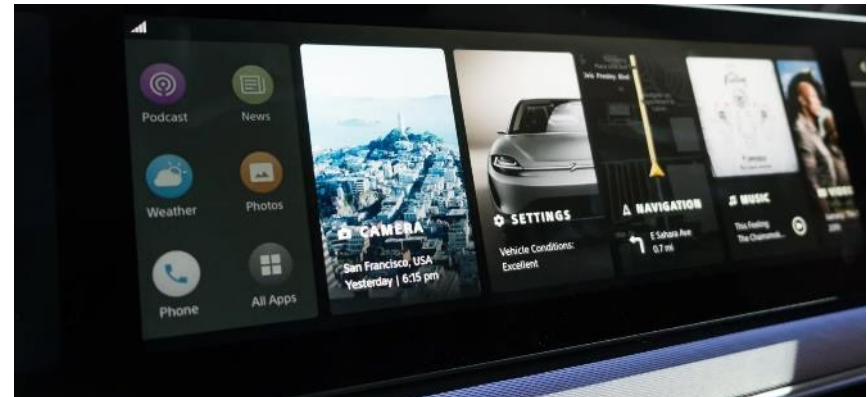
- The software platform Arene will be launched by 2025 and will be capable of handling basic vehicle functions as well as advanced applications like autonomous driving
- Toyota envisions services from a variety of businesses being added to a car as easily as downloading smartphone apps
- The company is considering monetizing the system through a licensing model
- Potential customers are Toyota's subsidiaries such as Subaru and other OEM and tech companies
- Toyota is competing with Tesla, VW, Daimler and GM who are all owning proprietary operating systems
- The company is lifting the share of software specialists up to 50% in its hires of engineering workforce
- Electronics and software is expected to account for 50% of a vehicle's cost in 2030



# Sony is entering the mobility space by establishing an electric car subsidiary

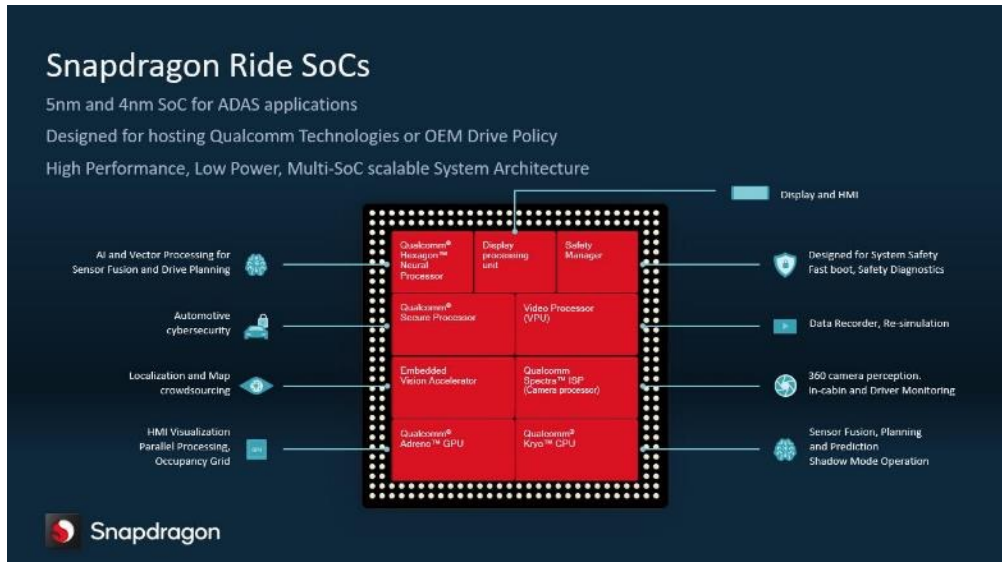
## SONY

- “Sony Mobility Inc.” will develop and produce a smart electric SUV
- AI and robotics will be heavily featured in the vehicle
- 5G-connected vehicle cabins are designed to become highly personalized entertainment spaces
- Passengers will be able to play video games on the go while connected to their PlayStation consoles at home
- Vehicles will serve as devices for Sony to capture recurring revenues through their entertainment offerings
- Hardware such as sensors, cameras and audio-equipment will be sourced from Sony’s own electronics portfolio



Source: Sony, *Automobility analysis*

# Qualcomm identified autonomous vehicles as a key growth area for its chip platform



- The company's Snapdragon Ride Platform modular software stack is designed to enable next generation ADAS and AD driving systems
- Will be in vehicle production in 2024
- Extensive partnerships signed with OEMs, including BMW, Volvo, Renault and Honda
- Platform also enables Digital Cockpit services, enabling OEMs to customize the in-car experience to customers' needs



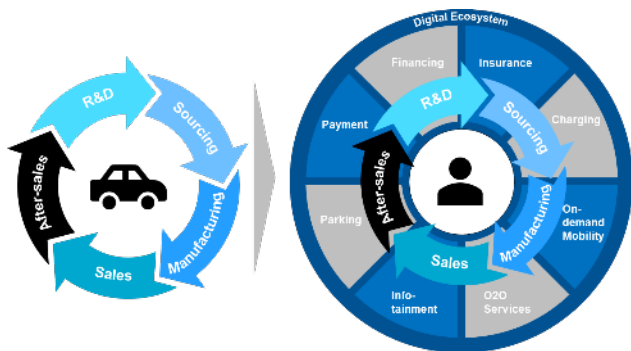
- Qualcomm's goal is to repeat its success in accelerating 5G and smartphone technology through strategic partnerships
- The company is actively seeking partnerships with automakers who understand the automotive industry's digital revolution
- In parallel, it is cooperating with tech companies such as **Arriver**, **Desay SV** and **Alps Alpine** to spark innovation

Source: Qualcomm, Automobility analysis

# A different mindset is required to compete in the “New Game”

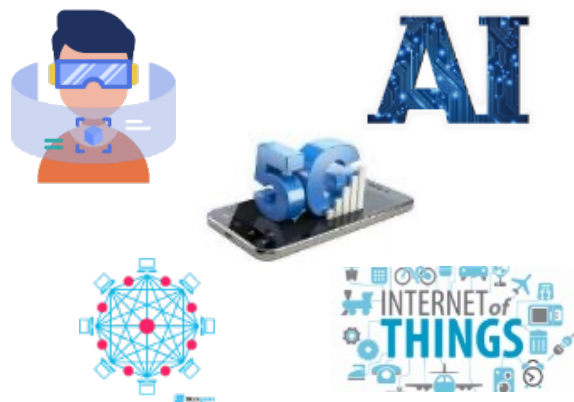
## Design Orientation – from Driver to User Centric

- Traditional for drivers (owner-centric)
- Purpose-built forms (user-centric)



## The Battleground has Shifted from Physical to Digital Sphere

- HMI: New forms of machine interaction via voice assistants and AR/VR
- Communications standards: C-V2X (vs. DSRC) will become favored due to its compatibility
- Metaverse: Alluring digital players into the EV battleground



## Collaborative Ecosystems to Build Full Stack IoM Solutions





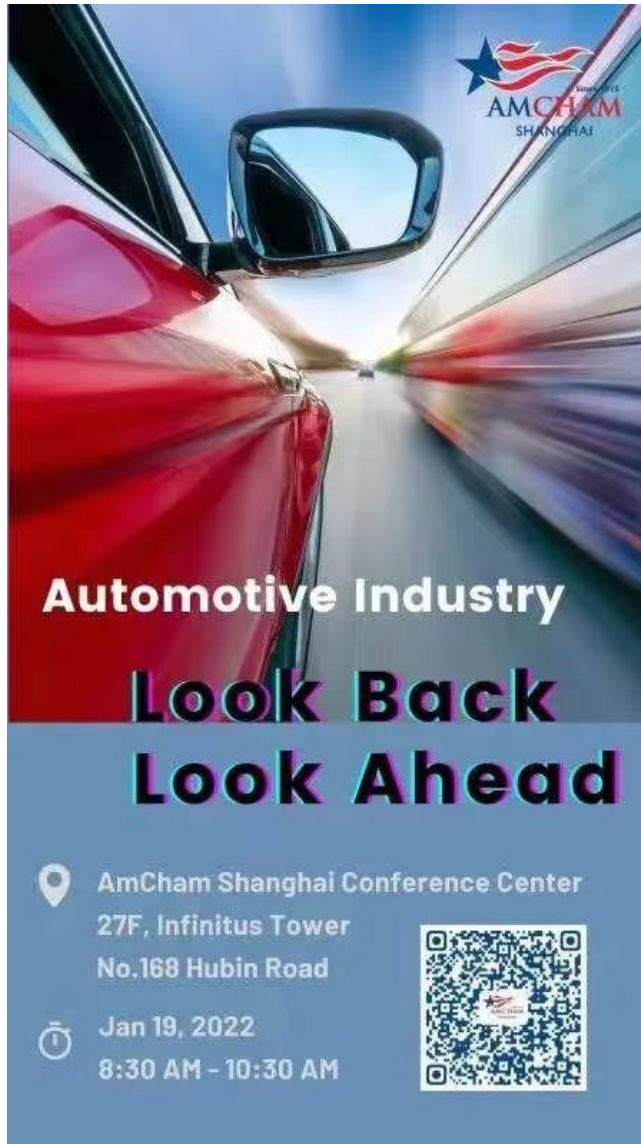
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A Look Back: China Auto Industry Status in 2021

Competitive Landscape in the New Game

A Look Ahead: CES 2022 Highlights

**Panel Discussion**


The poster features a dynamic, low-angle shot of a red car's side mirror and body, with a blurred background suggesting high speed. The AMCHAM SHANGHAI logo is in the top right corner. The main title 'Automotive Industry' is in white, and 'Look Back Look Ahead' is in large, bold, black letters with a blue shadow effect. Event details and a QR code are at the bottom.

**Automotive Industry**

**Look Back  
Look Ahead**

AmCham Shanghai Conference Center  
27F, Infinitus Tower  
No.168 Hubin Road

Jan 19, 2022  
8:30 AM - 10:30 AM



## PANEL DISCUSSION

### KEY QUESTIONS for 2022 & BEYOND

- **Can Chinese electric carmakers position themselves as premium brands** for Chinese consumers in the smart EV era? If so, what does this mean for the global carmakers?
- **Can Chinese brands hold their gains** as multi-national carmakers enter the EV game in China?
- **Should multi-nationals restructure their businesses in China** in the EV era, now that they can own more shares? **Does this even make sense** as the market preference shifts to digital and user-centric services?
- **Can Chinese carmakers translate their EV relevance and value propositions to become globally successful brands in other markets**, especially in Europe and the US?
- What will be the **headwinds and tailwinds pushing the market to 6M NEVs** in 2022?

# PANEL DISCUSSION

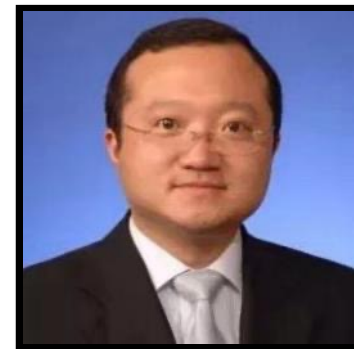
## KEY QUESTIONS FOR 2022 & BEYOND



**Moderator**  
**Bill Russo**  
Founder & CEO,  
Automobility Ltd.



**Panelist**  
**Lei Xing**  
Co-Host at  
China EVs & More



**Panelist**  
**Yu Zhang**  
Managing Director,  
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