

Future of the Mobility and Automotive Industry

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The data included in this document is accurate according to Passport, Euromonitor International's market research database, at time of publication: April 2021

OVERVIEW

Shared mobility

Electric and alternative fuel mobility

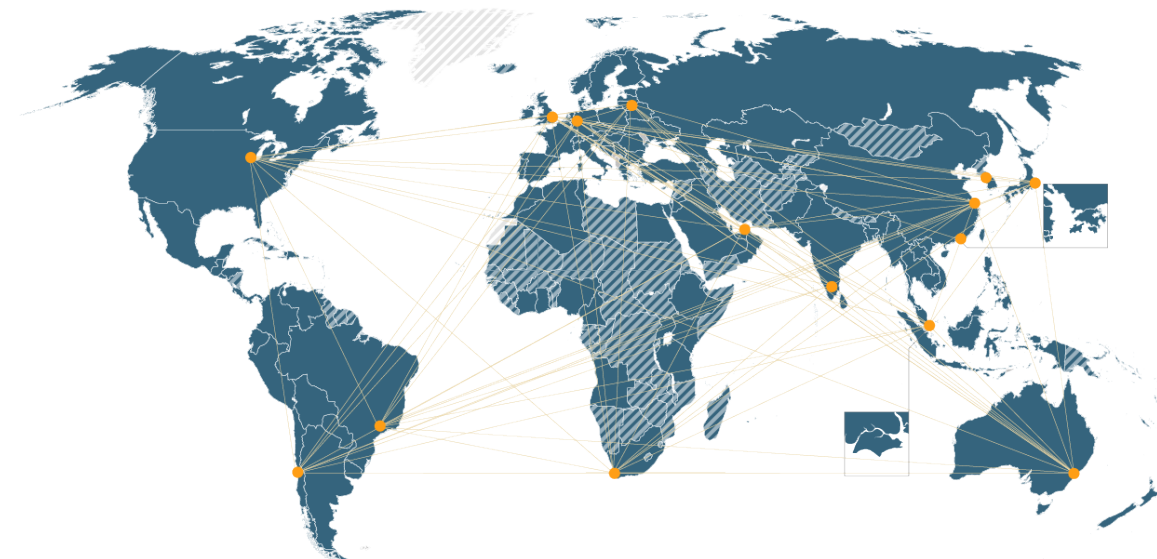
Connected cars

Autonomous vehicles

Online sales



Euromonitor International network and coverage



● **15 OFFICE LOCATIONS**

London, Chicago, Singapore, Shanghai, Vilnius, Santiago, Dubai, Cape Town, Tokyo, Sydney, Bangalore, São Paulo, Hong Kong, Seoul and Düsseldorf

■ **100 COUNTRIES**

in-depth analysis on consumer goods and service industries

■ + ▨ **210 COUNTRIES AND TERRITORIES**

demographic, macro- and socio-economic data on consumers and economies



1

Shared mobility

What is shared mobility?

Shared mobility is a transportation system where people share a vehicle either simultaneously as a group or over time as personal rental.

Urbanisation

- Between 2020-2040, urban populations will grow by 33% while the rural population will decline by 2.7%
- Improve mobility choice for the growing number of urbanites

Congestion

- Global car traffic volume has surged by 69% over 2000-2020
- More non-car based alternatives to reduce car traffic

Sustainability

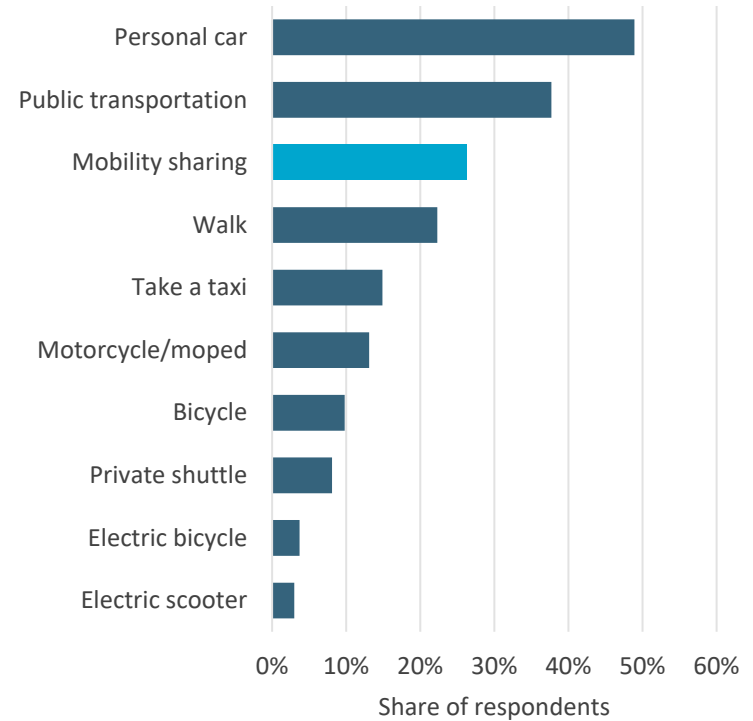
- In 2020, transport accounted for 22% of carbon emissions arising from the burning and flaring of fossil fuels
- Need cleaner alternatives to getting around in cities

Over a quarter of commuters use shared mobility

- In 2021, over a quarter of global respondents reported using shared mobility services to commute
- Only personal car use and public transportation are more popular than mobility sharing

Q: Which of the following do you use when commuting?

Global Respondents' Typical Mode of Commute, 2021



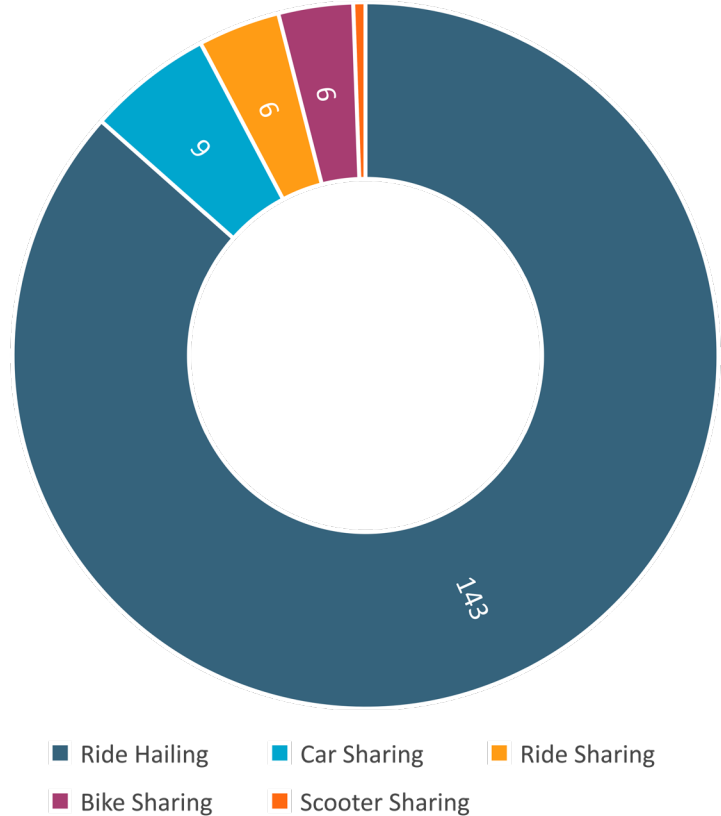
Note: mobility sharing in this graph is composed of ride-hailing, car sharing and ride-sharing

Source: Euromonitor's 2021 Mobility Survey

Ride-hailing accounts for 87% of the shared mobility market

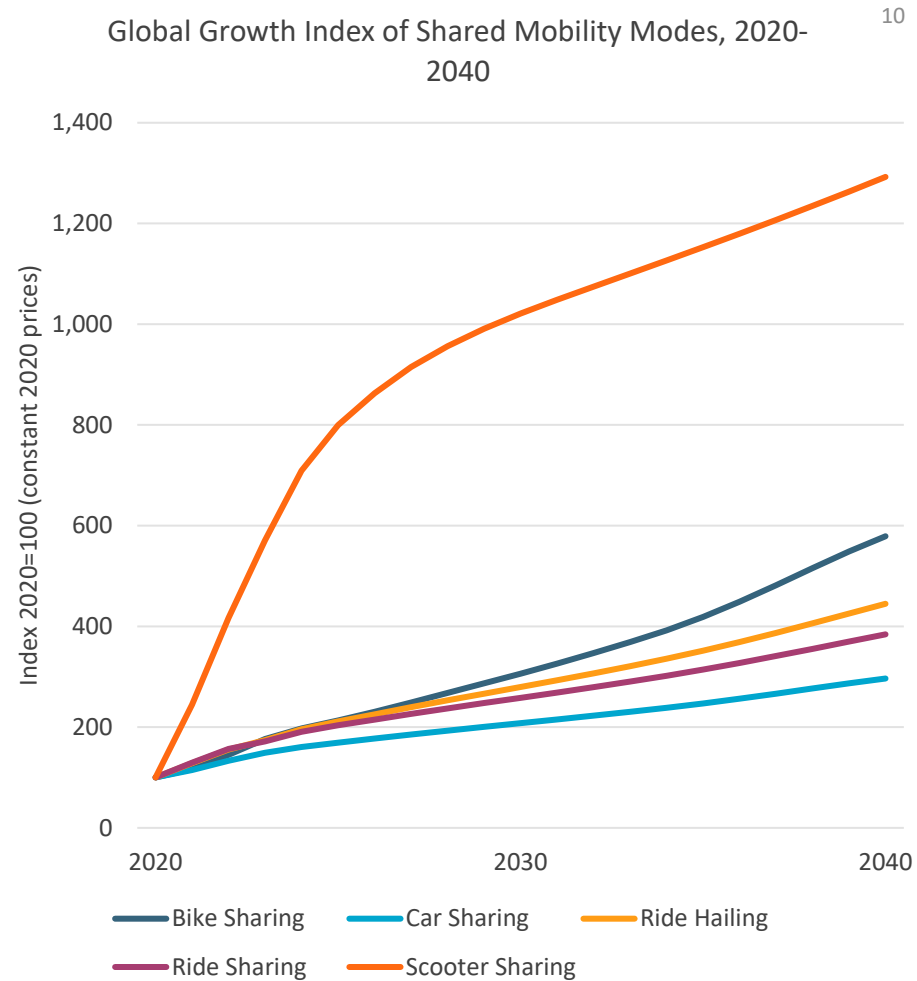
- Ride hailing is the most popular shared mobility mode. In 2020 it accounted for 87% or USD143 billion in gross bookings
- The ride-hailing industry is dominated by major players such as Uber, Lyft, Didi Chuxing and Grab

Shared Mobility Gross Bookings by Type, 2020



...but Shared Micro-mobility to see faster growth

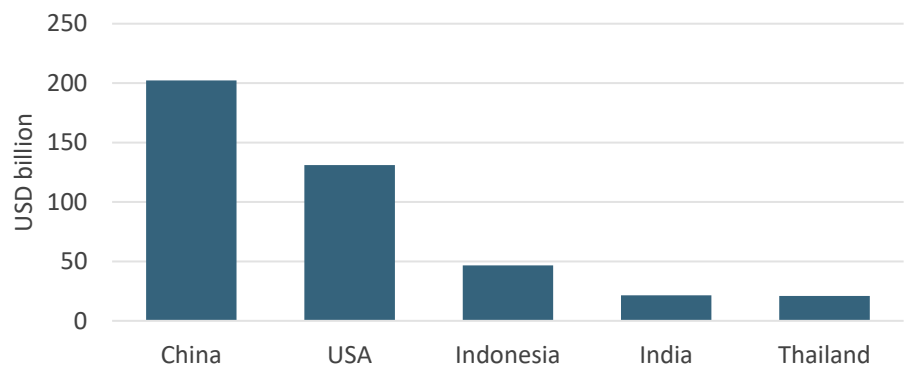
- Electric scooter sharing's gross bookings will rise 13-fold over 2020-2040 while bike sharing will grow 5-fold
- Car sharing to show the slowest growth with gross bookings rising 3-fold over 2020-2040



4 out of 5 largest shared mobility markets will be developing in 2040

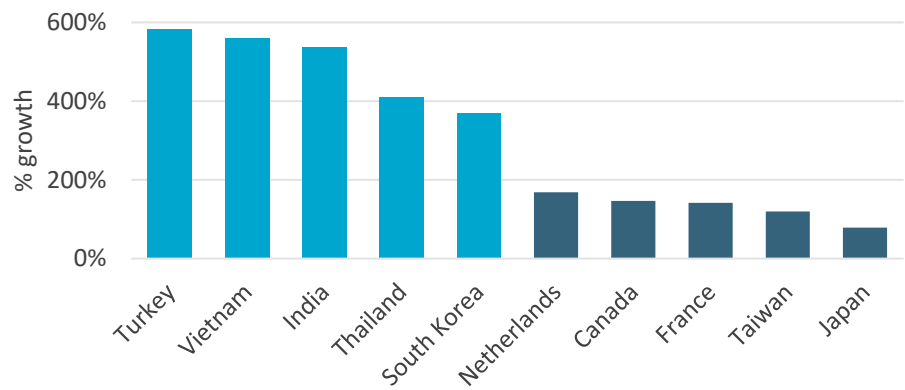
- In 2040, 4 of the 5 largest shared mobility markets will be developing
- Some of the best performing markets will be Turkey, Vietnam and India will experience the fastest growth in shared mobility gross bookings

Top 5 Largest Shared Mobility Markets, 2040



Source: Trade Sources and National Statistics

Top and Bottom 5 Markets for Shared Mobility Gross Bookings Growth, 2020-2040

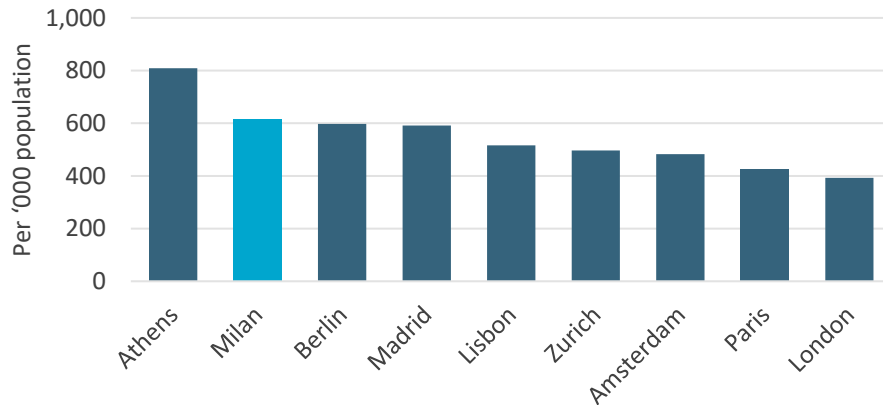


Source: Euromonitor from Trade Sources and National Statistics

Case study: Milan and Vianova

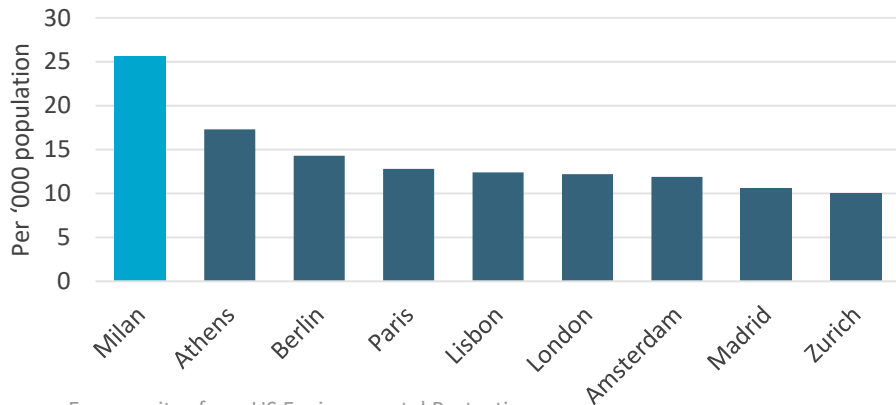
- The city of Milan and the data and tech firm Vianova are teaming up to improve shared mobility services by better integrating it into the wider transport system
- Vianova will be partnering with the likes of Cityscoot, VOI, Lime and Share Now to broaden the city's micro-mobility offering

Passenger Cars Per '000 in Select Cities, 2020



Source: Euromonitor International from European Automobile Manufacturers' Association (ACEA)/International Road Federation (IRF)/Eurostat/national statistics

PM2.5 Annual Mean Conc. in Select Cities, 2017



Source: Euromonitor from US Environmental Protection Agency/European Environmental Agency/national statistics



2

Electric and alternative fuel mobility

What is electric and alternative fuel mobility?

Electric and alternative fuel mobility refers cars running fully or partially on alternative fuels such as electricity and hydrogen.

Sustainability

- CO2 emissions from transport grew by 33% over 2000-2020
- Electric cars can reduce CO2 emissions in cities, especially if the electricity is derived from renewable sources.

Affordability

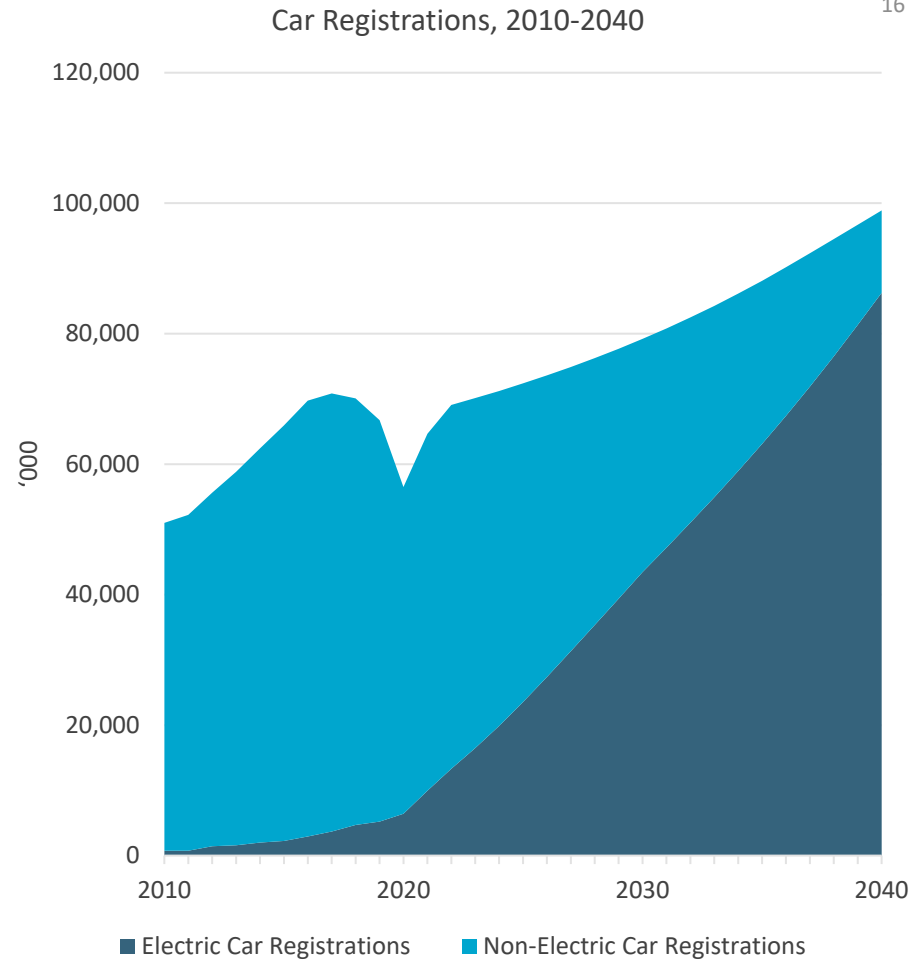
- Between 2010-2020, lithium-ion pack prices fell from USD1,100/KWh to USD137/KWh
- More competition in the market is helping to reduce electric car prices

Restrictions

- In 2020, 98% of all new passenger car registrations were either diesel or petrol
- More restrictions placed on diesel and petrol cars in cities is incentivising people to make the transition

Nearly 9 in 10 new car registrations to be electric by 2040

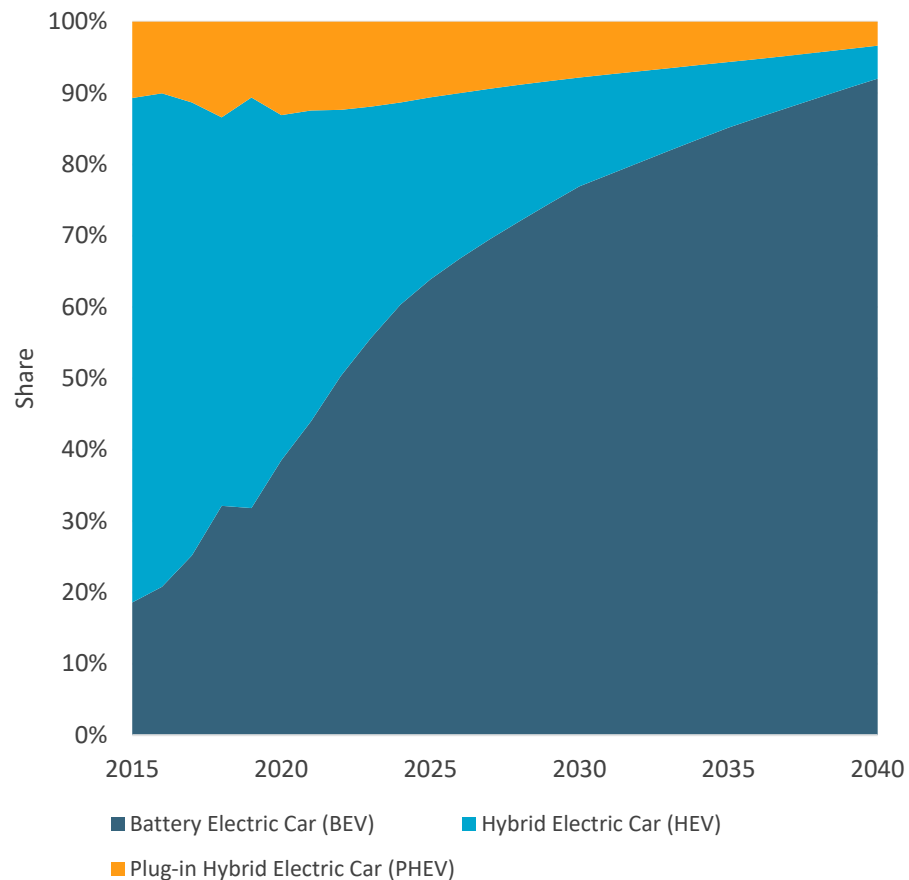
- In 2020, just 1.3% of all new vehicle registrations were electric across 45 major markets
- By 2040, 90% of all new vehicle registrations will be electric



90% of all new electric car registrations will be BEVs in 2040

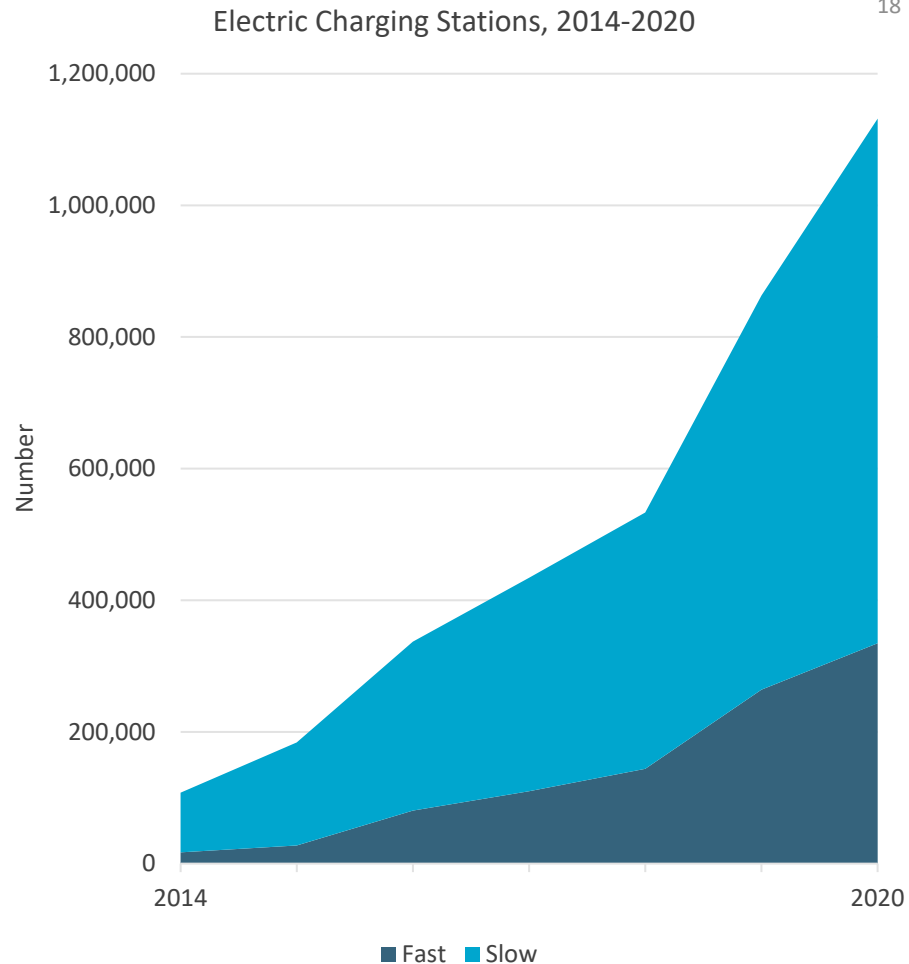
- Battery electric vehicles (BEVs) will be the fastest growing category among electric vehicles
- While only making up less than 20% of all electric car registration in 2015, by 2040, BEVs will account for 90% of all electric car registrations

New Electric Vehicle Registration Growth by Type Across 45 Countries, 2020-2040



Only 3 in 10 stations provide fast charging

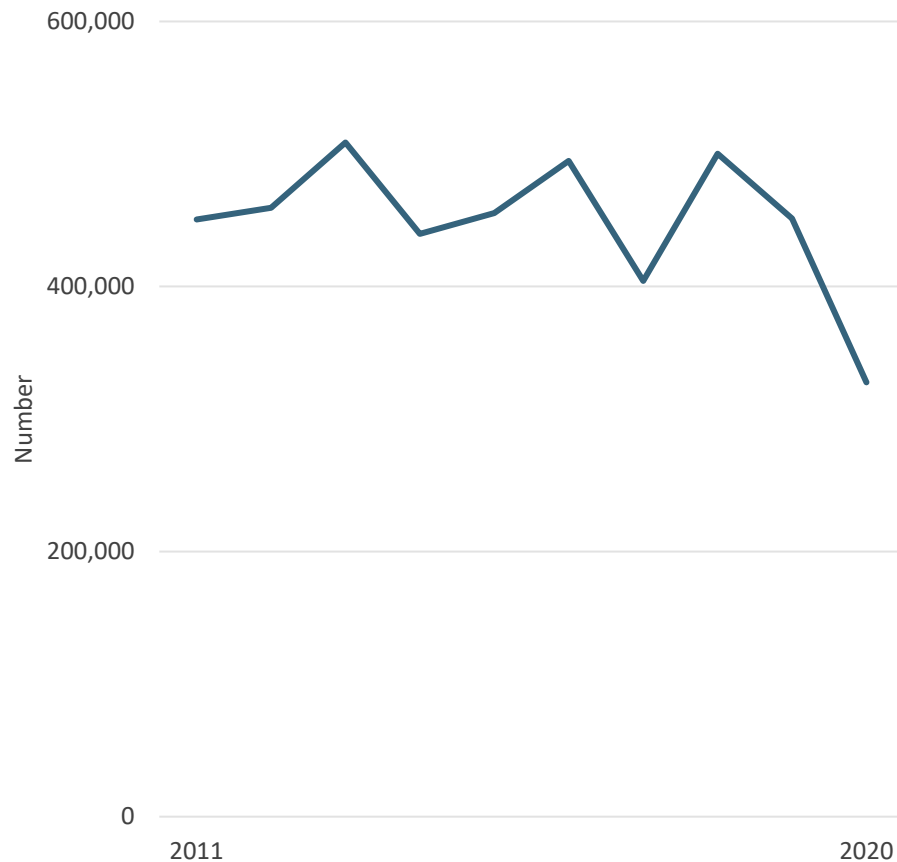
- In 2020, only 30% of electric charging stations were fast (charging speed of more than 22kW)
- Charging station availability will influence the future electric car adoption by consumers and businesses



Case study: BYD

- BYD is aiming to delve into the low to mid market and take advantage of state subsidies for vehicles under 300,000 yuan
- In 2021 BYD introduced 'Blade Batteries', a new breakthrough that makes traditional Lithium ion phosphate batteries safer and able to handle higher energy densities

BYD's World Passenger Car Sales, 2011-2020



3

Connected cars



What are connected cars?

Connected vehicles embodies a field of technology that allows vehicles to communicate with each other and the wider environment via the internet.

Internet

- Between 2000-2020 the number of internet users grew to 1024% to 4.1 billion
- Internet access underpins the rollout of connected cars

Technology

- In 2020, 76% of the world's households possessed a smartphone
- Consumers are becoming more tech-savvy and are demanding more connectivity solutions in the car

Regulations

- Government mandates and regulations are pushing the car industry to incorporate more safety features
- E-call and Electronic Stability Control are examples of government mandates for greater safety

Low-mid market

Increasing penetration of connected car solutions in the low to mid market segment

Partnerships

More partnerships between tech and automakers to take advantage of synergies

ADAS

A greater push for more safety will make advanced driving assistance even more important

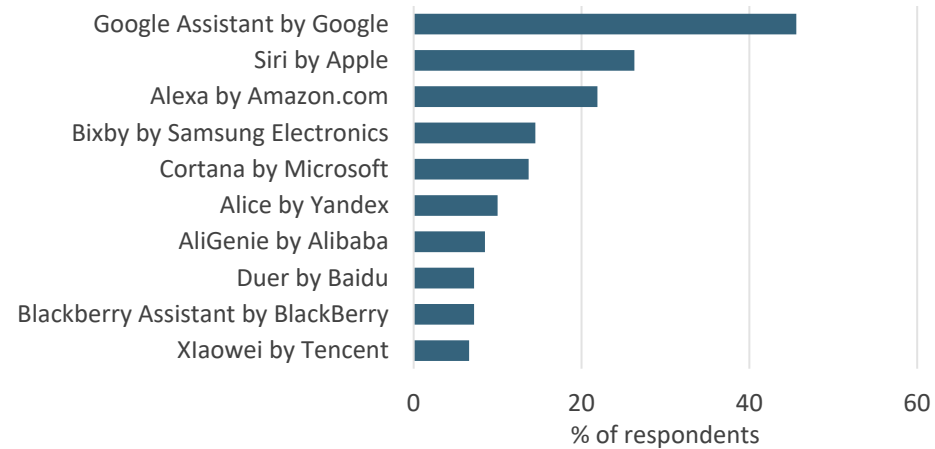
Insurance policies

Telematics data can be used to provide more data on driving habits which can then be used for personalised insurance policies

Case study: Ford and Google

- In 2021, Ford and Google formed a 6-year alliance, starting in 2023 which will see all Ford and Lincoln vehicle being equipped with Android Google apps and services built in
- The two firms will create a collaborative group, Team Upshift which will be developing projects based on new retail experiences

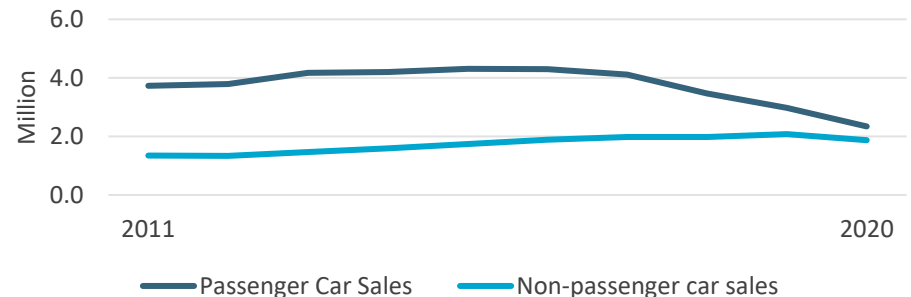
Global Respondents' Use of Virtual Assistant Platforms, 2020



Q: Which of the following virtual assistant platforms do you use? Select all that apply.

Source: Euromonitor International Digital Consumer Survey

Ford Sales by Vehicle Type, 2011-2020



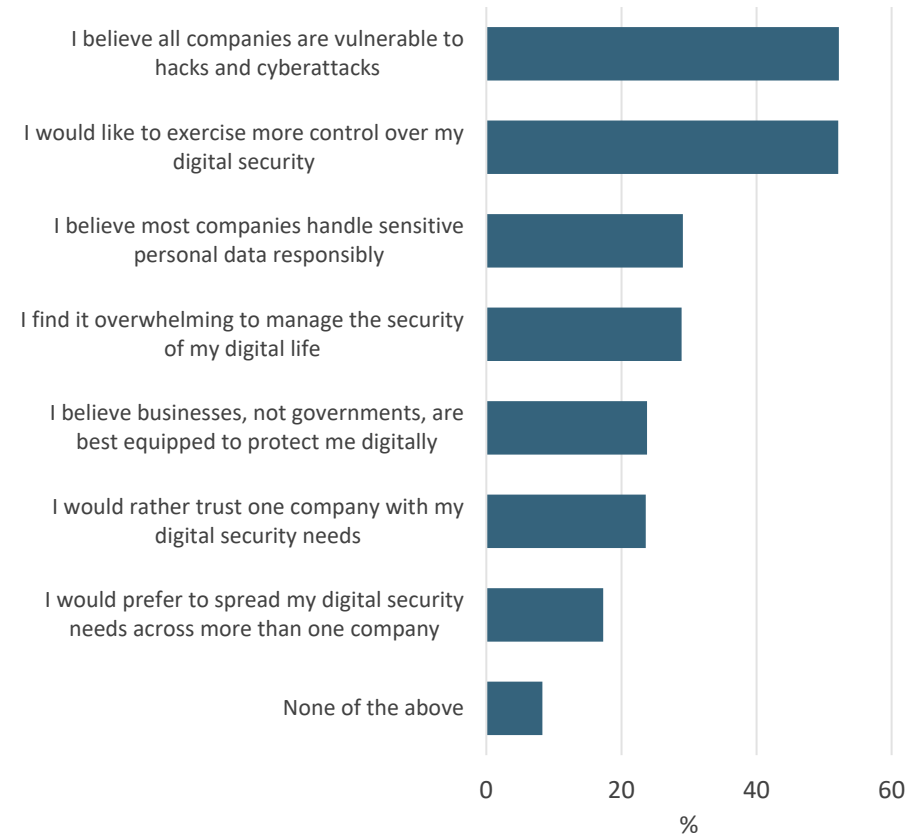
Source: Euromonitor from Trade Sources and National Statistics

Q: Please select all statements that best fit your beliefs related to digital security. N=20,203

52% feel companies are vulnerable to cyber attacks

- Companies will need to improve virus security if people are to have greater confidence in connected car technologies
- 52% of global respondents as according to Euromonitor's mobility survey feel companies are vulnerable to cyberattacks

Attitudes and Perceptions to Cyber Security, 2020



Q: Please select all statements that best fit your beliefs related to digital data and personal information N=20,203

Attitudes and Perceptions to Data Privacy, 2020



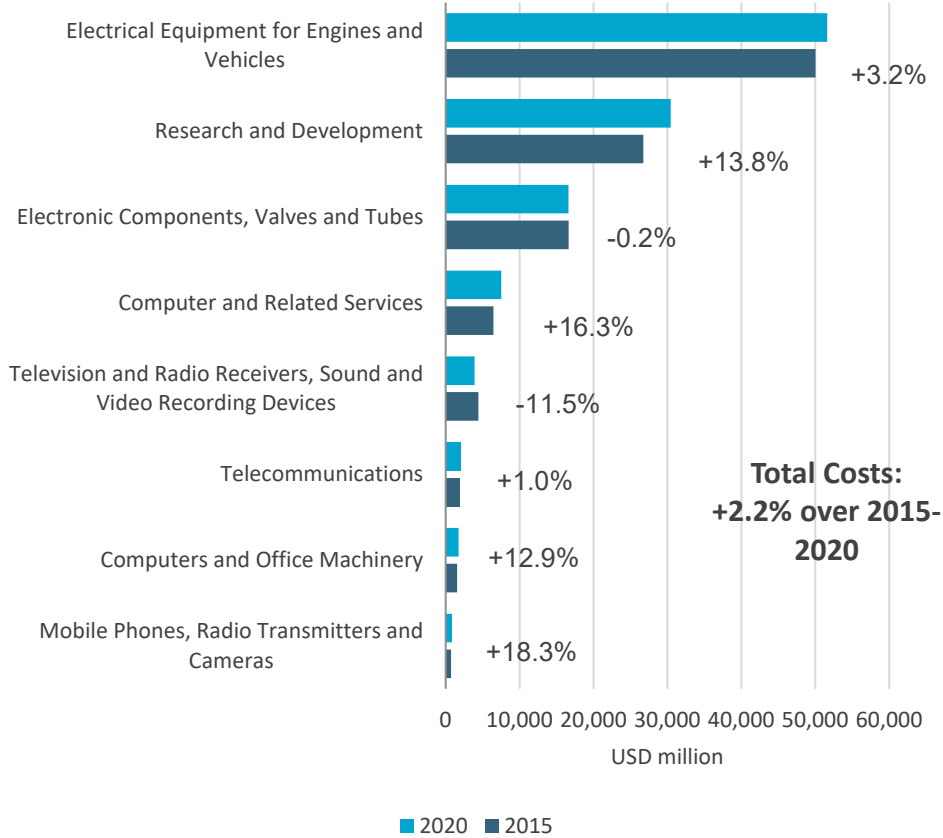
55% are concerned about data being sold to third-parties

- Data privacy is important to users who may feel sensitive data may be passed on to third parties
- Around 55% of global respondents feel that personal data should not be sold to third parties

Connected cars to transform automotive industry's supply chain

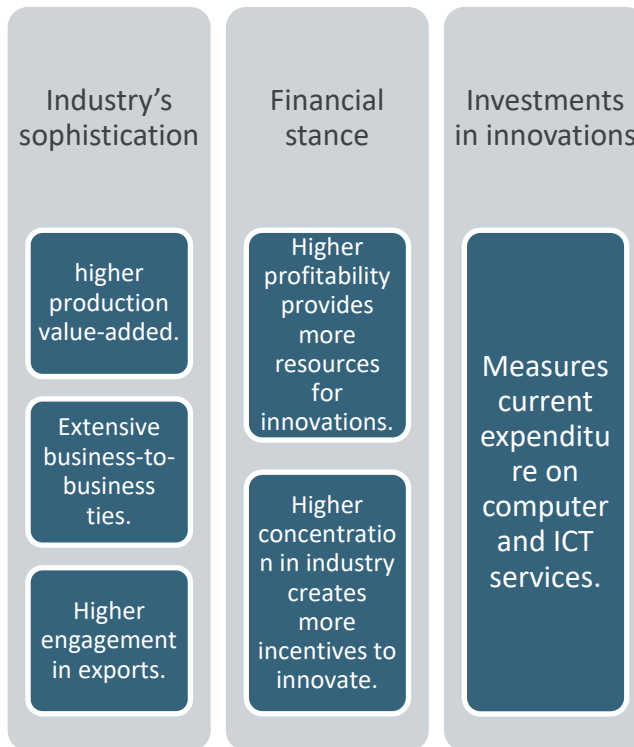
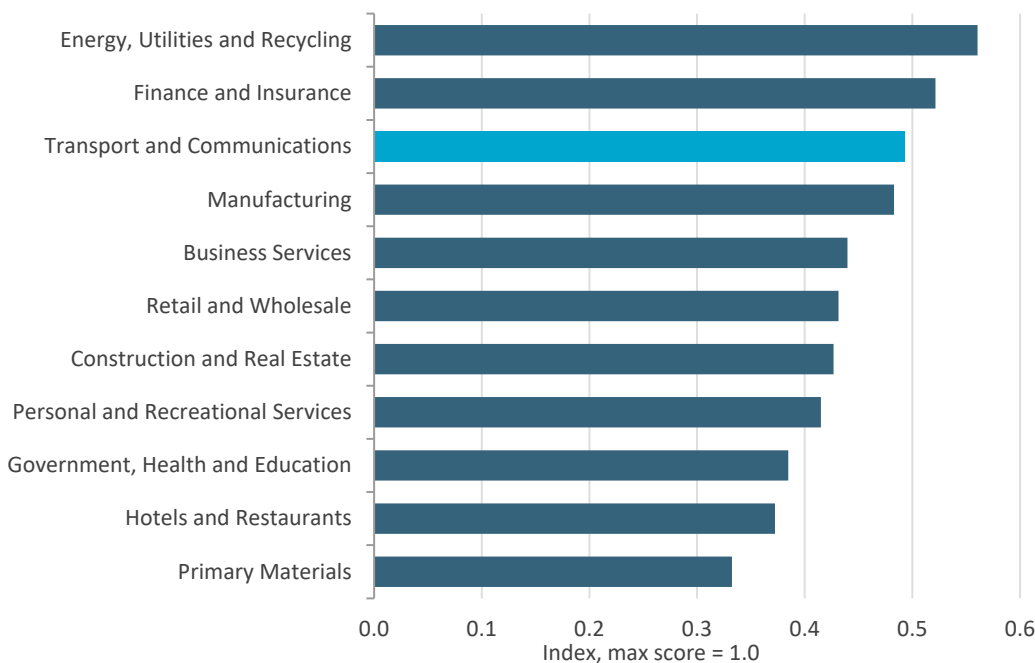
- Stricter safety standards drive expenditure on electronic components
- Connected cars will transform supply chains
- Telecommunication and cloud computing services providers will benefit

Automotive Industry's Costs in Selected Categories, 2015-2020

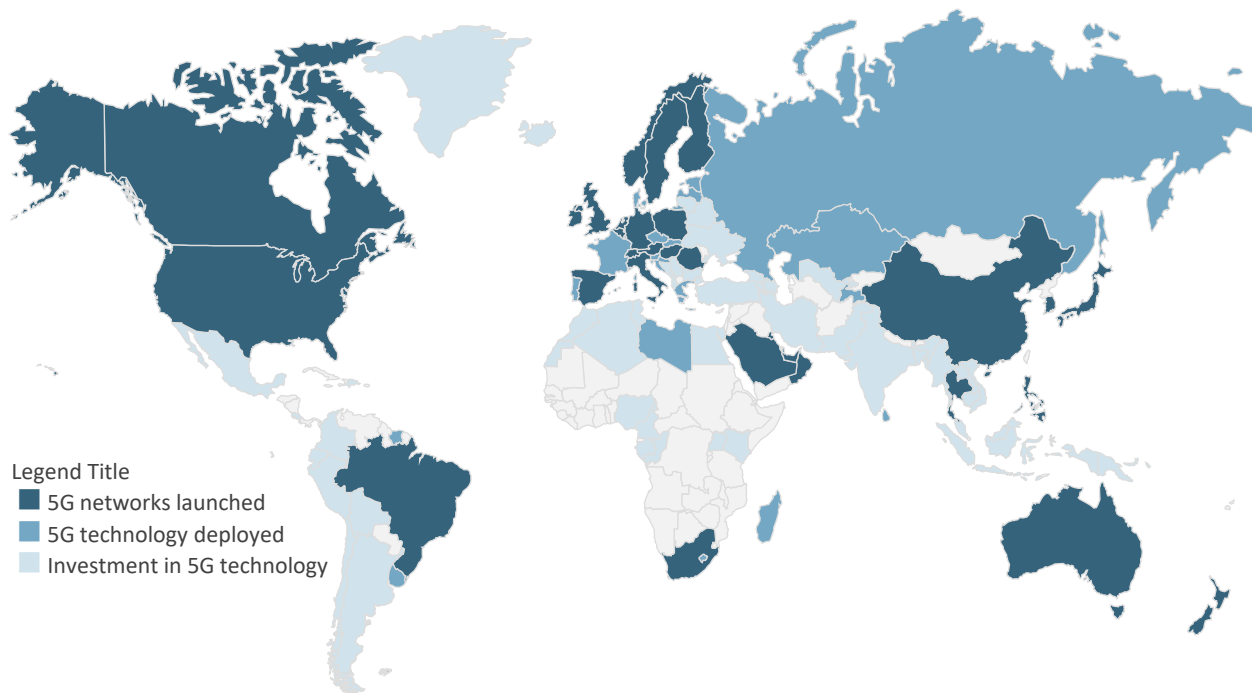


5G internet will be crucial for connected cars

Best Positioned Sectors to Adopt Internet of Things Solutions



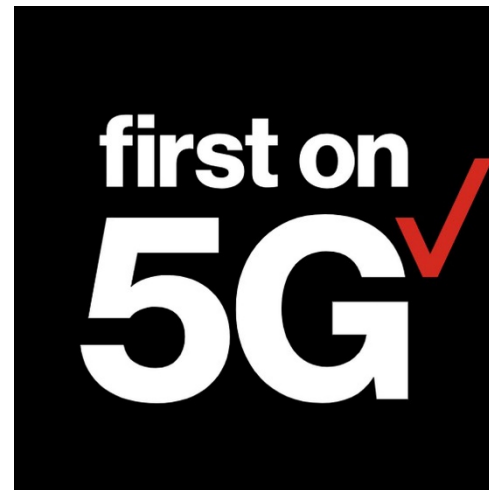
Countries with 5G internet



Source: Global Mobile Suppliers Association

Case study: Verizon and Amazon

- In November 2020 LG, together with startups Renovo and Savari, started testing connected vehicles in multiple US cities
- The technology was based on Verizon's 5G network, which was used to transfer data from cars to servers
- Amazon's AWS service was applied to help store and analyse the data flows



Source: Verizon



Source: Amazon AWS

4

Autonomous vehicles



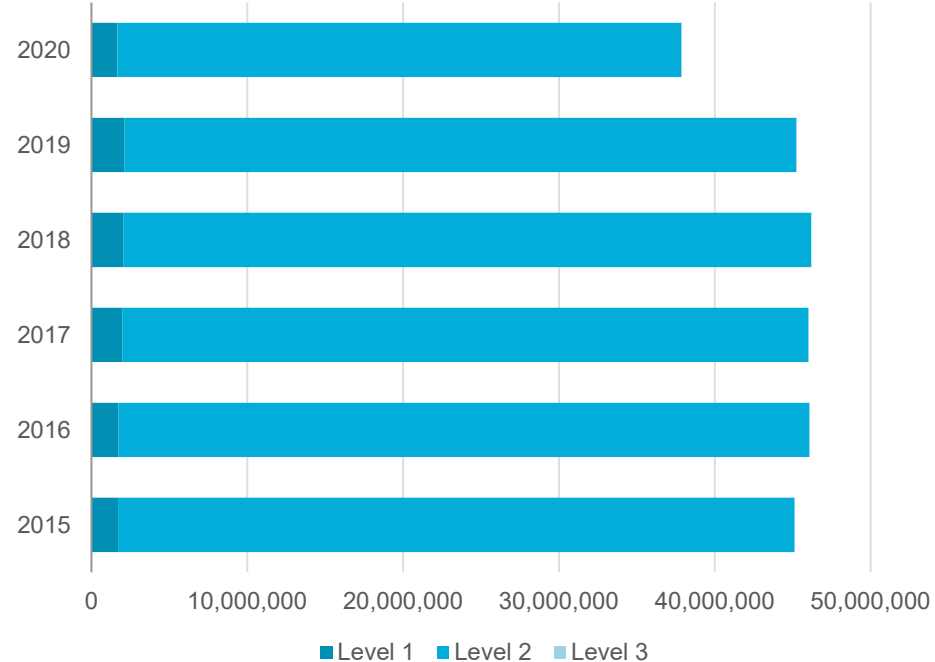
What are autonomous vehicles?

Autonomous vehicles are vehicles capable of sensing environment and operating without human intervention.

60% of new cars had semi-autonomous driving equipment

- Majority of cars have Level 2 autonomous equipment
- Emerging markets drive demand for Level 1 equipment
- Penetration of more advanced Level 3 technologies remains limited

Global Semi-autonomous Passenger Car Sales, 2015-2020



Source: Marklines.com

Level 1: The system assists with either acceleration/deceleration or steering operations.

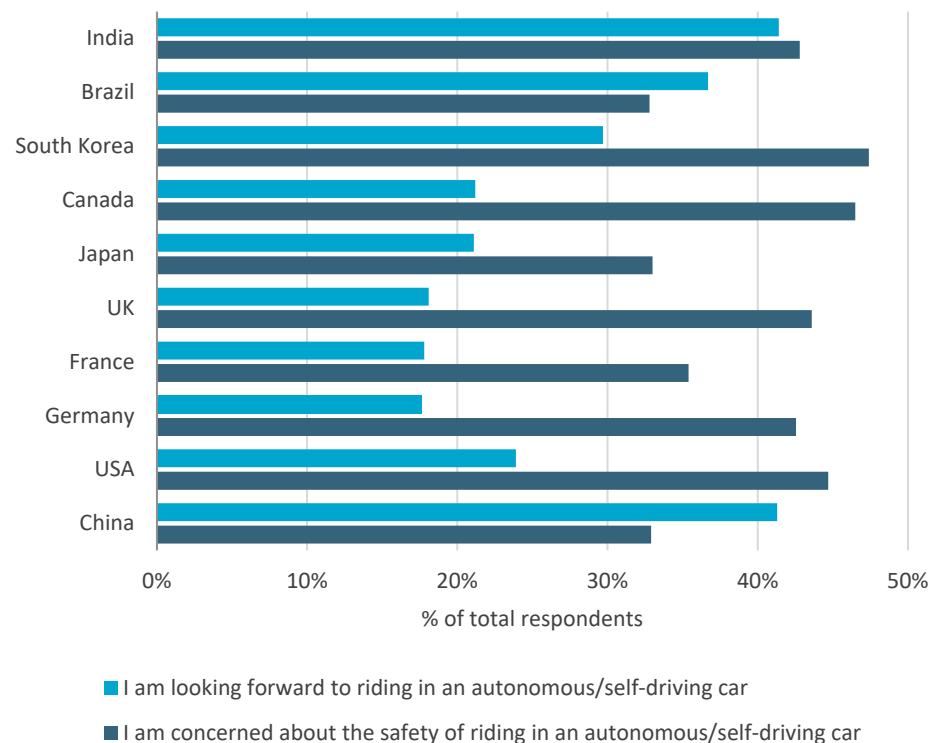
Level 2: The system assists with both acceleration/deceleration and steering operations.

Level 3: Under specific circumstances and when parking, the system automatically controls acceleration/deceleration and steering operations.

Consumers are open to autonomous vehicles, but safety concerns need to be addressed

- 31% of consumers globally want to drive autonomous vehicle
- Younger generation is more willing to drive autonomous vehicles
- Consumers in emerging markets are more willing to drive autonomous vehicles

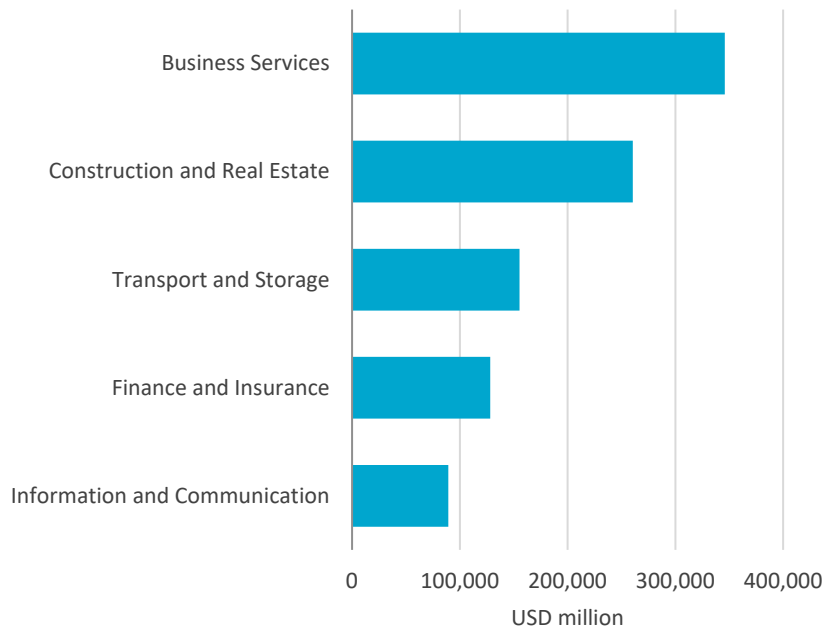
Consumer Attitudes Towards Autonomous Vehicles in Top 10 New Car Markets, 2020



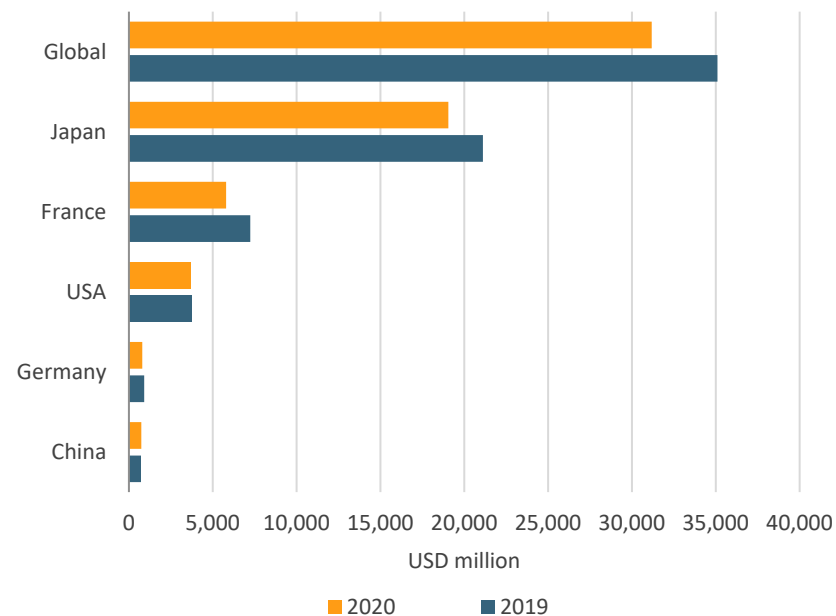
Source: Euromonitor International Mobility 2020 Survey

COVID-19 pandemic to delay launch of autonomous vehicles

Top 5 B2B Costs of the Global Retail Industry, 2020



Automotive Industry's Spending on R&D in Selected Countries, 2019-2020



Case study: Ford

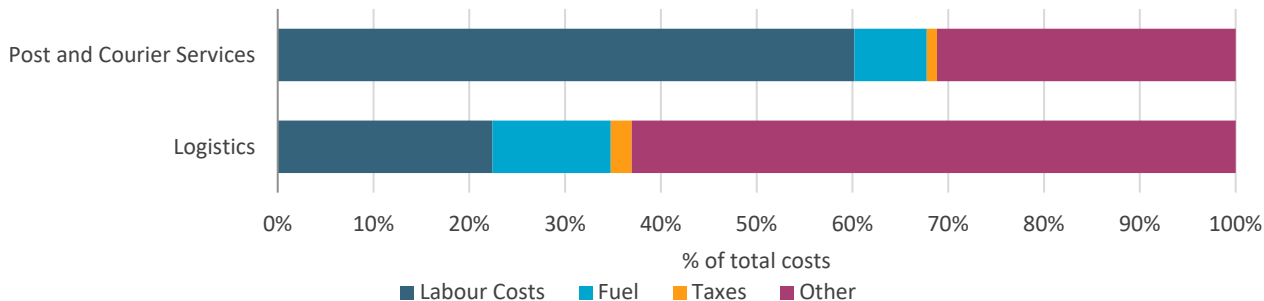
- In 2020 Ford announced it will postpone its autonomous vehicle programme until 2022
- The outbreak of COVID-19 pandemic prompted the company to rethink its investments and potential use of autonomous vehicles
- This is predicted to delay the testing and production of fully autonomous vehicles by 2-3 years



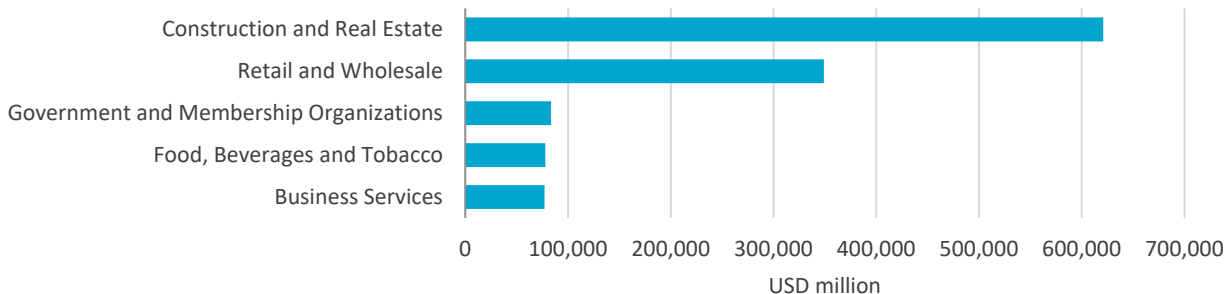
Source: Ford Motor Co

Companies would benefit from lower transportation costs

Global Cost Structure, 2020



Top Buyers of Logistics and Post and Courier Services, 2020



Autonomous vehicles could reduce transportation costs per km by up to 40%

A hand holding a stylus is shown interacting with a tablet. The entire image is overlaid with a warm, orange-to-yellow gradient. The stylus is positioned over the tablet's screen, and the hand is visible on the right side. The background is a solid, light orange color.

5

Online sales

Online sales

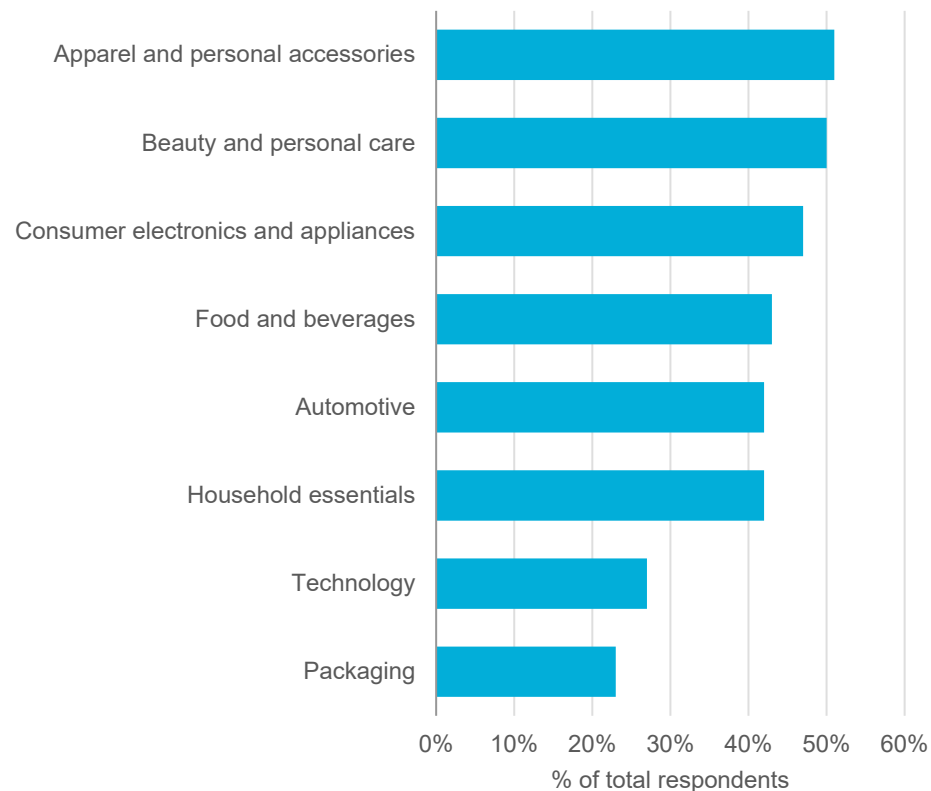
The background of the slide is a solid orange color. Overlaid on this is a semi-transparent image of a hand pointing at a tablet screen. The hand is on the right side, with the index finger pointing towards the center of the screen. The tablet is positioned diagonally across the frame. The overall aesthetic is clean and modern, with a focus on digital technology.

Online sales cover online car sales (new and used) through online platforms.

Automotive companies plan investments in e-commerce

- 42% of automotive companies plan to increase investments into e-commerce
- This helps to diversify sales risks and improve consumer experience

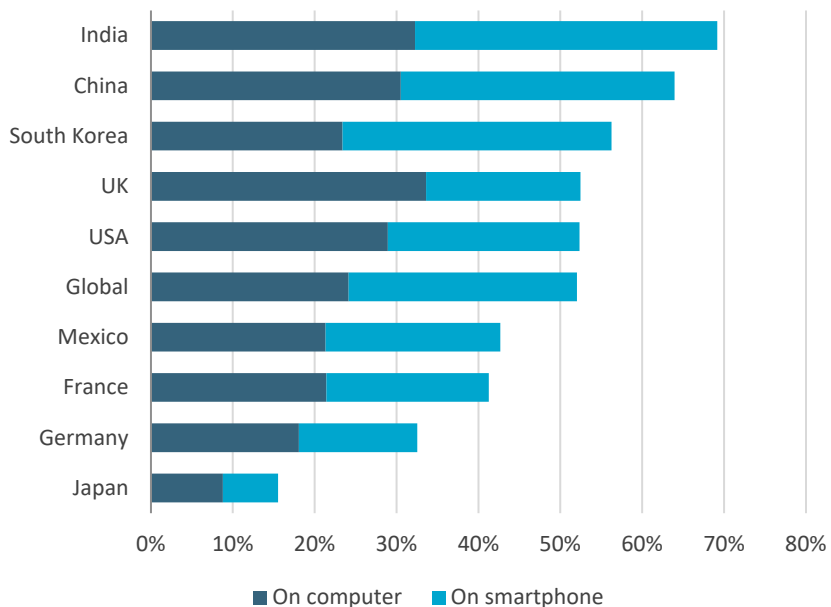
What future measures do you expect your business to introduce or adapt to prevent similar risks in the future: E-commerce/omni-channel distribution?



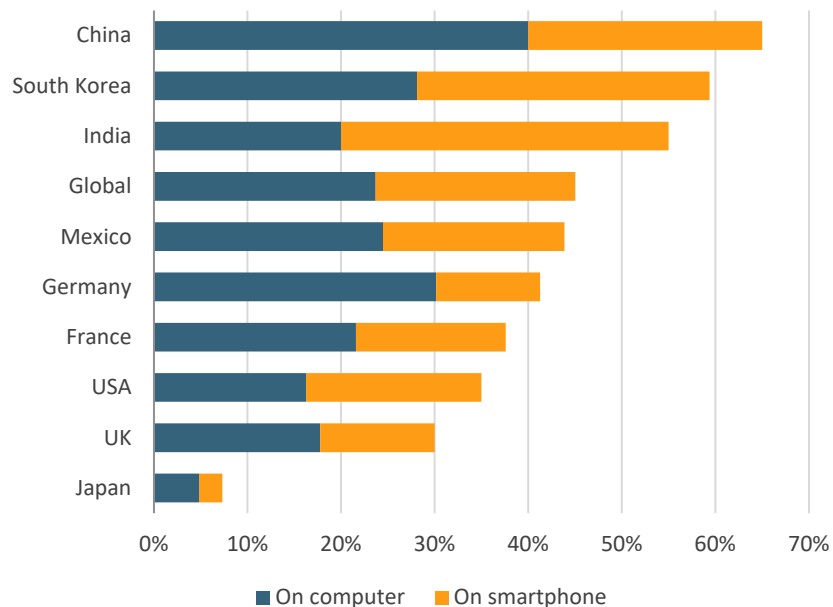
Source: Euromonitor International Voice of the Industry COVID-19 October 2020 Survey

52% of consumers purchased a new car online

New Car Purchase by Online Channel in Selected Countries, 2021



Used Car Purchase by Online Channel in Selected Countries, 2021



Source: Euromonitor International Mobility 2021 Survey

Case study: Volvo

- In 2021 Volvo announced it plans to produce electric vehicles only by 2030 and sell them through online platform
- The company will offer fixed prices for all consumers, adding more transparency to the process
- Physical dealerships will also be involved in the process and help with logistics, delivery and service of cars



Your XC40 Recharge

Monthly payment

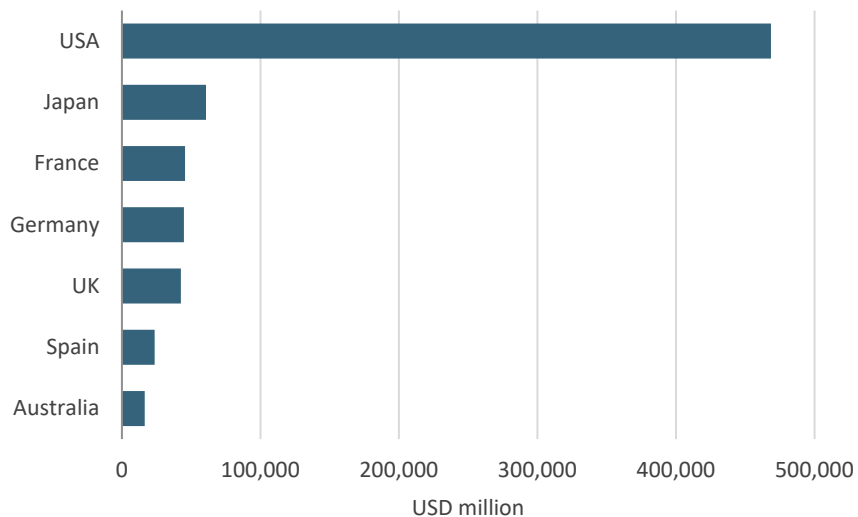
£769/ month

NEXT

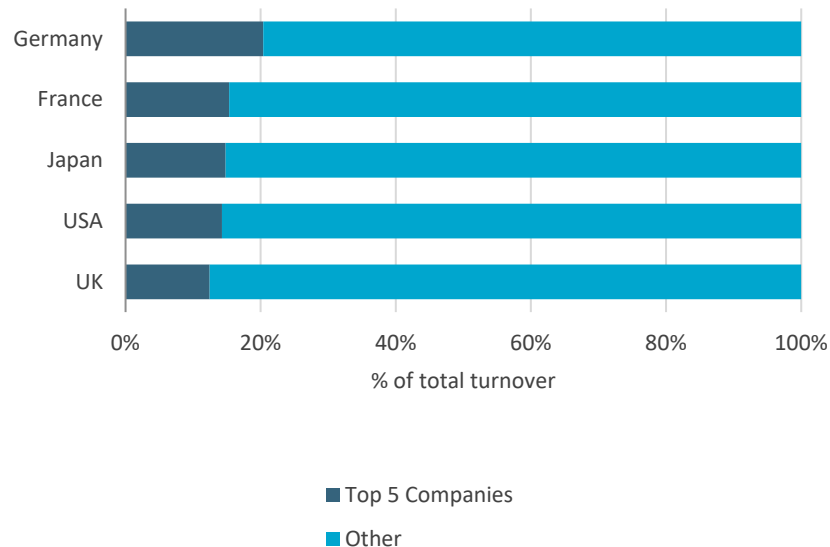
Source: *Volvocars.com car configurator*

Online sales will put pressure on smaller dealerships

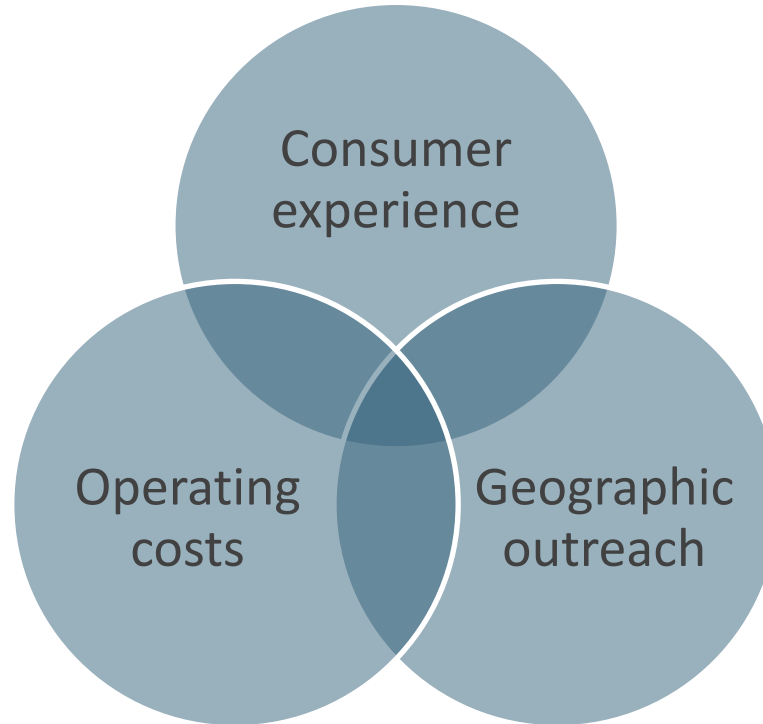
Turnover of Car Dealership Industry in Selected Countries, 2020



Car Dealership Industry's Concentration in Selected Countries, 2020



Car companies will have to find the right balance between online and physical dealerships



Key takeaways

Connected cars will transform transportation ecosystem by improving safety and reducing transportation costs

COVID-19 pandemic is forecast to delay the mass production of autonomous vehicles until 2025

Developing markets will drive the growth of the global shared mobility market thanks to rising incomes and improving internet access

Battery electric vehicles (BEVs) is expected to be the fastest growing electric vehicles category through to 2040 compared to PHEVs and HEVs

Automotive companies are forecast to invest into online sales

Thank You

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