

5 Key Aftermarket Trends in the US:

Navigating Opportunities presented by an ever-changing vehicle fleet

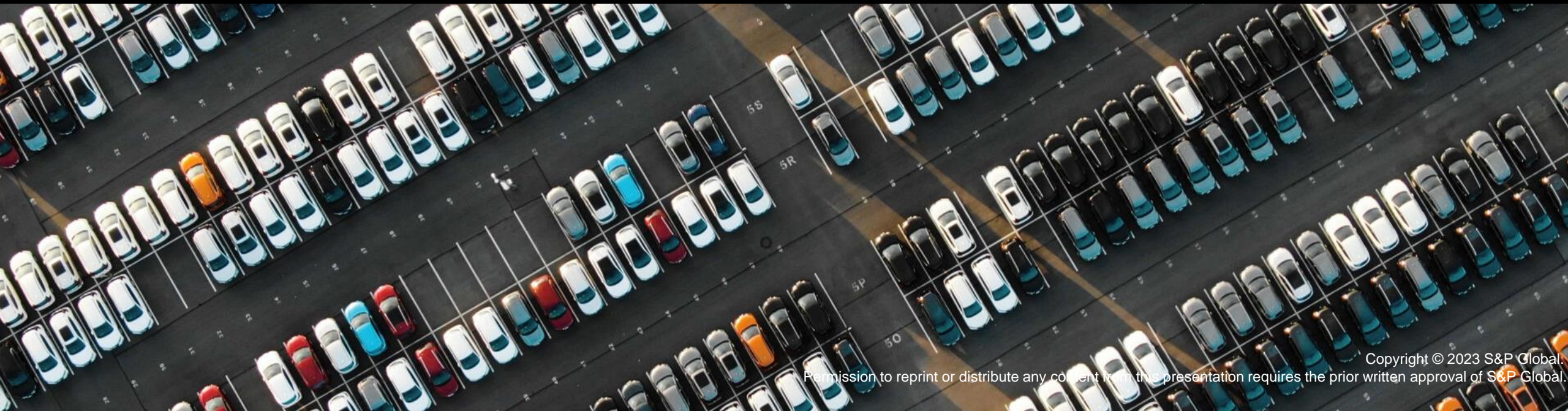
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Agenda

Update on current status

- Semiconductors and supply chain
- General update on the vehicle fleet
- Outlook on vehicle miles traveled

Short-Term

1. Ongoing soft new vehicle sales
2. Scrappage is hovering near historic lows

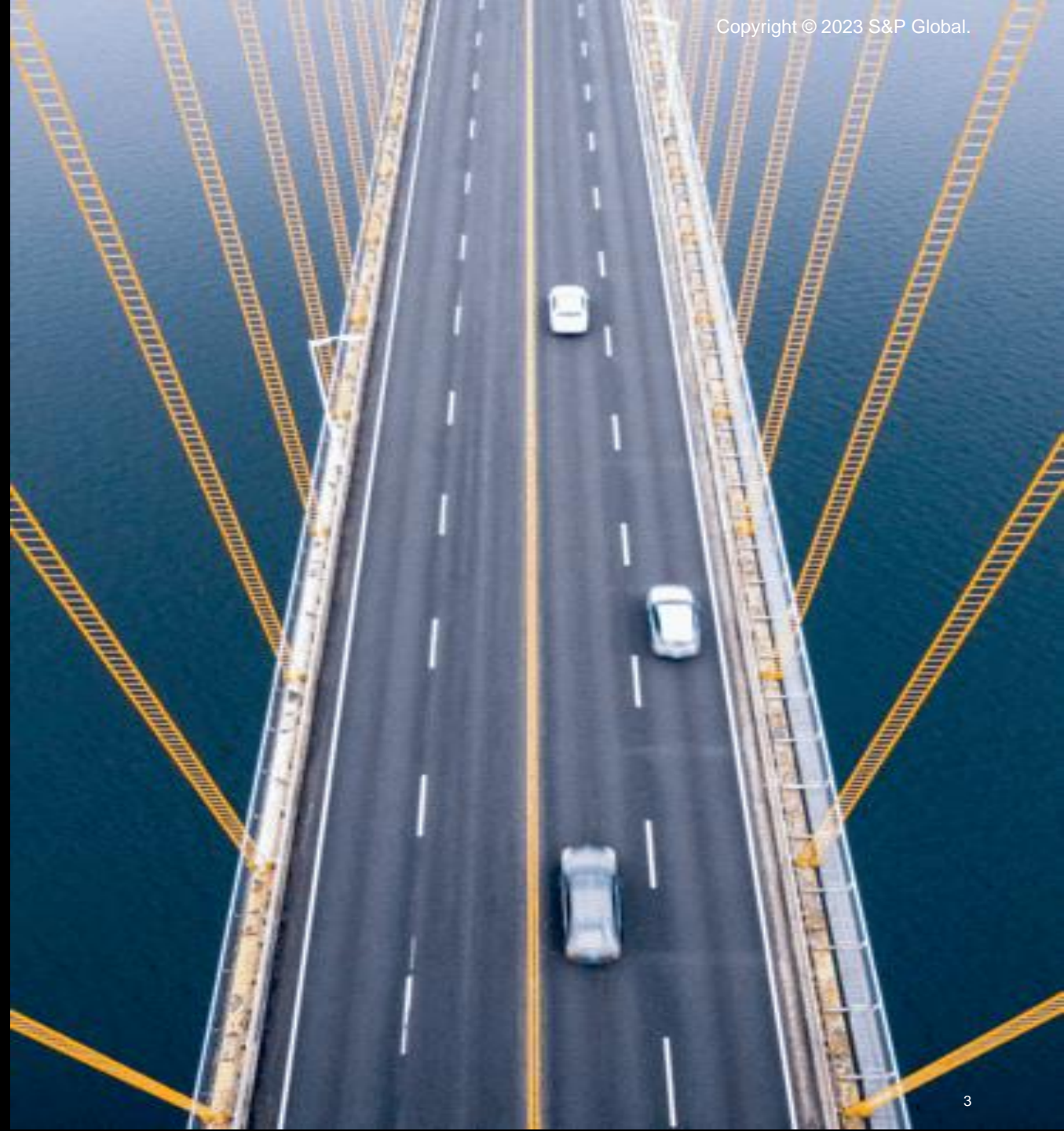
Ongoing

3. Evolving vehicle fleet
4. Aging fleet, significant sweet-spot growth

Long-Term

5. The road to electrification

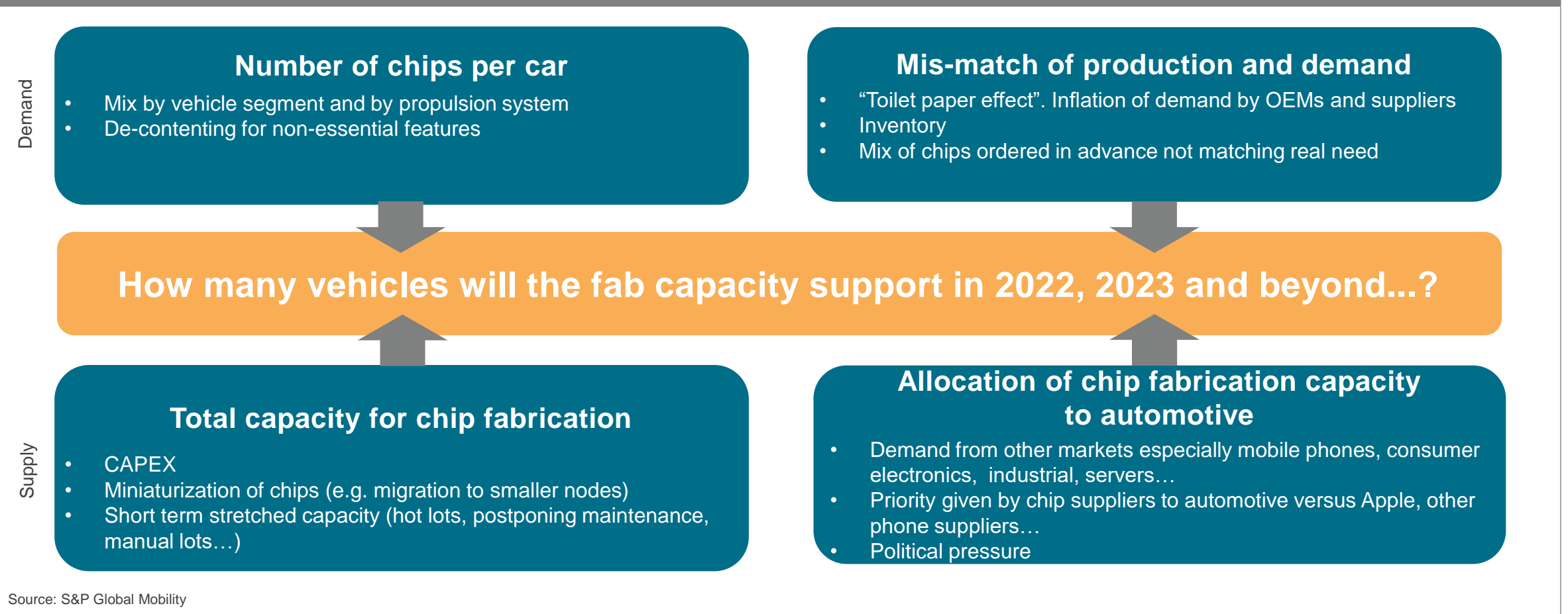
Update on current status



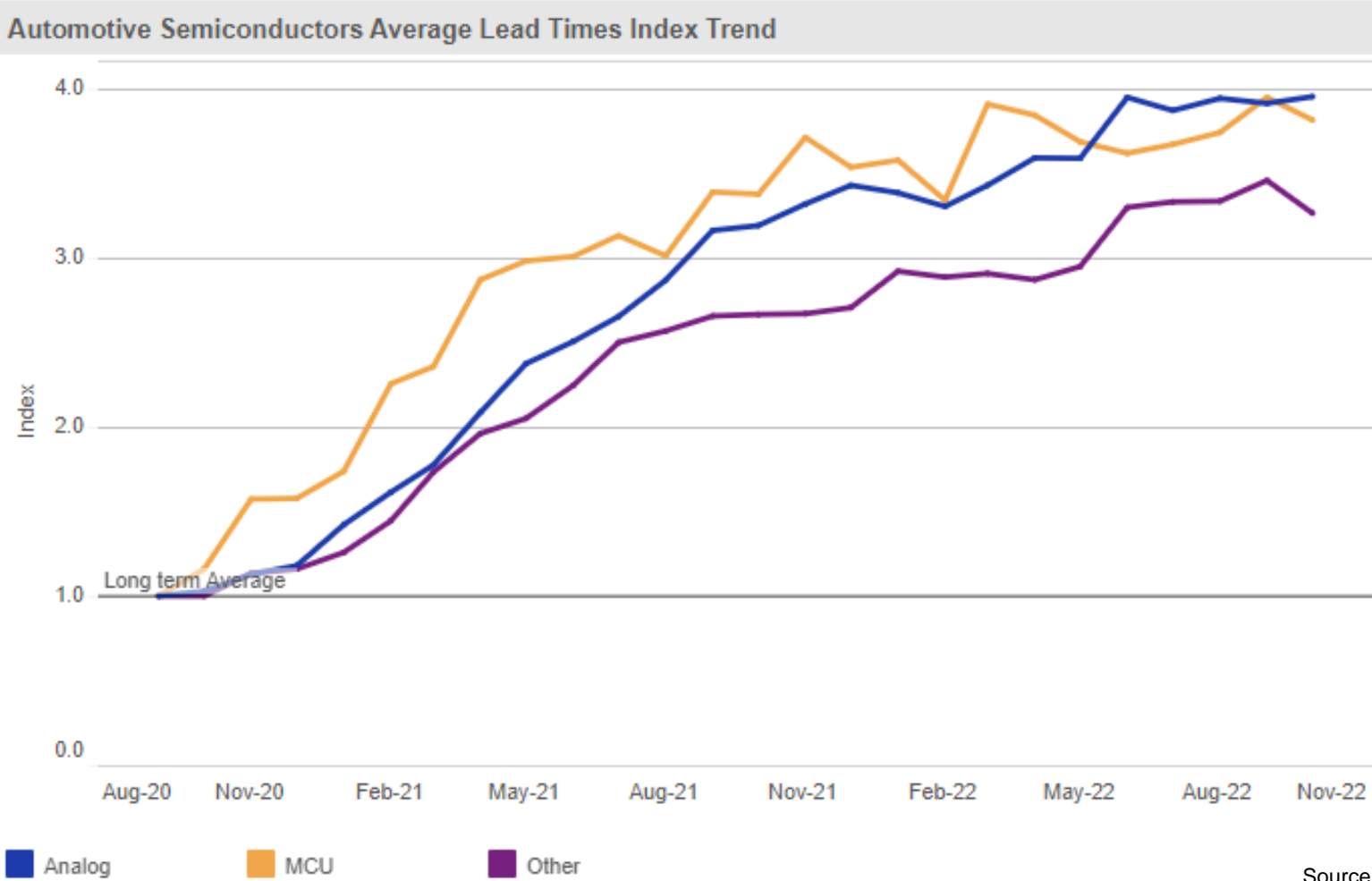
Semiconductor outlook: it's complicated

Analog chip supply will determine how many vehicles will be built in the near-term

Factors influencing automotive chip supply



Lead time for automotive chips still at historic high



The Automotive Lead Time Index measures the lead time variation compared to long term average. An Index 3 means the Automotive chip buyers need to wait 3 times longer than normal before they receive semiconductors after placing the order.

Source: S&P Global Mobility, AutoTechInsight, October 2022

Parc growth has bounced back, but new sales muted by supply side constraints

Inflated used values seeing declines in scrappage rates and contributing to growth in average vehicle age

283M ▲

Passenger cars and light trucks
January 2022

15.1M ▼

New vehicles added
January 2022

4.2% ▼

Scrappage
January 2022

12.2 ▲

Average vehicle age
January 2022

Vehicle mileage increased in 2022, with a return to pre-pandemic levels

Sustained high gas prices at the pump are a potential headwind in 2023 though

2021

2022

Average miles traveled for light vehicles

12.4k

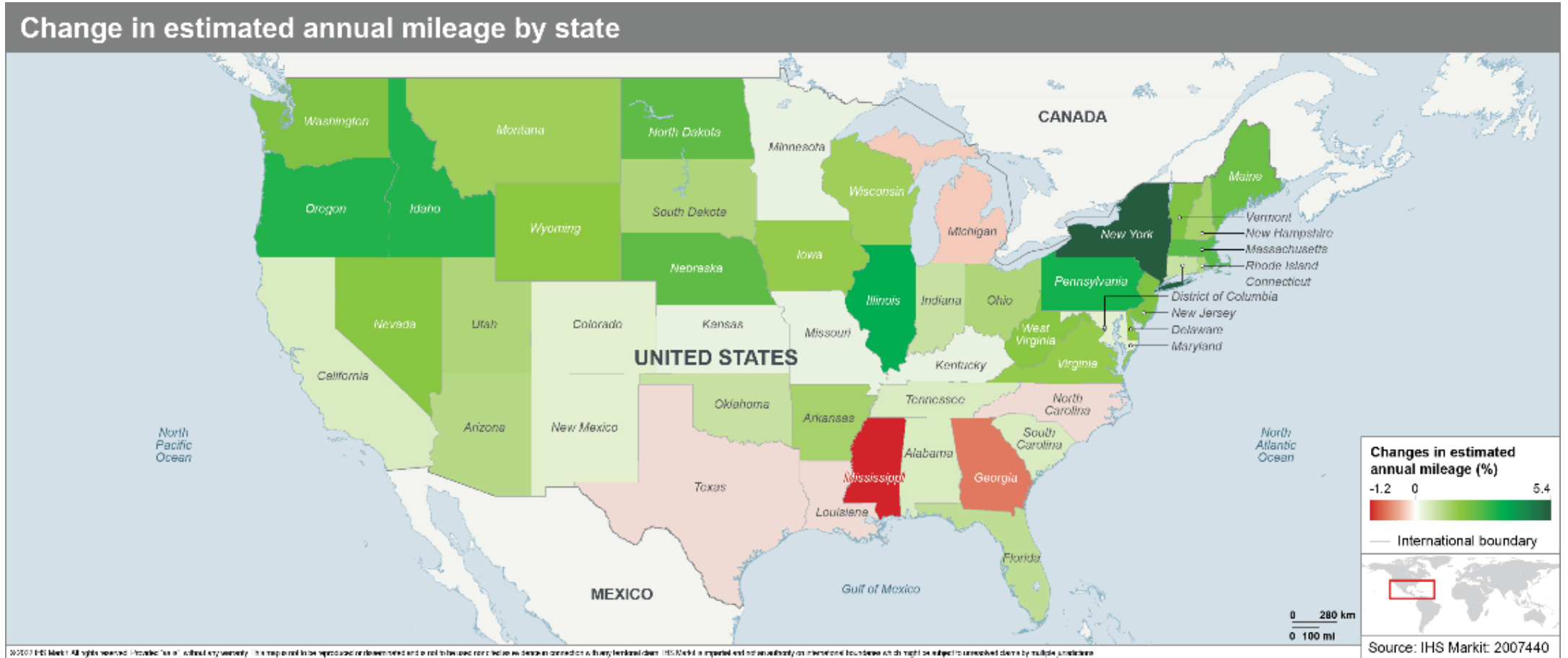
12.5k

Total US miles traveled for light vehicles

3.4T

3.5T

Recovery and growth in VMT was variable in 2022



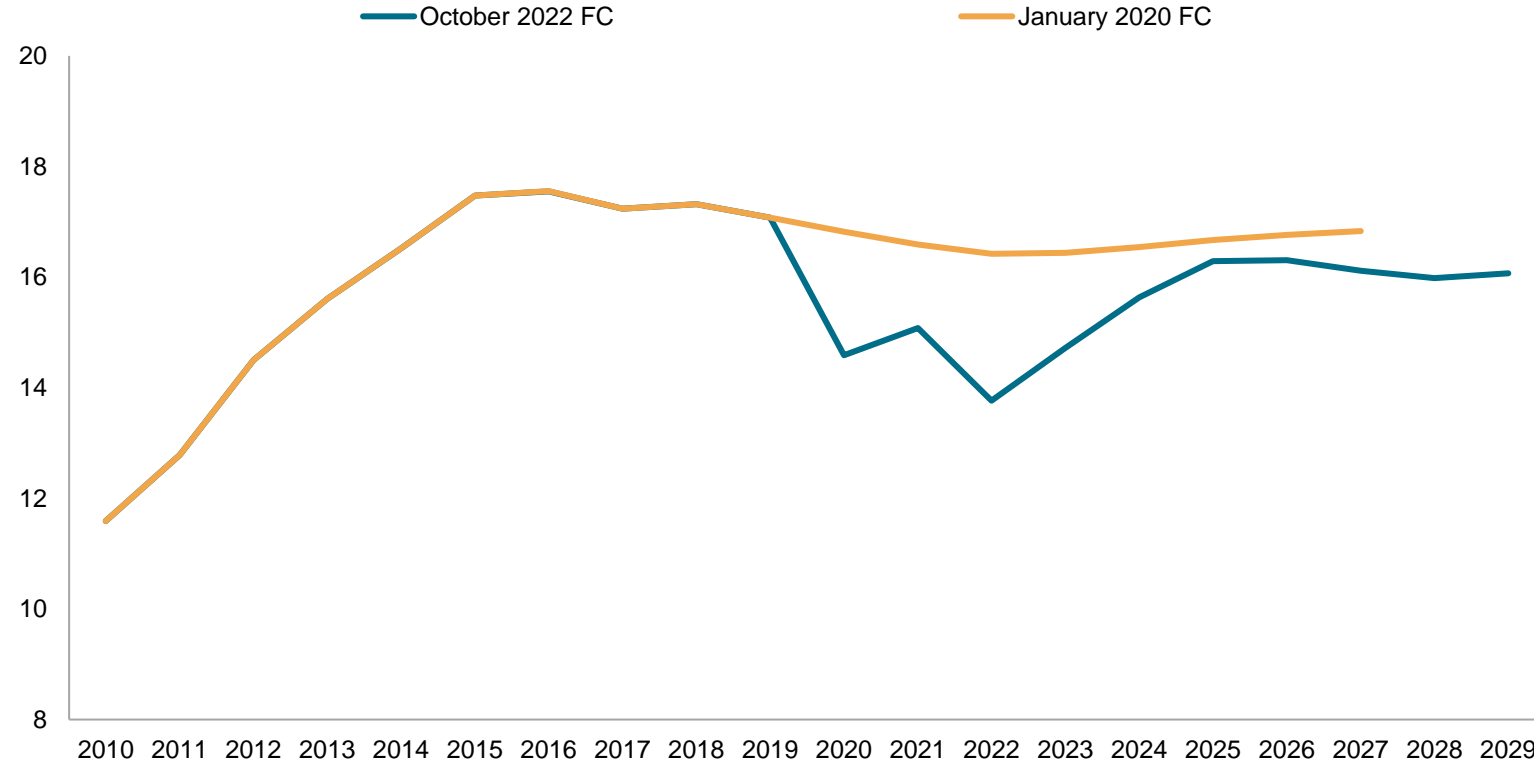
1. Ongoing soft new vehicle sales



Supply chain constraints after sales recovery

Pent-up demand is vulnerable to macroeconomic deterioration leading to demand destruction

US light vehicle sales in millions, 2010-2029



Data compiled Jan. 01, 2023.
Source: S&P Global Mobility.
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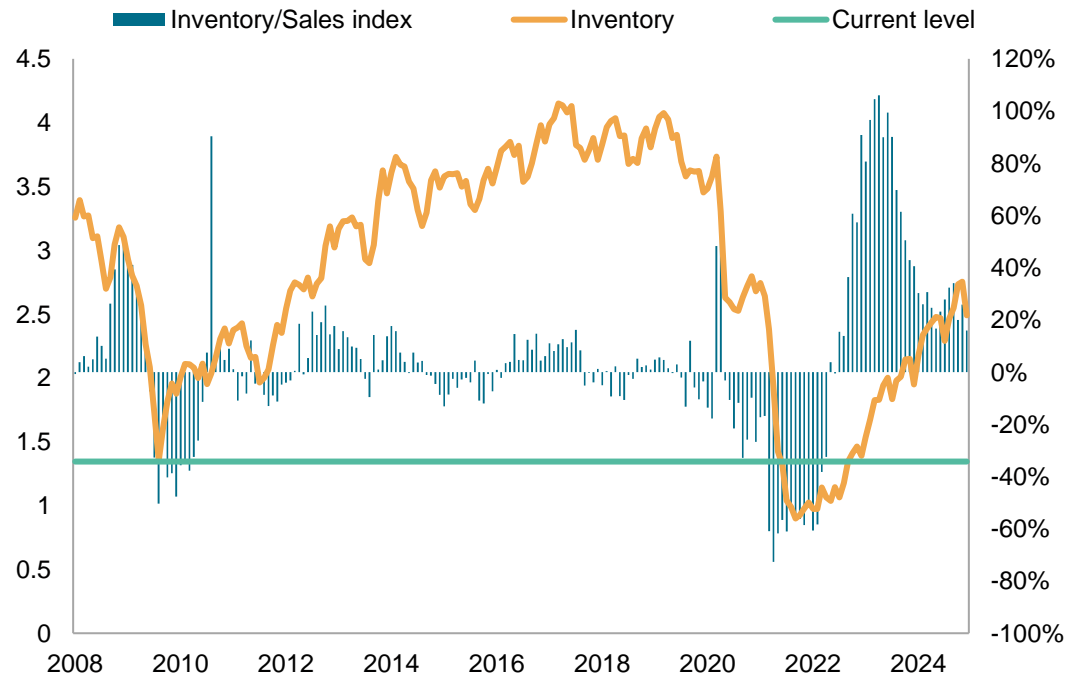
Economic issues

- Consumer outlook stressed by inflation, vehicle prices and material concerns
- Currently dealing with supply constraints, **but transition to demand constrained is likely**
- Opportunities to find right customer based on vehicle age and scrappage
- Market conditions are shifting, yet we are already running at recessionary levels
- Interest rates move higher
- Affordability to become a challenge; macro environment weighs on sentiment

US vehicle inventory levels

Supply challenges extend inventory constraints, sales are depressed and macroeconomic headwinds lurk
 Start of the restocking phase, build will be slow

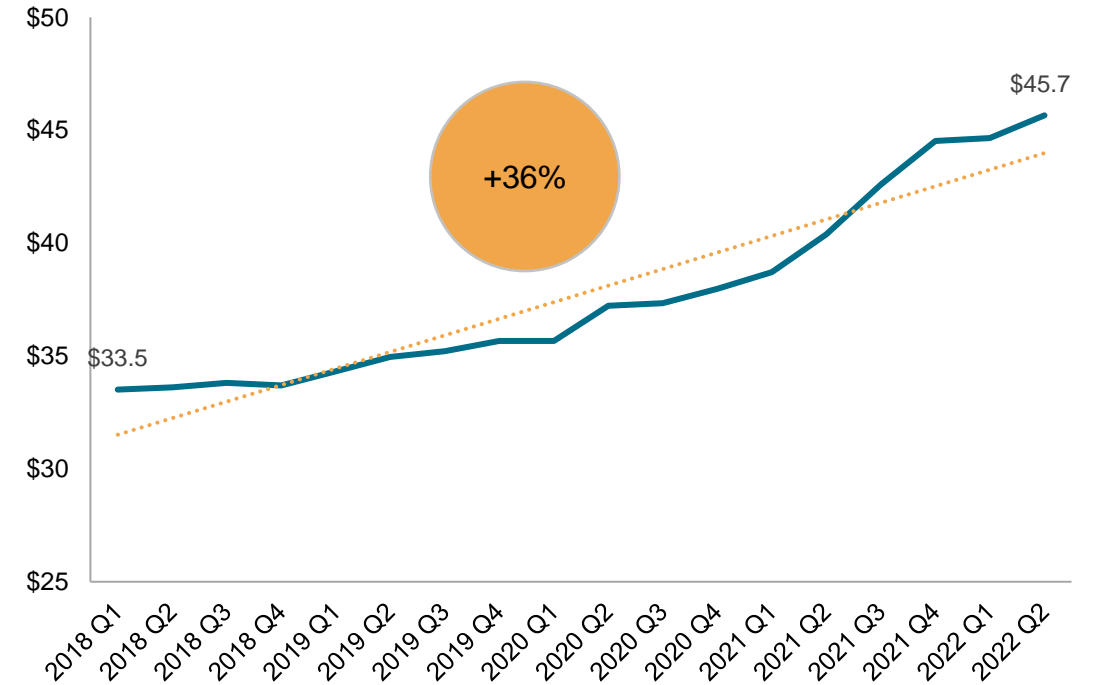
US vehicle inventory by month



Data compiled Jan. 01, 2023.
 Source: S&P Global Mobility.
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Prices not sustainable, but fundamentals reign

US average light vehicle prices, thousand of USD (2018-2022 Q2)

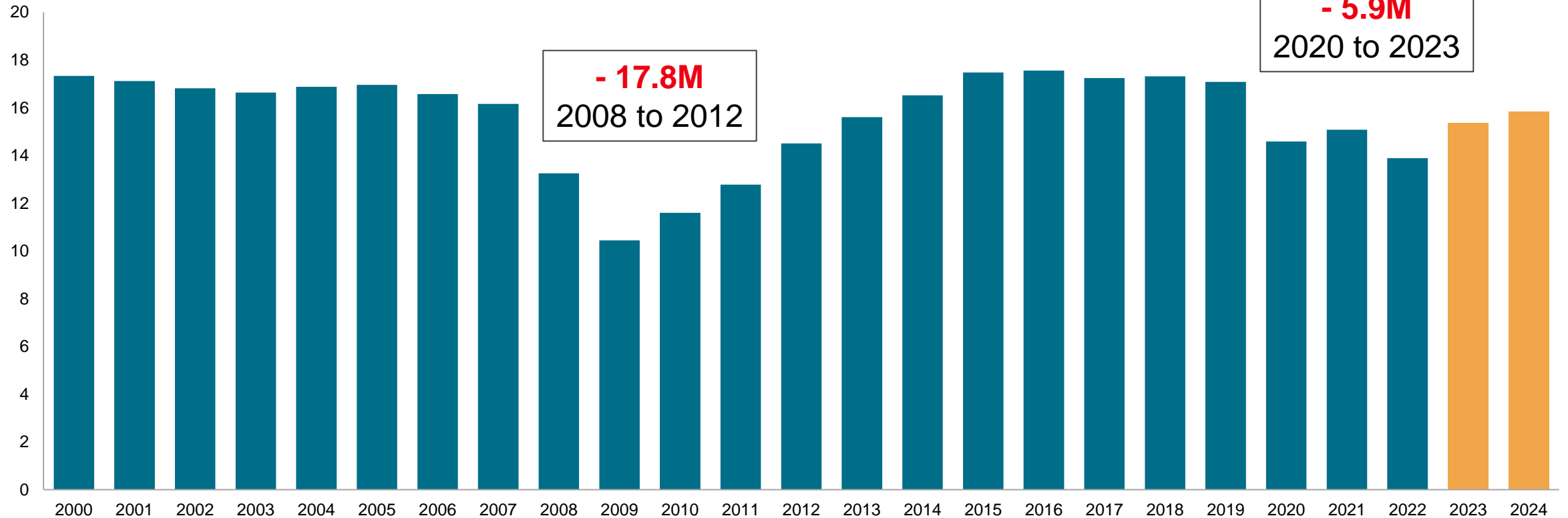


Data compiled Jan. 01, 2023.
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US light vehicle new registrations continue to fall below historical norms

Overall loss of new registrations expected to be about a third of the great recession

US light vehicle registrations, 2000-2024 (millions)



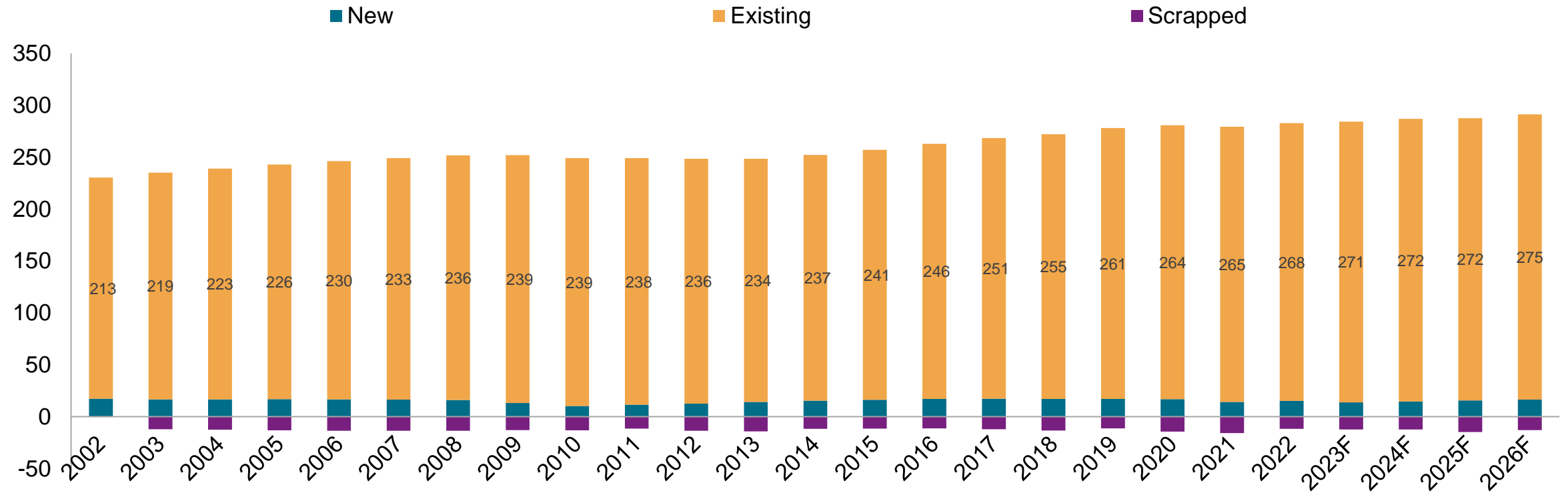
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2. Scrappage hovering near historic lows



VIO growth continuing, albeit slow, amid soft new vehicle registrations

VIO in millions 2000-2020 including scrapped and new additions

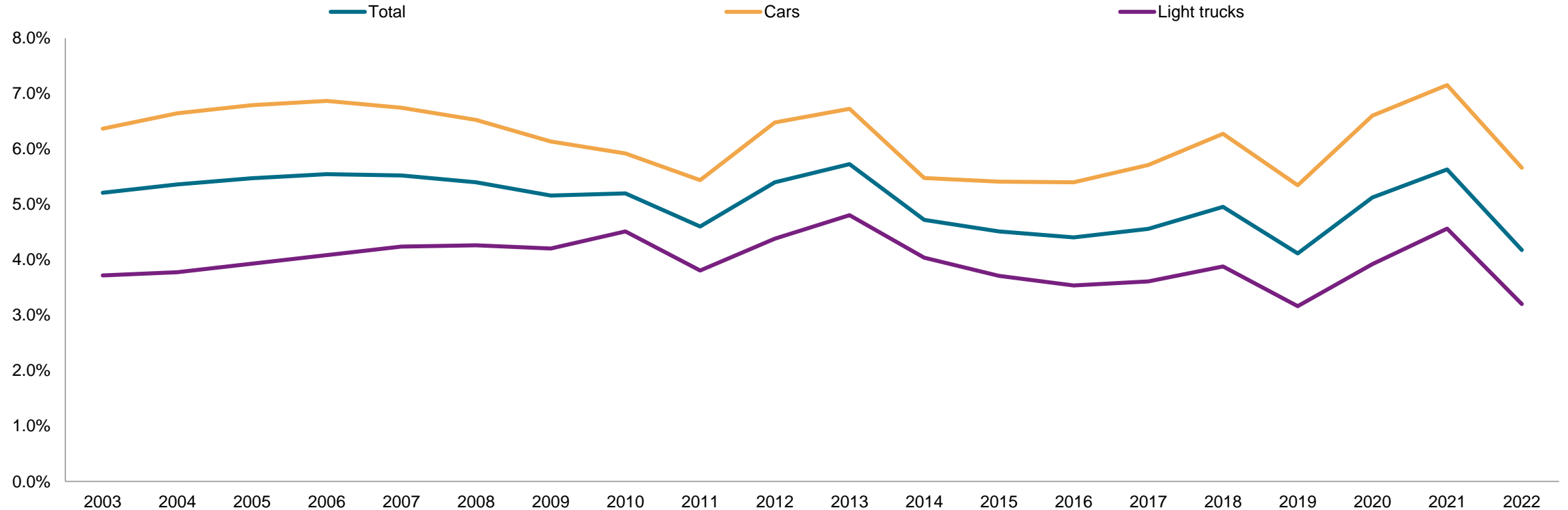


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After chaos caused by the pandemic, scrappage trending near historic lows

Light truck scrappage is notably low, which is pulling scrappage down and helping to push overall VIO up

US light vehicle annual scrappage rates 2003-2022



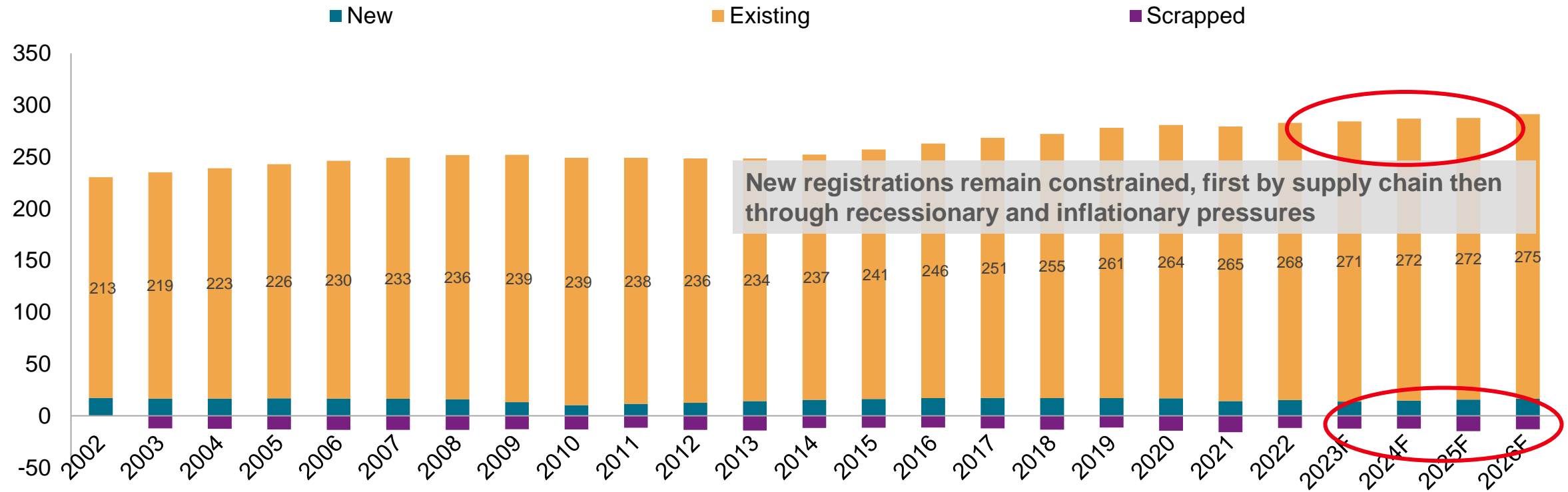
Data compiled Mmm. DD, YYYY.

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VIO growth driven by older vehicles due to low scrappage and high vehicle residual values

VIO in millions 2000-2020 including scrapped and new additions



New registrations remain constrained, first by supply chain then through recessionary and inflationary pressures

Constrained scrappage and vehicles returning will push VIO up

Data compiled Jan. 01, 2023.
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3. Evolving Vehicle Fleet



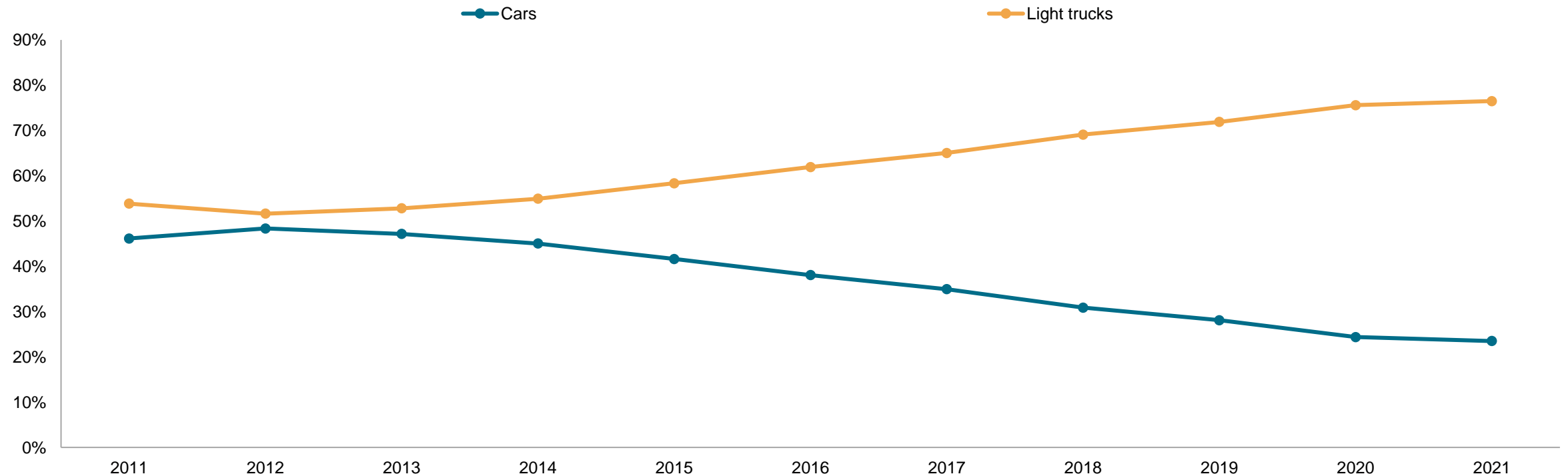
3. Evolving Vehicle Fleet – Shift to Trucks



New vehicle sales continue to favor light trucks, with the takeover accelerating in the past few years with trucks heading to a near 80% share of the market

Chip crisis has brought a richer build mix which has favored light trucks

US share of annual new vehicle registrations by type 2011-2021

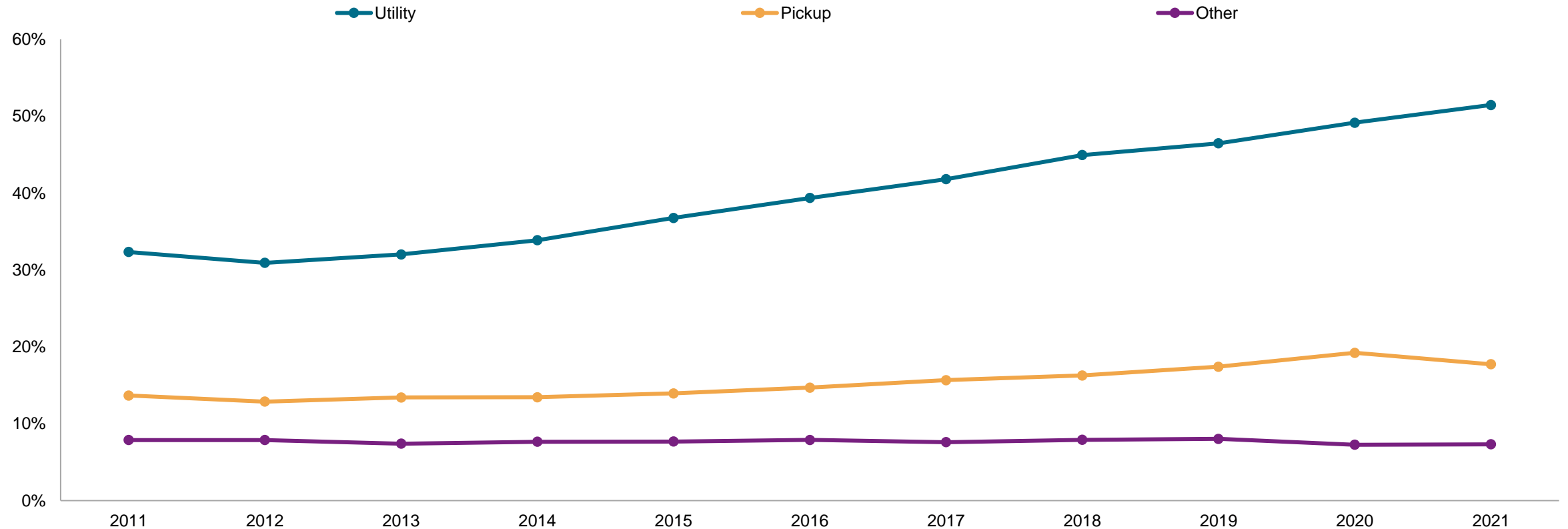


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CUVs driving light truck growth

For aftermarket not known yet whether \$ value of repairs aligns with trucks or cars

Light truck body styles by share of new registrations

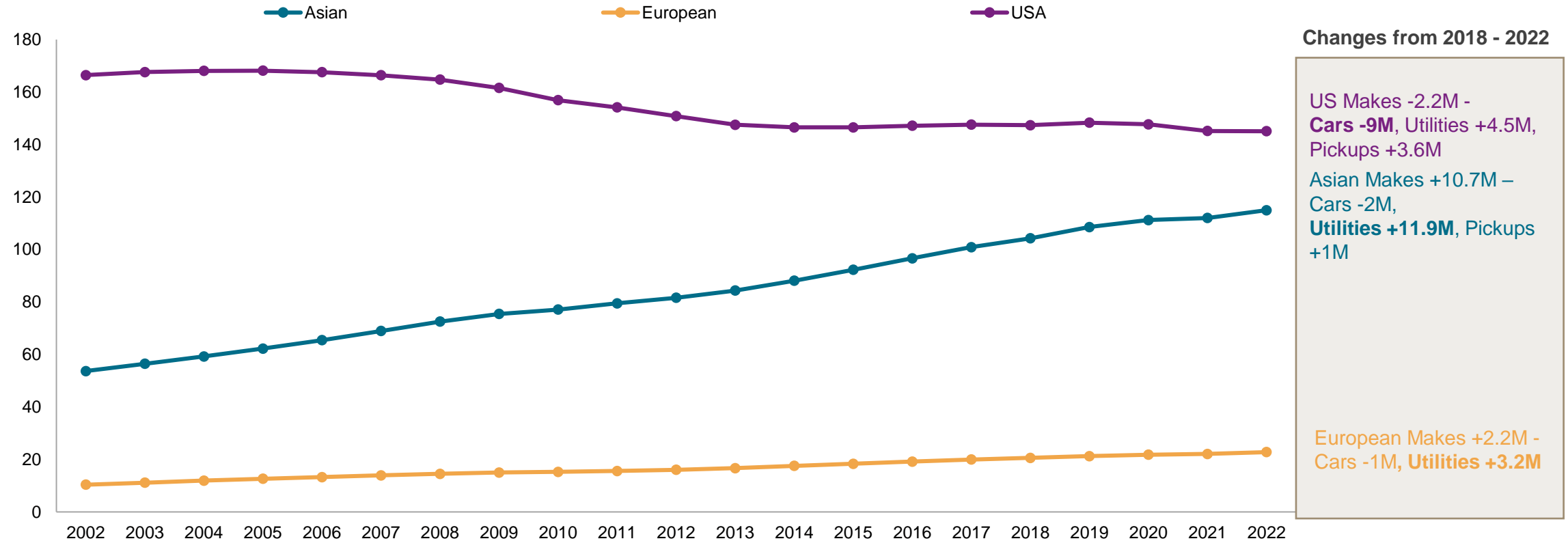


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Asian makes continue to gain a significant share of VIO

Utility vehicles are driving force in the growing share of Asian vehicles, and the reduction in pickup share

VIO by make and region of origin in millions



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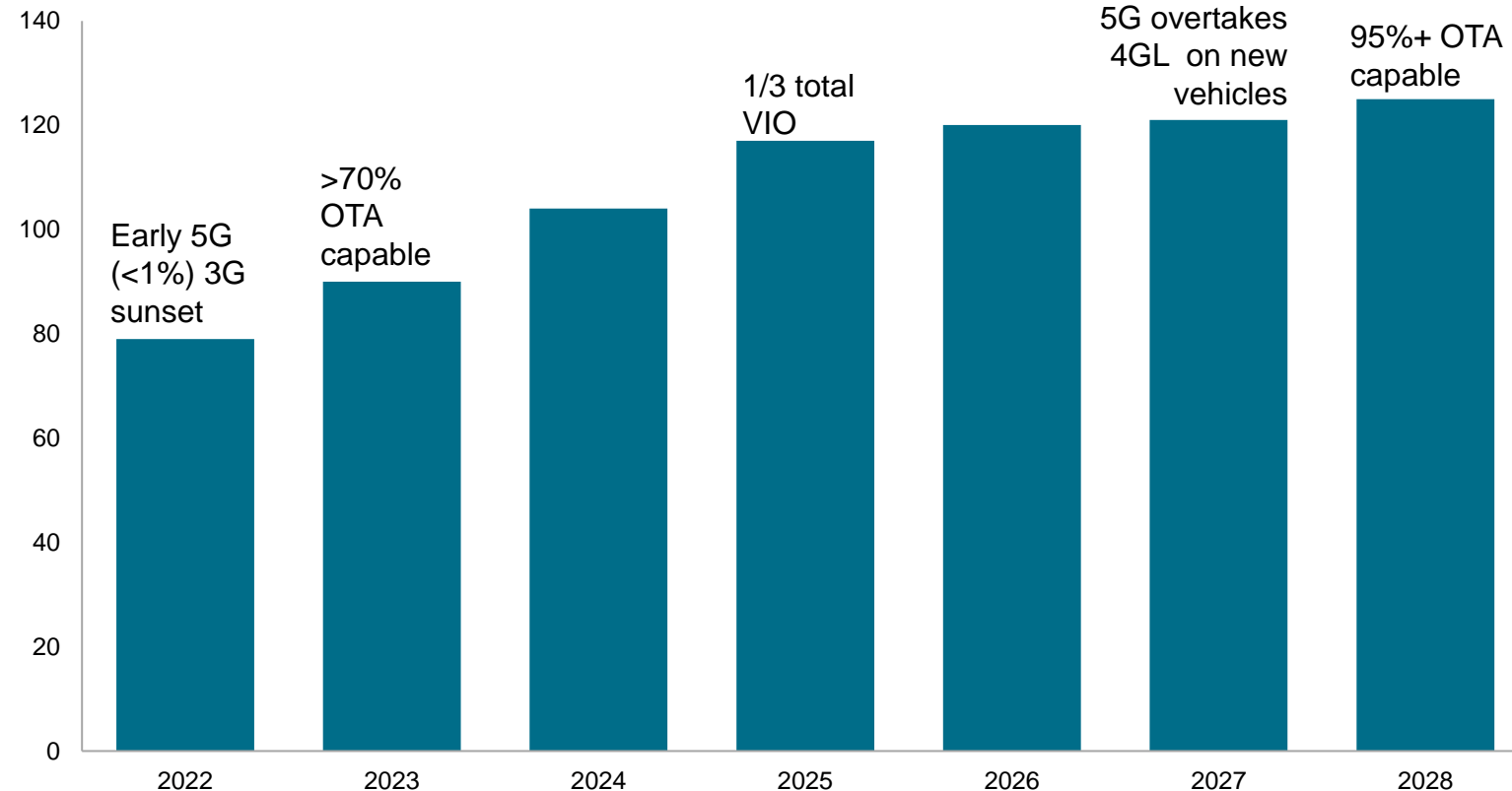
3. Evolving Vehicle Fleet – Connectivity



Connectivity rapidly growing in the US fleet

GM keeps OnStar active for 10 years on all new vehicles, making \$2B annually on it, at a 70% margin...

Connected vehicles in operation (C-VIO) in million, US 2022-2028



Source: S&P Global Mobility.
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We will continue to see more connected vehicles with longer serviceable connections

We are just beginning to see the evolution from 3G toward 5G now

With this shift we are also seeing a rapid increase in Over the Air update capabilities

Connected vehicles expected to represent a third of VIO in 2024

- But 5G connections will not overtake 4GL until 2027

By the end of the decade, over a third of VIO will be connected, with 95%+ capable of OTA

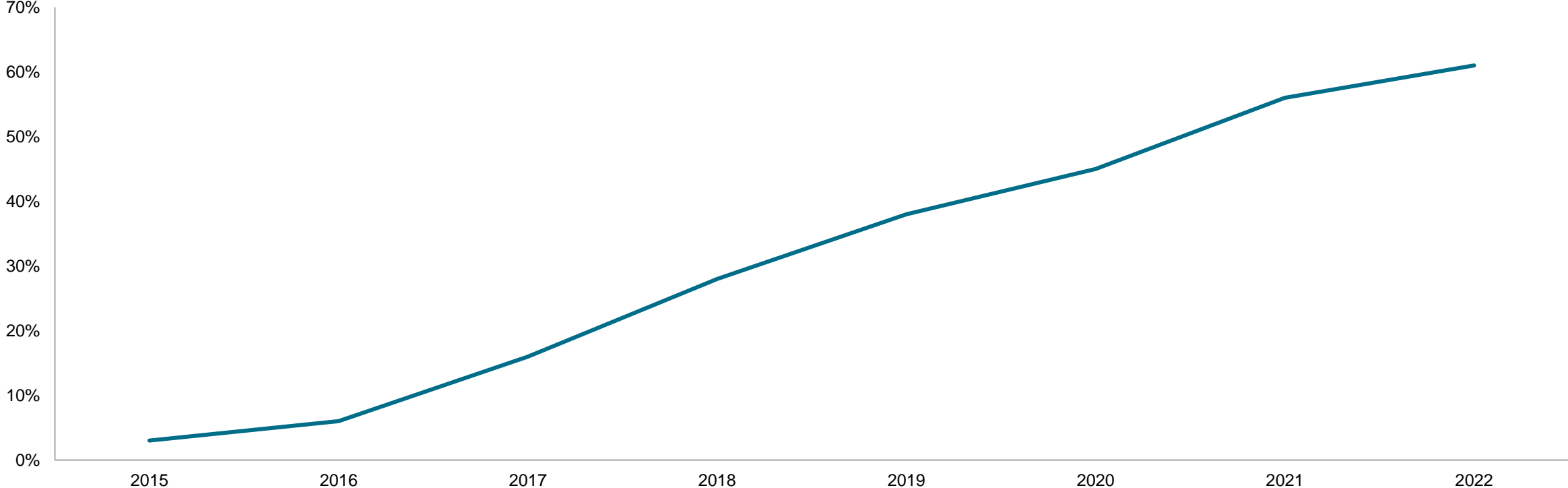
3. Evolving Vehicle Fleet – ADAS Adoption



Adoption of some ADAS features is accelerating and will continue to penetrate the fleet rapidly

ACC becoming standard feature or high take rate for large volume Asian imports

Adaptive cruise control take rate in the US by model year 2015-2022

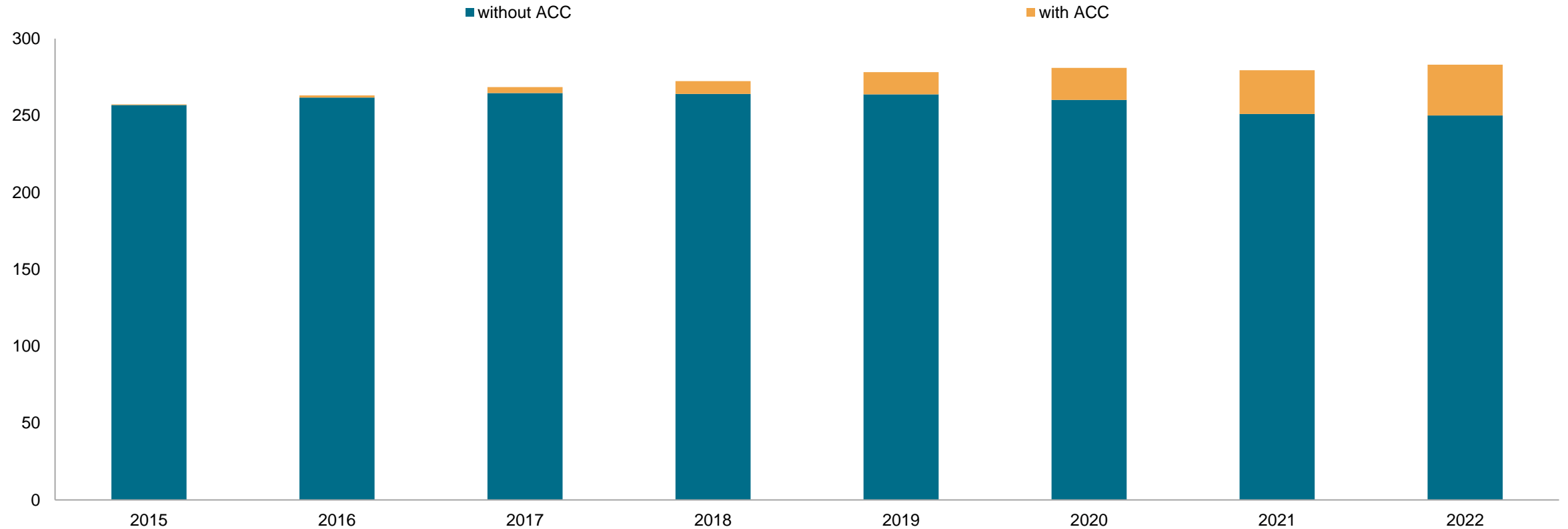


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Share of VIO takes much longer to show emergence of ADAS technologies

60% ACC penetration by 2022 translates to 12% of VIO

Tech VIO in the US, 2015-2022

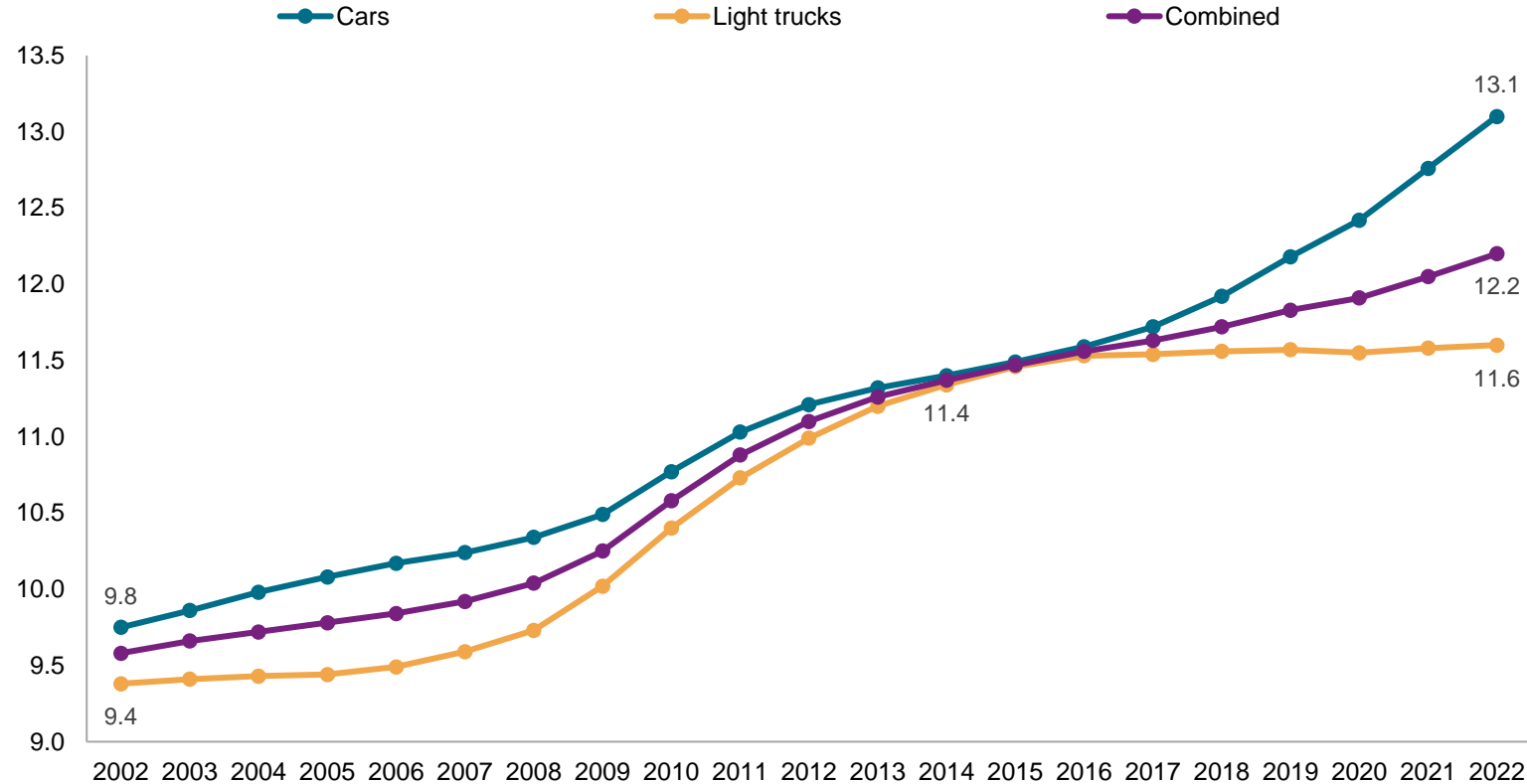


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4. Aging fleet, significant sweet- spot growth



Average age of VIO in US 2002-2022



Source: S&P Global Mobility.
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When we look back about 20 years, cars were still older than light trucks, but the variance between the two was less than a half year.

Over the past 20 years you can see that they've moved similarly – through the great recession actually converging as consumer preference was decidedly toward smaller vehicles to the point that in 2015 they were essentially equal.

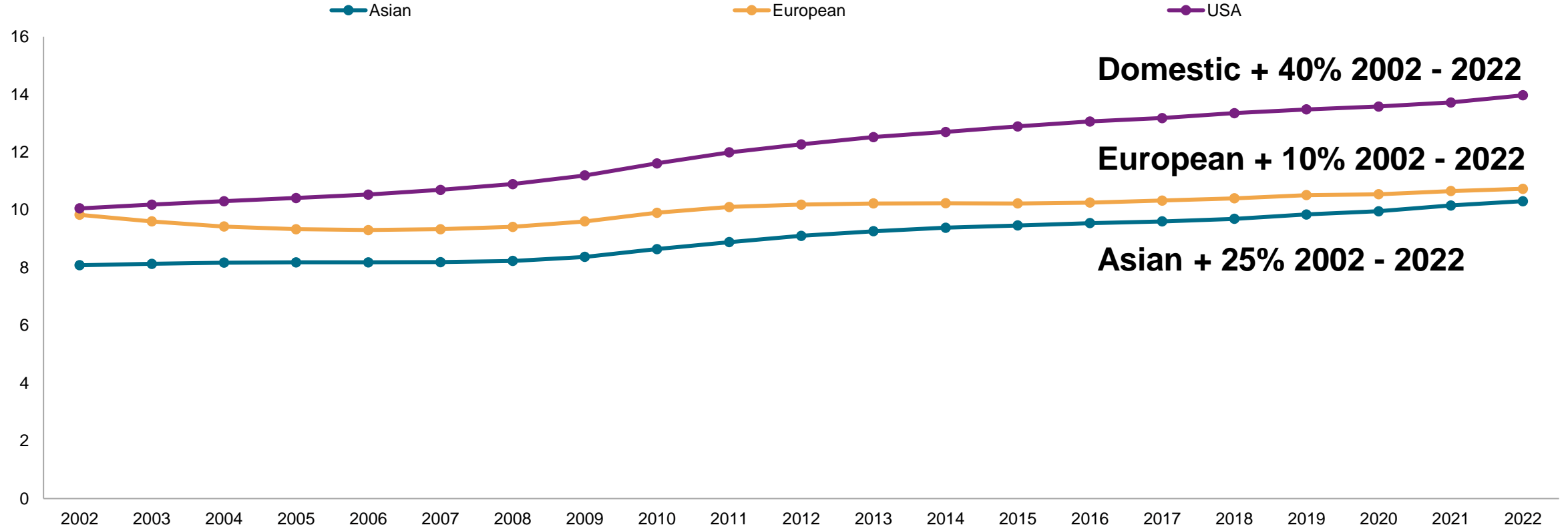
But since that time, cars have aged rapidly faster as preference has shifted significantly to light truck body styles like CUVs and SUVs.

We love the average age metric – it is a great indicator of the overall market, but to answer the question of the magnitude of the impact of the shift to CUVs we need to dig a little deeper still...

Domestic age is driven by the increasing share of light trucks, especially pickups

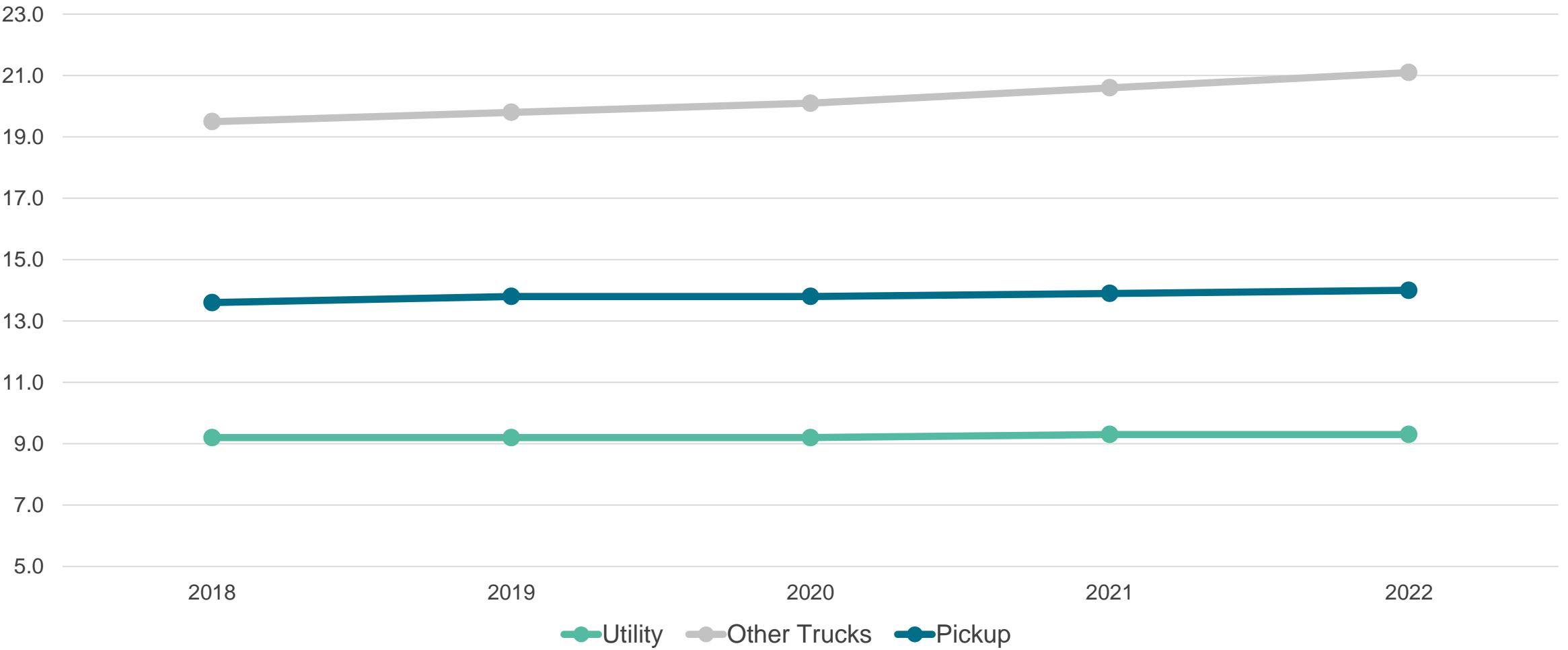
As Asian share continues to increase so does their average age and will continue to be the case in the future

Average age of US VIO by origin 2002-2022



Source: S&P Global Mobility.
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Light Truck Average age moderated by Utility Vehicles

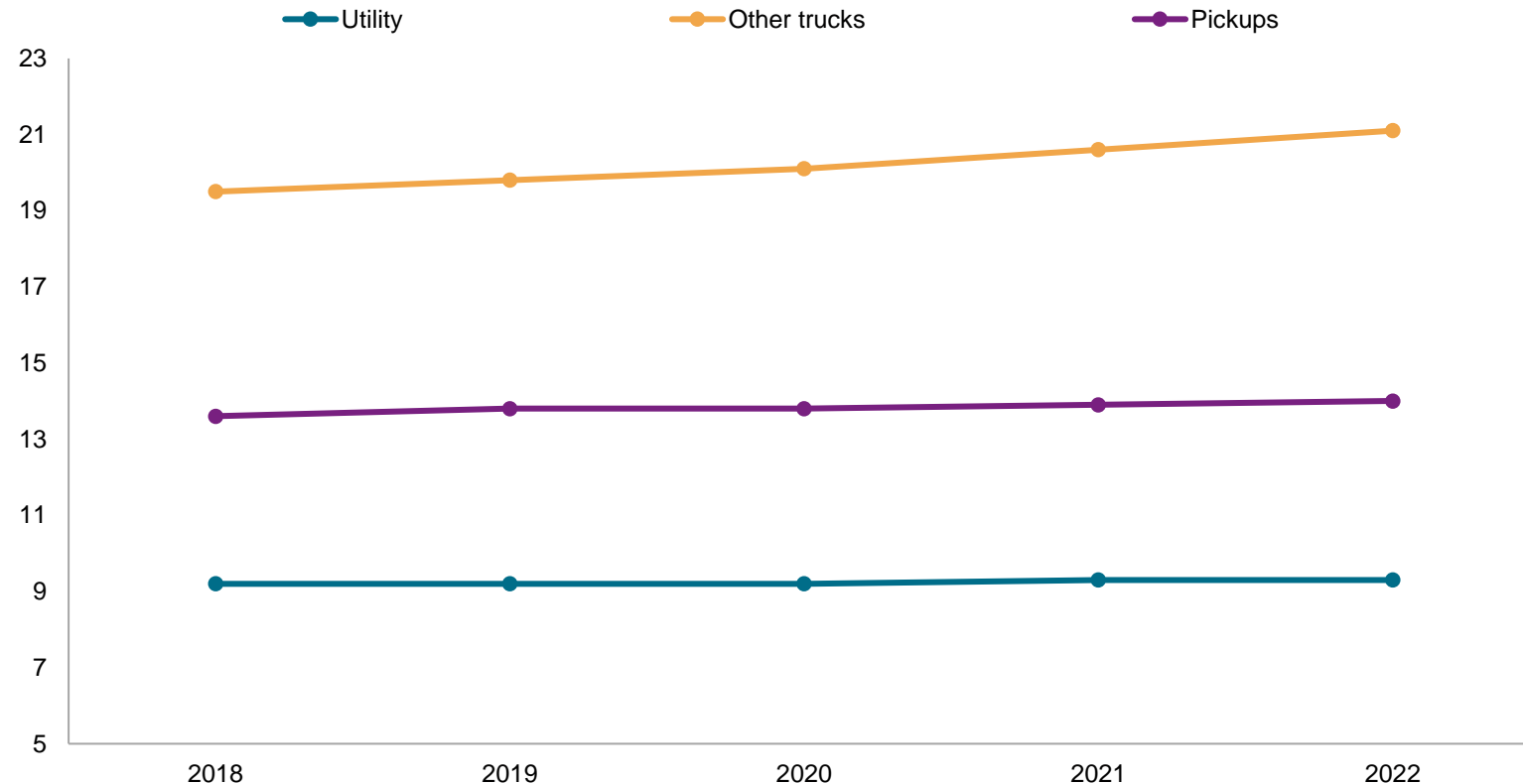


Vehicles in operation as of January 1
Source: S&P Global Mobility

Light truck average age is moderate by utility vehicles

The real question then is will CUVs be more like their older siblings – SUVs and Pickups? Or like sedans?

US VIO light truck average age 2018-2022



Source: S&P Global Mobility.
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If they age like other light trucks the next several years will provide substantial opportunities as this body style's volume begins to normalize, and age.

At just over 7 years of age, and being the largest light truck segment, CUVs will begin to be an even larger source of aftermarket repair than it has been. If CUVs age like their truck counterparts, then get ready for the average age to continue to climb.

Age mix continues to be more favorable through the first half of the 2020s. Right now, all three cohorts are roughly equal at around 94M each.

US annual total light vehicle VIO by age group 2021-2026

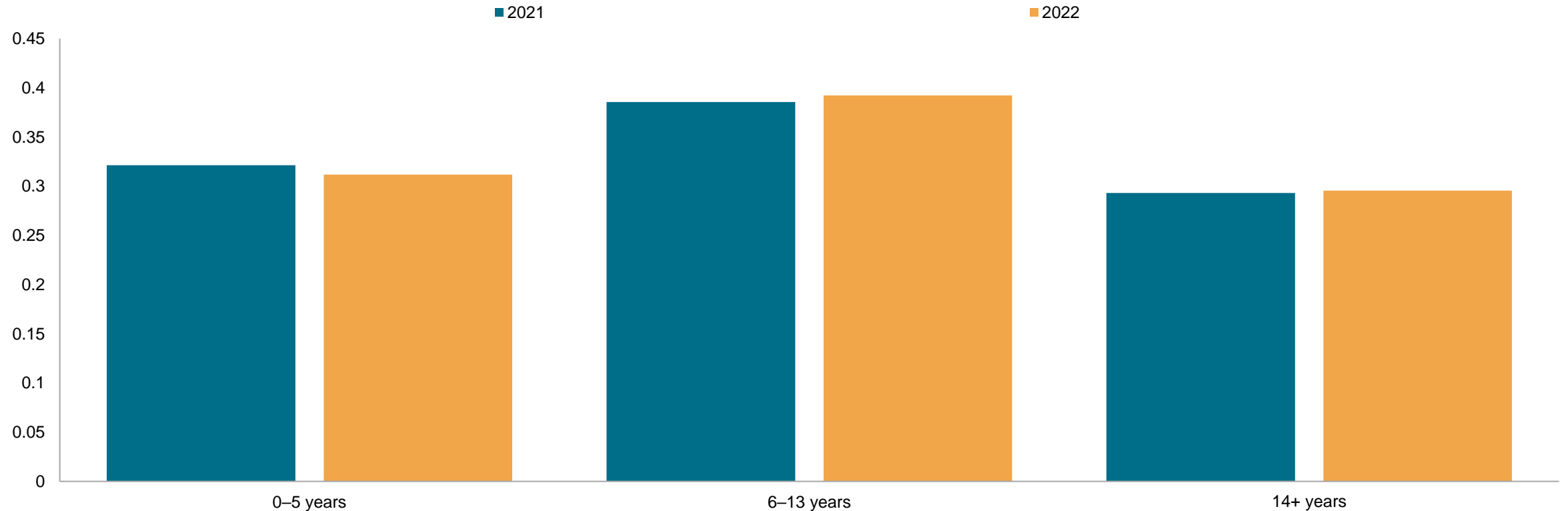


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Share of annual miles traveled favor vehicles in aftermarket sweet spot

An increasing share of annual miles are traveled by older, out-of-warranty vehicles

US mileage share by age category of VIO



Note: 2021-2022 vehicle miles traveled.

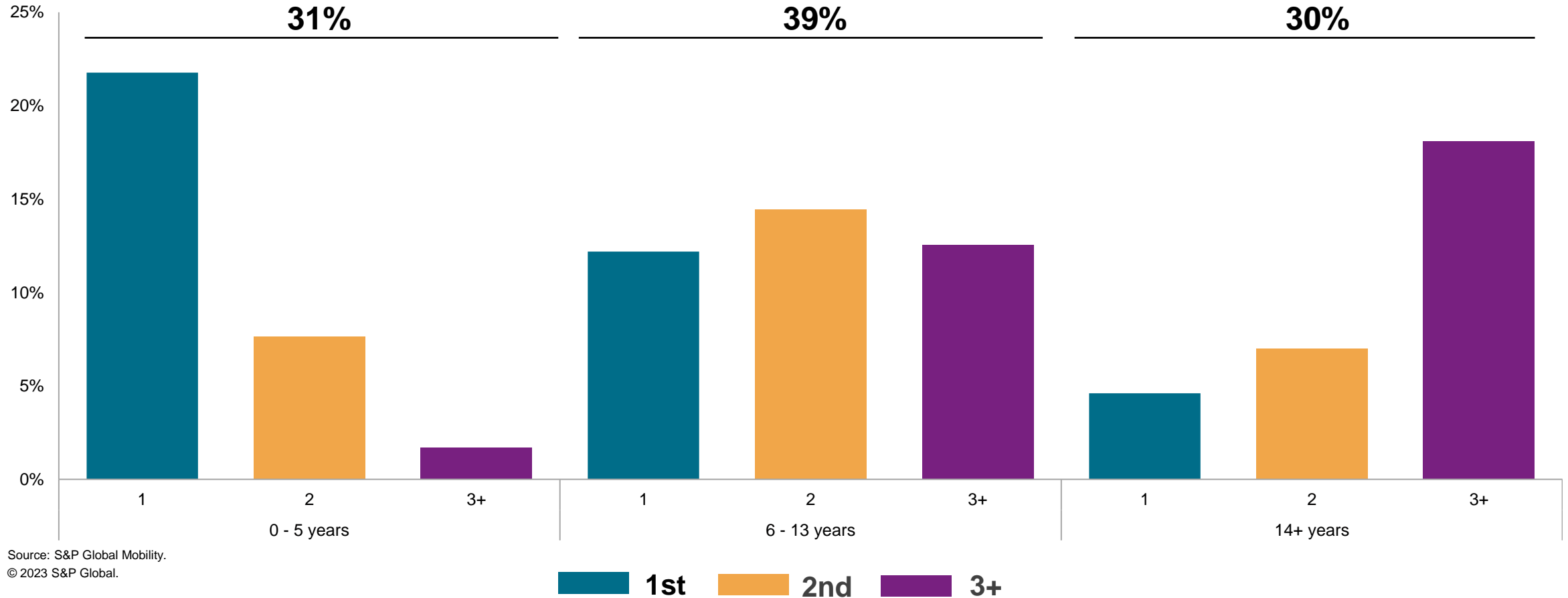
Source: S&P Global Mobility.

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For older vehicles, annual miles will belong to subsequent vehicle owners

Nearly a third of the miles in the second cohort are also the first owner, but falling steeply thereafter

US overall mileage share by owner number in each cohort (with cohort total share)

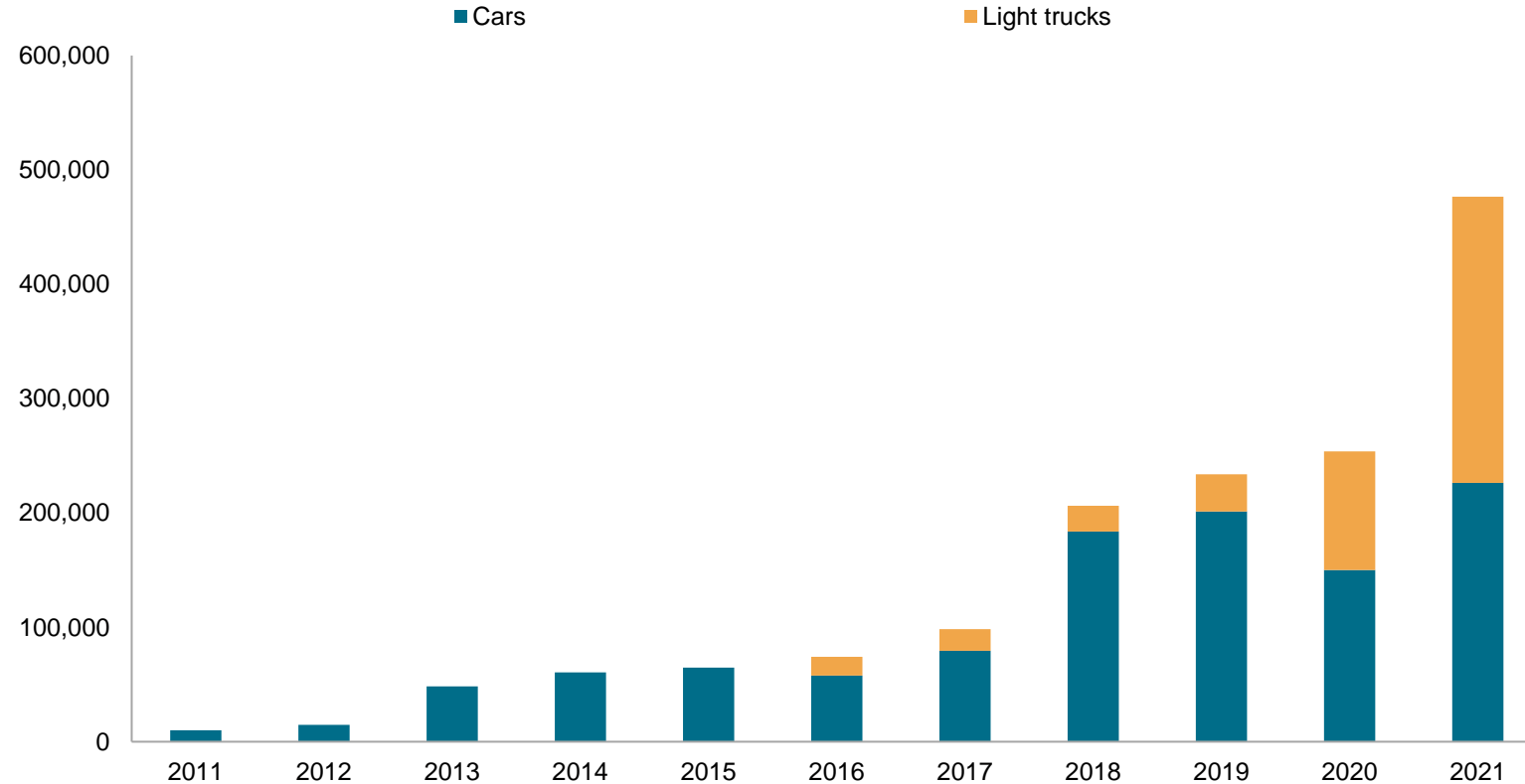


5. The road to electrification



Light trucks now taking over the US's EV market

New EV registrations in the US by vehicle type



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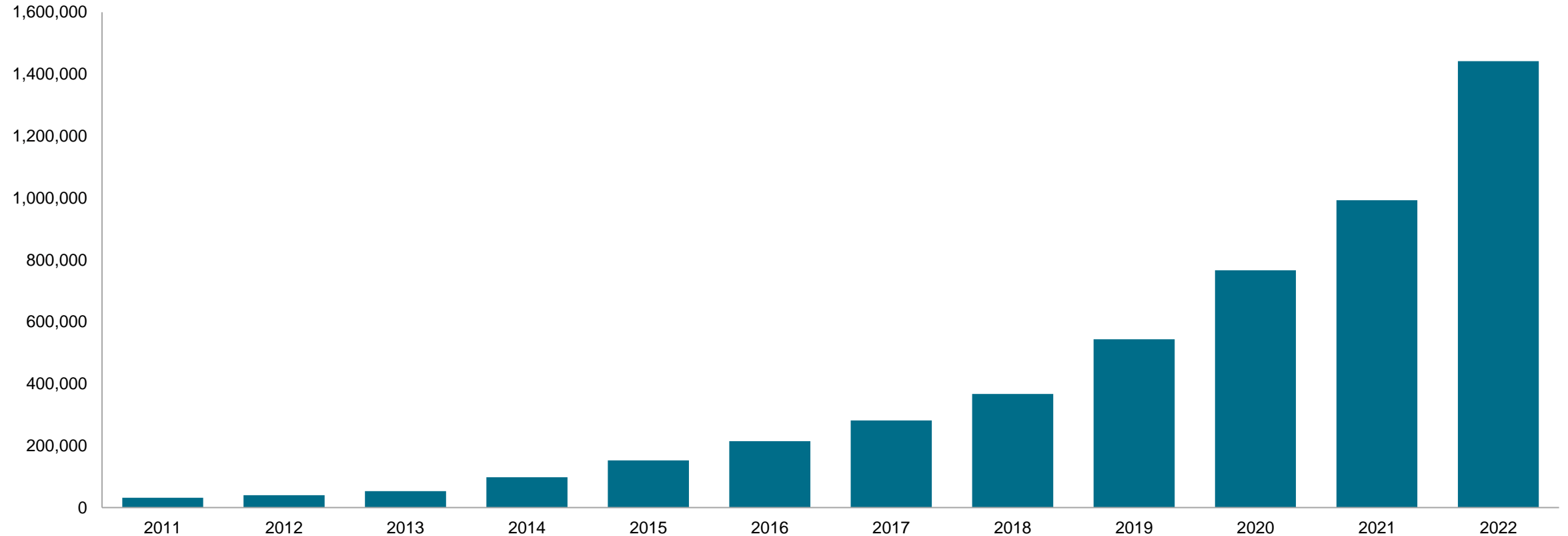
Light Trucks right now are where the EV Growth is, just like the rest of the automotive space

From 2019 to 2020 car registrations actually shrank by 25% while truck registration increased by over 3x.

VIO for EVs is growing, and maybe even heading toward parabolic growth

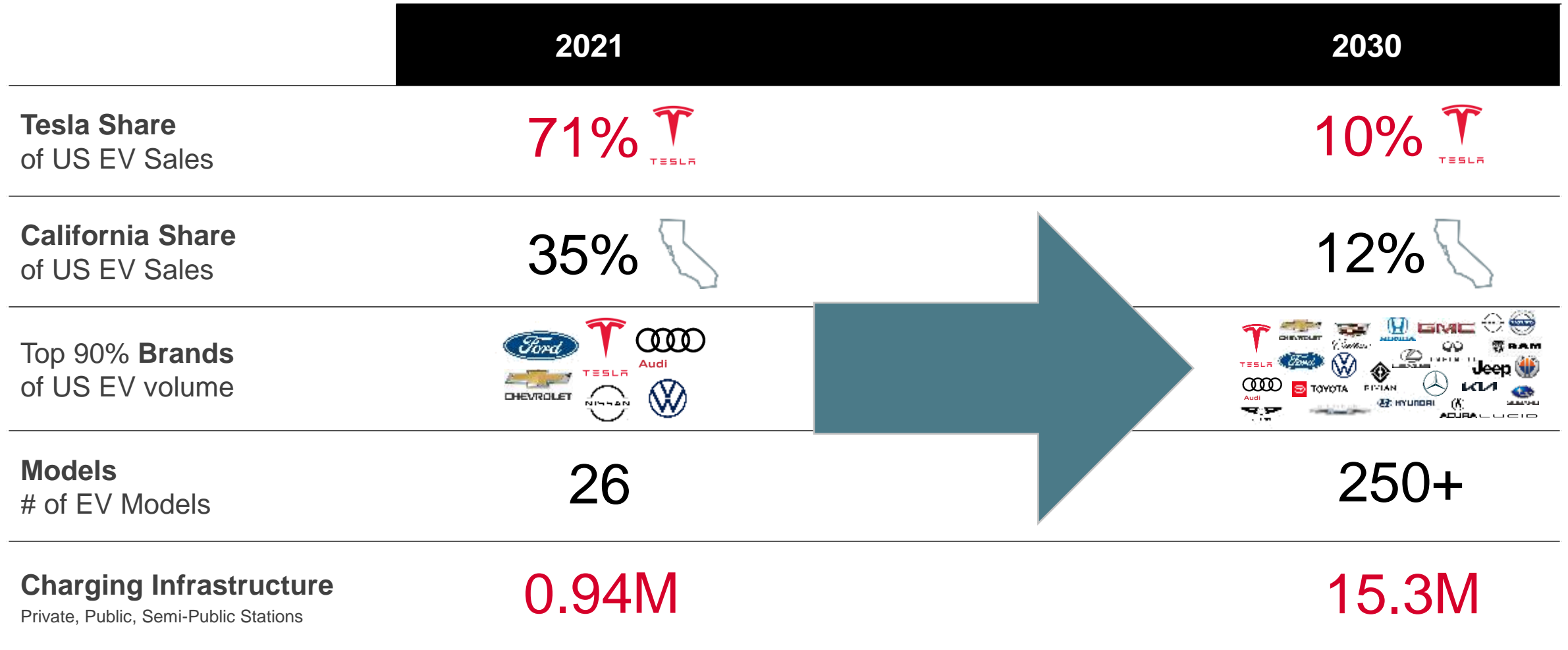
Q4 2022 EV VIO was heading towards two million

US electric vehicle VIO 2011-2022



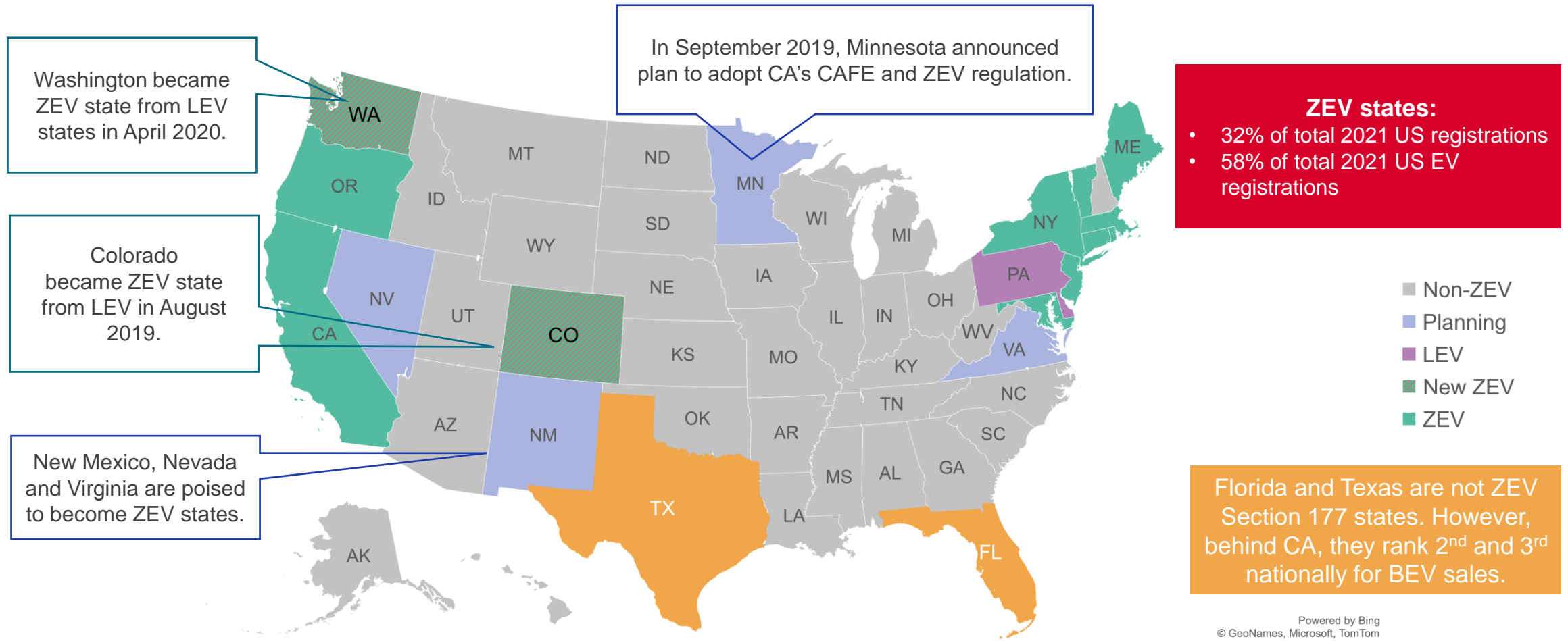
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The Battery Electric Vehicle (BEV) landscape is growing exponentially



ZEV/LEV States Map

Two previous LEV states, Colorado and Washington recently became ZEV; more expected to follow...



Sources: CARB, S&P Global Mobility research

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EV volume is growing, but face headwinds to continue pace

“The world needs more oil and gas now to deal with an energy shortage while pushing to transition to renewable supplies.” – Elon Musk, ONS Energy Conference, Norway

([Tesla \(TSLA\) Elon Musk Says World Needs More Oil and Gas as Bridge to Renewables – Bloomberg](#))

“The shift to relying on electricity for transport requires more battery materials including iron and lithium...That industry needs to expand massively so enough cells can be made to replace the energy provided by fossil fuels.” – Elon Musk, ONS Energy Conference, Norway

([Tesla \(TSLA\) Elon Musk Says World Needs More Oil and Gas as Bridge to Renewables – Bloomberg](#))

"staggering amount of work and investment that is needed to scale this industry quickly"; and that "90% to 95% of the battery capacity supply chain the industry will need over the next 10 years has not been built yet" – RJ Scaringe, CERA Week 2022, Houston

(<https://ihsmarkit.com/research-analysis/fuel-thought-pace-change-energy-mobility-climate-innovation.html>)

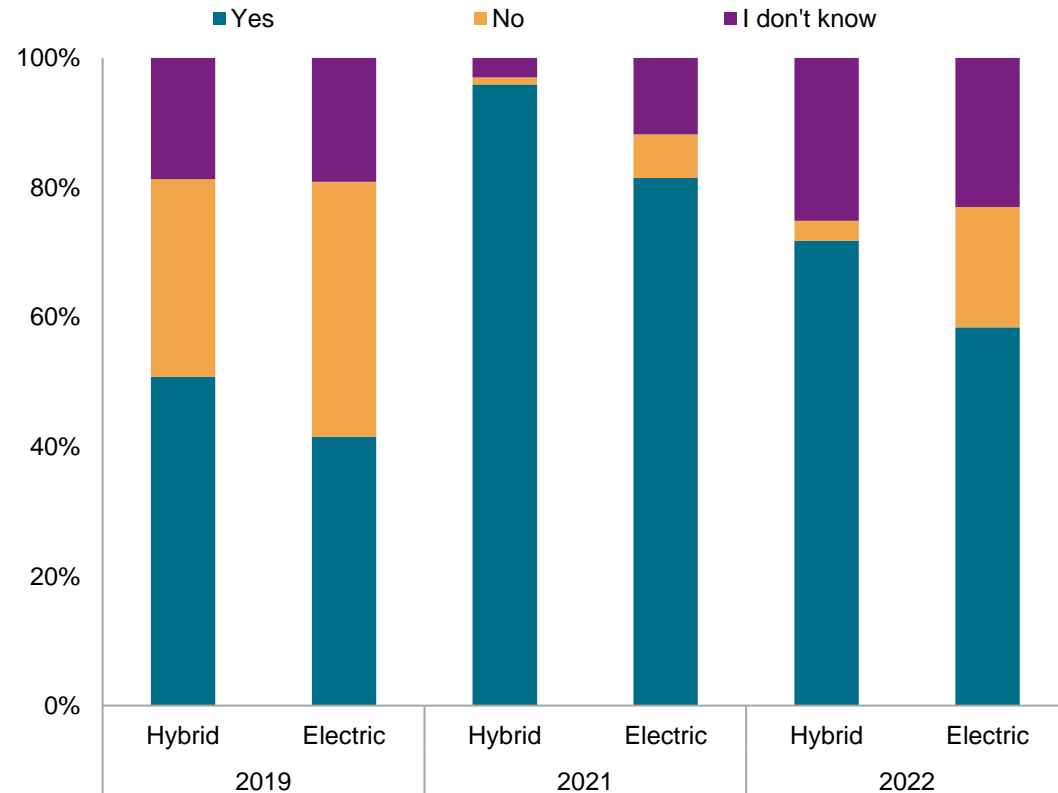
“How did the F-150 Lightning fare in this head-to-head challenge? Let’s just say it didn’t match up well against the gas-powered Sierra. Towing the travel trailer significantly ate into the EV’s range, limiting how far the truck could drive before requiring a recharge”

– RV.COM ([See How Towing a Travel Trailer Impacts the Range of an Electric F-150 Lightning - RV.com](#))

Consumer openness and buying decisions

Skepticism toward EV technology has grown as pricing, charging infrastructure, and battery technology

US consumers open to purchasing an EV/hybrid 2019, 2021 and 2022



Source: S&P Global Mobility.
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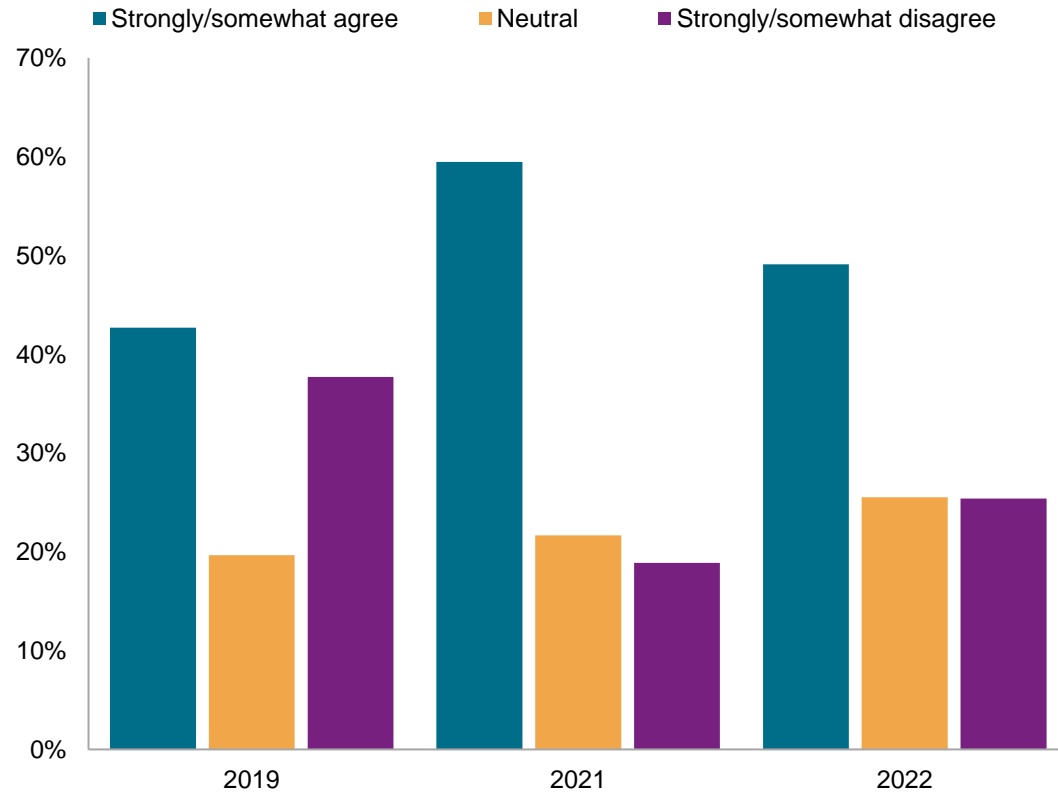
Reasons for and against purchasing an EV/hybrid



Consumer confidence

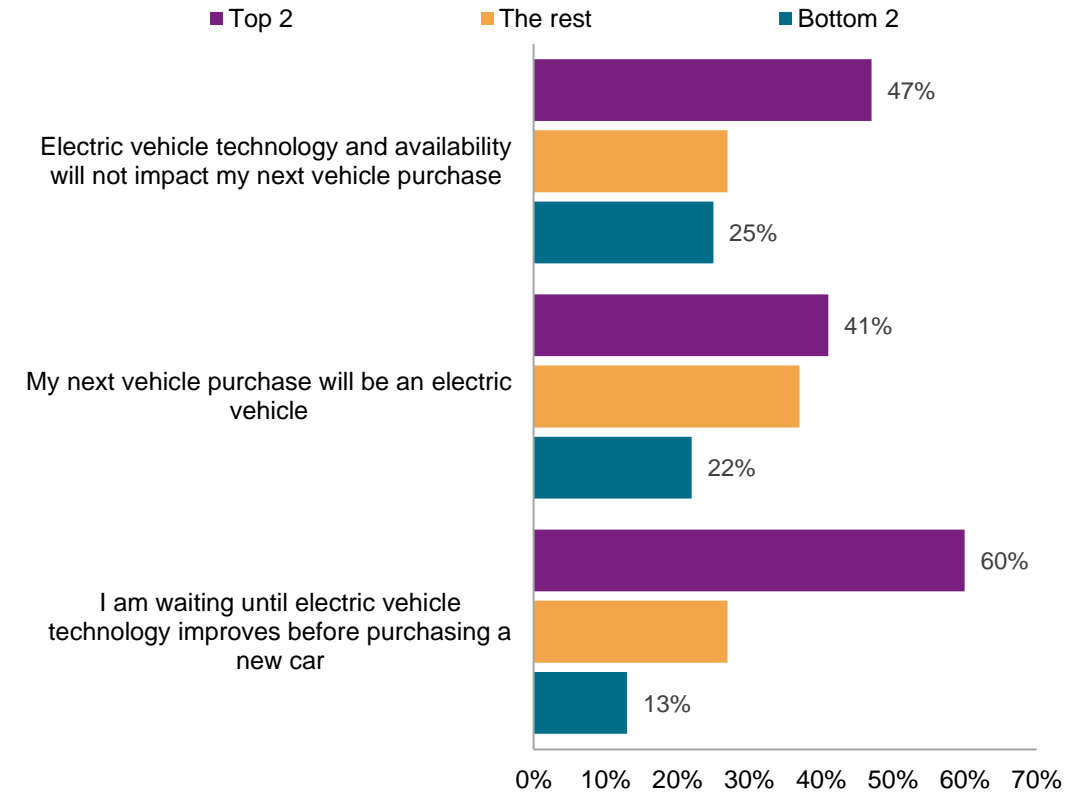
Confidence in EV technology has decreased since 2021, with most consumers opting to wait until technology

% believing EV tech is ready for mass adoption in their country



Source: S&P Global Mobility.
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Level of agreement with statement



Source: S&P Global Mobility.
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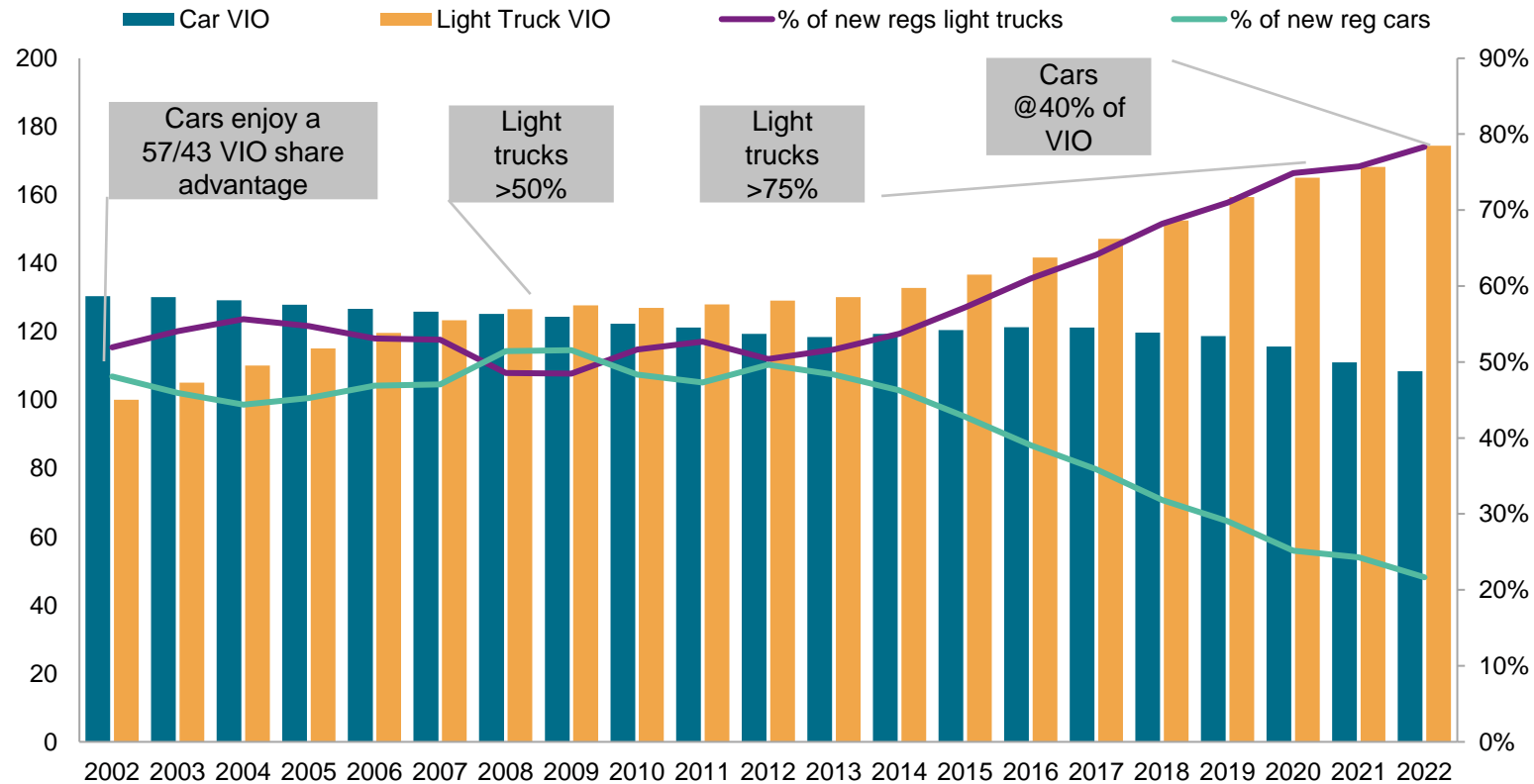
5. The road to electrification – How long will organic adoption take



Car/truck VIO interaction helps contextualize the shift to EVs

Evs they are coming, but ICE will be in the fleet for years

Car and truck interaction in US VIO 2002-2022



Source: S&P Global Mobility.
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in 2002 passenger cars represented 57% of overall VIO and share of light trucks in new registrations were about 54% - so close to even 20 years ago

It still took 6 years for light trucks to overtake cars in VIO

It took another 12 years for trucks to gain a 3:1 advantage in new vehicle sales

20 years later, going from slightly over 1:1 to 3:1 has only changed the composition of the fleet overall by 19 point

The shift to light trucks is picking up steam, but even from about 1:1 it has taken decades...EVs currently represent less than 1% of VIO and 5% of new registrations...

From this perspective it will take a long time to turn over the fleet en masse to the concept of EVs

Wrap up

Summary

Fleet trend is positive for the aftermarket

- Increased repair opportunities to continue as new vehicle supply cannot keep pace with demand causing older vehicles to stay on the road longer
- Inflation and increasing interest rates have caused further new vehicle demand destruction and will continue to drive longer vehicle lifecycle in existing fleet
- Average age likely to experience upward pressure thru at least 2024 due to constrained new vehicle sales
- Vehicle usage has exceeded 2019 levels, even though the way people use their vehicles may have changed for the foreseeable future.
- Confusion and consternation around the rollout of BEV's may cause consumers to take a prolonged wait and see approach



Vehicle Fleet is healthy and growing

- Healthy and growing even amid low new vehicle sales. Consumers continue to demonstrate that they want vehicles in their driveway.



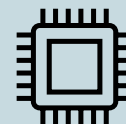
VMT bounced back and is growing, but is different

- Pandemic impacted overall travel for one moment in time, but also changed congestion patterns as more individuals continue to work remotely



Fuel Prices climbing could be a drag on VMT

- Between the Russia/Ukraine war, recession fear and inflation, the price of fuel remains high – which could be a headwind for VMT



Ongoing Supply Chain challenges continue

- The complexion of the vehicle fleet will continue to be changed by ongoing challenges as new vehicles cannot meet demand, and older vehicles are forced to stay on the road longer

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