



Q1 2016

Which countries are leading plug-in electric vehicle uptake?
How is uptake changing quarter by quarter?



China had a record year for PEV adoption over 2015 and that trend is continuing; China registered the largest amount of PEVs in Q1 2016, yet ranks lowest on the Plug-In Electric Vehicle Index.

Of all Q1 2016 PEVs registered in the eight countries analysed,

37% were PHEVs,
63% were EVs.

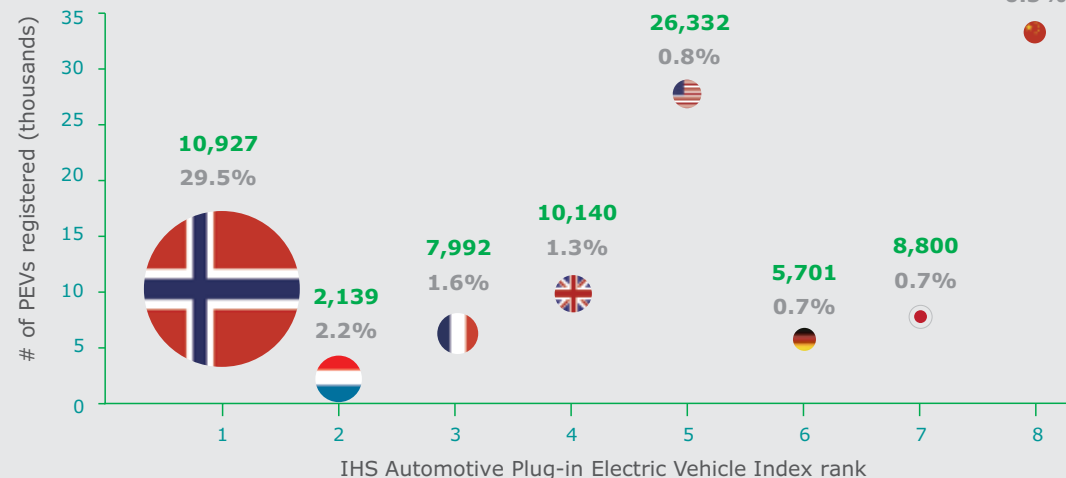
Plug-in Electric Vehicle (PEV) =
Electric Vehicle (EVs) + Plug-in Hybrid
Electric Vehicle (PHEVs)



#1

Norway once again leads the Plug-In Electric Vehicle Index ranking with almost 1 in every 3 vehicle registered in Norway in Q1 2016 being a PEV.

Q1 2016



PEV market share in **France** (rank 3) is gaining ground on PEV market share in the **Netherlands** (rank 2). Attractive incentives are supporting adoption of PEVs in France, while a change in PHEV taxation in January 2016 inhibited the market in the Netherlands.

Germany, like in previous rankings, is in the lower half of the ranking system. In Q2 2016, a new subsidy directly supporting PEV sales were legislated in Germany for the first time. IHS Markit expects Germany to rise in the Plug-In Electric Vehicle Index rankings in future editions.

IHS Automotive Plug-in Electric Vehicle Index ranks Plug-in Vehicle market share (%) in a given quarter; i.e. PEV registrations ÷ all vehicle registrations

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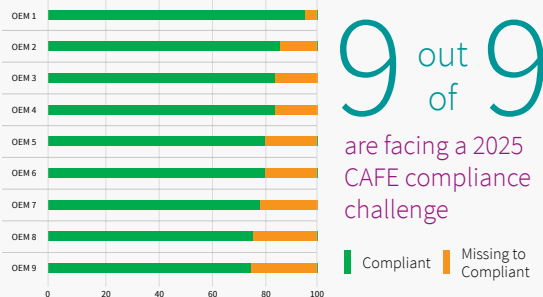
Source: IHS Automotive Plug-in Electric Vehicle Index



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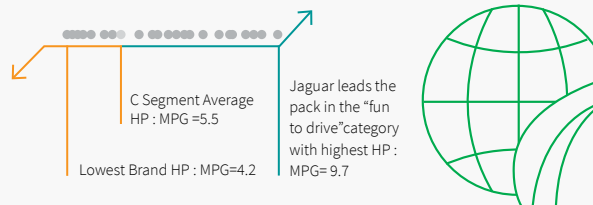
Will your vehicle fleet be compliant?

Many OEMs will still be challenged to meet future emissions regulations (US Passenger Car Fleet)



Competitive Trade - off

U.S.OEMs that are further behind may have to sacrifice vehicle performance to become compliant



\$400 Billion

Estimated global incremental spend on technology solutions for light-duty vehicle energy management to 2020

22g/km

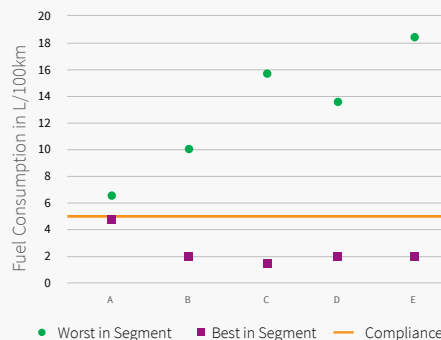
average reduction in CO₂

across the Top 30 EU28 passenger cars (between 2015 and 2021)



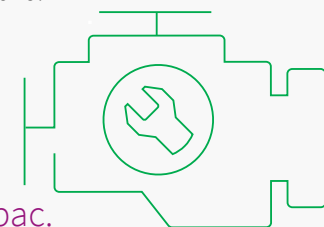
Each segment tells a different compliance story

China Passenger Car Fleet in 2021



Balancing powertrain R&D with market demand and regulatory compliance can be complex and costly. Are you leading or lagging the market? What are the implications?

Learn more at www.ihsmarkit.com/vpac.

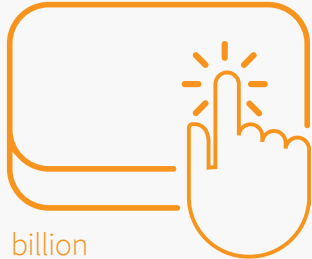




Connected Car - Are your investments “aligned” with the latest developments?

The global automotive
display systems
market will grow to

\$18.4 billion

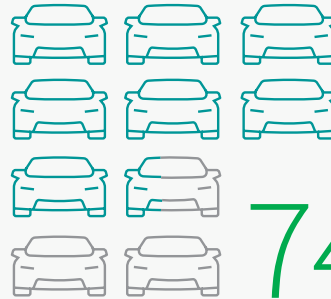


by 2021, nearly doubling in the next six years,
90% of which will come from continued
growth in center stack and instrument cluster
display systems

Autonomous Vehicles



vehicles with some form of autonomy will be
sold globally in 2035



74%

of new car intenders who currently own a
vehicle with an infotainment system are willing
to pay for software updates that improve or
add functionality to their vehicle

Global revenue from automotive telematics systems
will grow at a compound annual growth rate (CAGR) of
more than 19% to

\$4.2 billion
by the end of 2021



In 2035, China will have
the largest driverless fleet for
mobility services with more than

8 million vehicles in-use
for “car as a service”



The rise of connected cars and
autonomous driving is breeding
new strategies around mobility
and raising concerns about the
viability of traditional automotive
business models.

Automotive can help you
navigate the change.

Learn more: www.ihssupplierinsight.com

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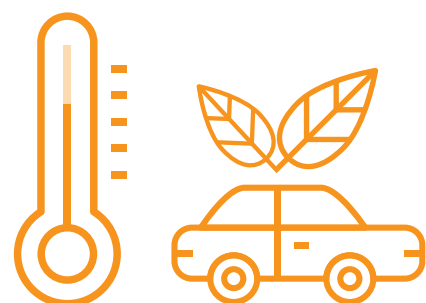
The automotive environment may change drastically under the new administration

This infographic represents the current environment for two of the promises highlighted in Donald Trump's Contract with the American Voter.

Regulations

"An economic plan...with trade reform, regulatory relief, and lifting the restrictions on American energy."

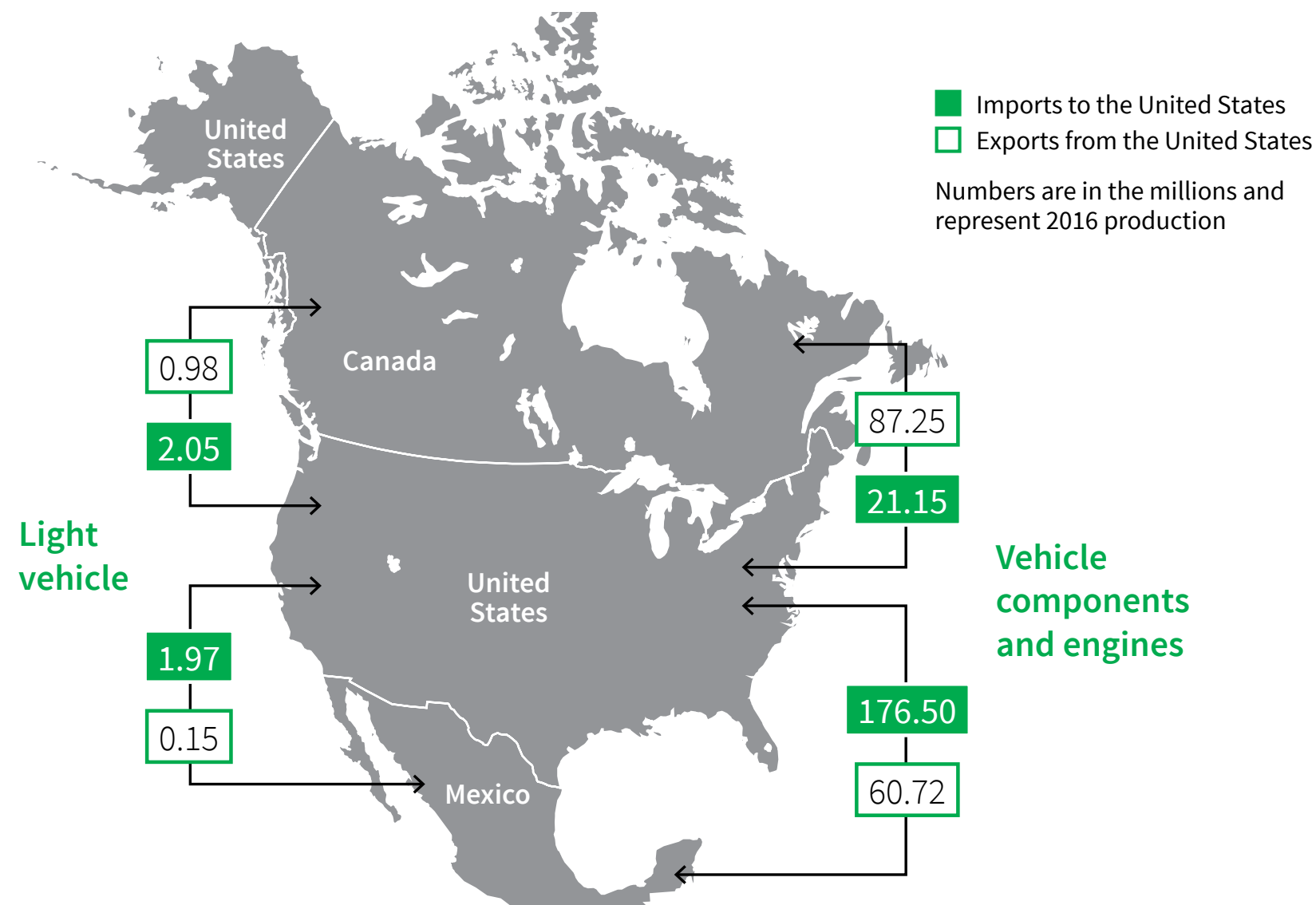
"...a requirement that for every new federal regulation, two existing regulations must be eliminated."



65% of zero emission vehicles (ZEVs) are registered in the 10 states that have adopted California's ZEV standard. If regulatory restrictions are lifted, what will be the impact on electric vehicles?

Free trade

"...renegotiate NAFTA or withdraw from the deal under Article 2205."



More than 5.15 million light vehicles and 345.62 million components or engines move between the United States and Canada or Mexico and could be impacted by new US tariffs and retaliatory tariffs.

Learn more about how the new administration's proposals might affect the status quo.
Visit: [IHS.com/NewAdministrationAutoScenarios](https://www.ihsmarkit.com/NewAdministrationAutoScenarios)



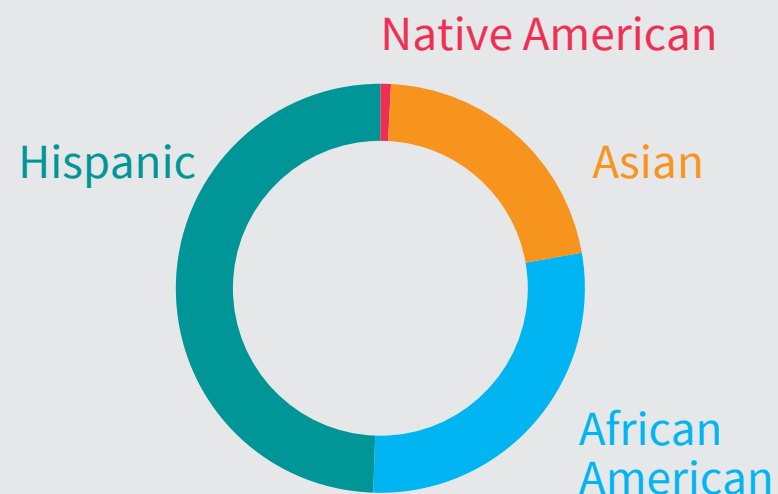
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In the United States, 28% of 2016 model-year (MY) vehicles were registered to ethnic consumers.

How can you harness the purchasing power of these markets?

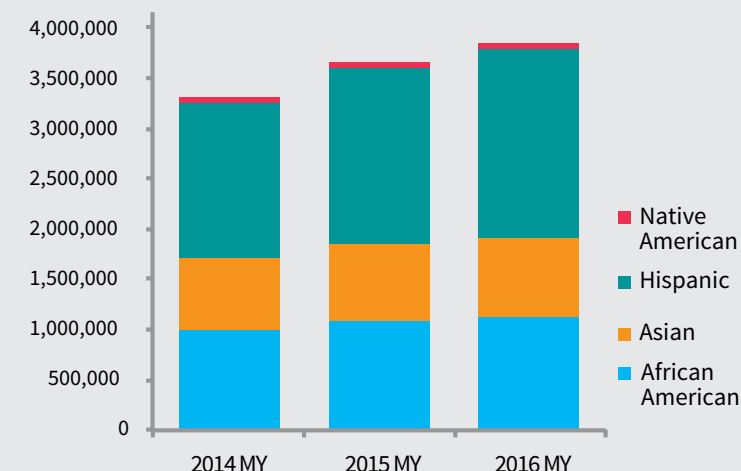
Ethnic market share

The Hispanic market is almost as big as the other three markets combined



Ethnic consumer volume growth outpacing industry

Ethnic consumer volume (+5%) grew 5x faster than the balance of the industry (+1%)



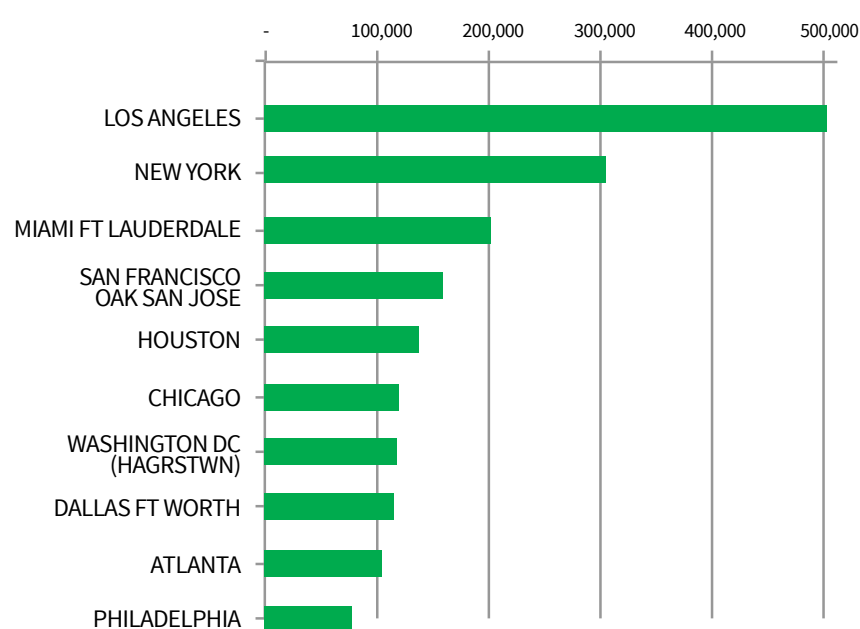
Top 10 Female DMAs (2016 MY)

Despite slower growth rates, New York is still #1 for number of female buyers

Rank	Location	2016 MY	2016 YoY Growth
#1	NEW YORK	385,976	5%
#2	LOS ANGELES	371,400	8%
#3	CHICAGO	154,102	6%
#4	PHILADELPHIA	151,943	3%
#5	DALLAS FT WORTH	144,918	10%
#6	DETROIT	142,731	8%
#7	MIAMI FT LAUDERDALE	135,459	13%
#8	BOSTON (MANCHESTER)	131,841	1%
#9	HOUSTON	126,481	1%
#10	SAN FRANCISCO OAK SAN JOSE	120,281	7%

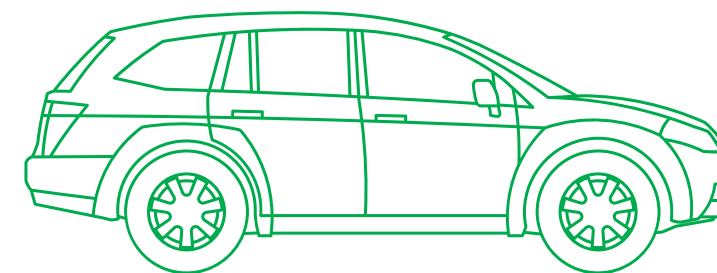
Top 10 Ethnic DMAs (2016 MY)

Leading the pack with 503,941 vehicles sold to ethnic groups, Los Angeles grew 7.9% y/y from 2015-16



Most popular segment for females

Non-luxury compact CUV is the leading segment among female drivers, with 63% more vehicles sold than the #2 segment



For more information, please visit [IHS.com/Auto-diversity](https://www.ihsmarkit.com/Auto-diversity)

The top seven reasons why Brazil's automotive sector will not rebound as quickly as hoped

1. Technology

The local supply chain will face great hardship to meet the investment levels needed to keep up with the global technological revolution, and a strong consolidation of Tiers 2 and 3 is likely to occur.



2. Consumption

Without a robust competitiveness policy, market volume in 2025 **will not return to the 3.6 million** units sold in 2012.

3. Capacity utilization

Current capacity is more than 4.5 million units, well beyond current demand. Idleness will weaken companies and jeopardize the supply chain.

Roughly **300 domestic suppliers will be reduced by half** in 10 years, owing to mergers and acquisitions in the sector.



4. Regulation

Disregard for global regulations leads to noncompliance with nontariff barriers, which will reduce Brazil's access to export markets.



5. Prices

The rising cost of materials, incorporation of new technologies, and loss of production scale will drive car



prices up by 2025.

6. Sales

The share of entry-level and low-content cars will fall from the 20% share achieved in 2010 to **less than half** of that in 2025.



7. Distribution network

Car dealers will have to change how they operate. As profit margins for new cars erode, revenue must come from services, parts, and used cars.



Brazil is experiencing its worst recession in 80 years.

Auto sales are down 50%↓

from what they were three years ago, and big changes will be necessary to get Brazil back to the peak reached in 2012 by 2025. However, with the country mired in both political and economic crises, will industry stakeholders be willing to work together to enact change?

Download our summary analysis that elaborates on the top seven reasons why Brazil's automotive sector will not bounce back any time soon.

www.ihsmarkit.com/AutoSectorBrazil

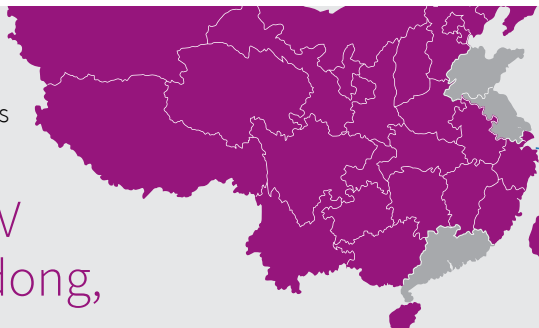


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How well do you know your automotive markets?

China is a vast and challenging market. Validating a new model or platform requires expertise and reliable insight.

25% of Chinese SUV sales occur in Guangdong, Jiangsu and Shandong



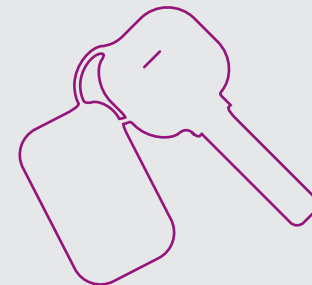
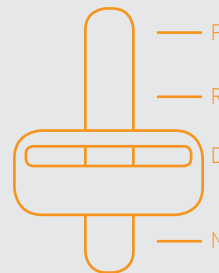
The average age of vehicles in Germany is constantly rising: Between 2005 and 2015, the average age of the parc grew

by about 1.5 years to 9 years

From 2005 to 2015, the share of

Automatic Transmissions has doubled in China

Over half of all vehicles registered in 2015 had automatic transmissions



The western European used car market has

grown by 3.1% from 2010 to 2015

(supported by strong manufacturers, dealer and rental new car registrations)

Access the most comprehensive vehicle-market intelligence with MarketInsight

www.ihs.com/MarketInsight

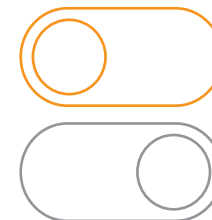


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Could lightweighting be the key to meeting your compliance goals?

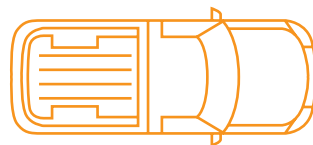
Weight Reduction + Propulsion Efficiency

Two main levers automakers will use to comply with stiffening emissions/fuel economy standards globally.



12x

Aluminum sheet usage (net) is slated to climb 12x from 2014 to 2025—reaching 2.1 billion pounds.

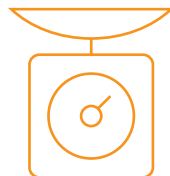


15%
weight loss

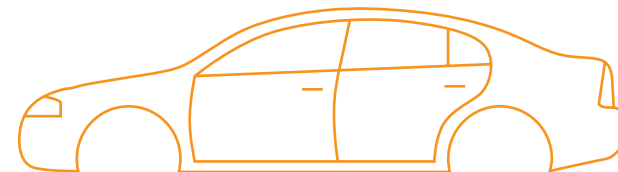


The average body-in-white (BIW) mass in North America will decline more than 15% from just over 979 pounds in 2014 to under 827 pounds in 2025.

SUV/CUVs
tip the scale



Increases in the production of SUV/CUVs alter compliance challenges as these vehicles can weigh 10–15% more than their sedan siblings from the same platform.



Most substantive reductions are occurring within the “edge” segments:

- Full-size unibody vehicles
- Sporty cars
- Full-frame light trucks

Let BIW Material Forecasts from IHS Markit help you pinpoint future opportunities for mass reductions. Visit – www.ihs.com/BIW



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Are you prepared for the growth in global truck segments?

In 2022, global medium-duty (6-15T) truck sales will cross the 1 million unit mark for the first time and by 2025,

approach **1.1 million**



In the first half of 2016, while China's medium & heavy truck market rose 15% y/y, sales of artics (tractors) alone surged more than

30%



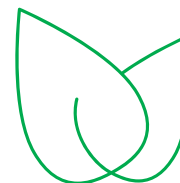
Through 2025, production of medium & heavy trucks (>6T) is expected to rise more than

25%



2X

In North America, installations of natural-gas engines in heavy-duty (Class 8) trucks are predicted to nearly double by 2020 and rise further to 2025



By 2025, more than **70%** of the world's medium- & heavy-truck sales volume is expected to meet the equivalent of Euro V or higher emission standards, up from below 50% today

IHS Markit provides sales, model production and engine production forecasts for the world's medium and heavy commercial vehicles.

Find out more at: [IHS.com/automotive](https://www.ihsmarkit.com/automotive)



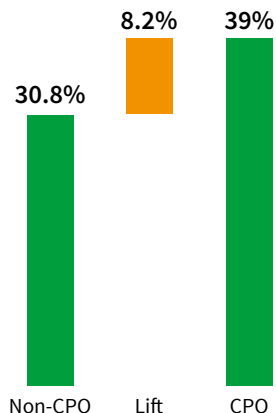
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Driving loyal owners

Certified pre-owned customers lift a brand's loyalty rate by

8.2 percentage points

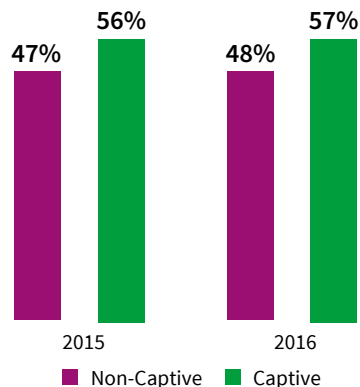
over non-CPO buyers



Owners that finance their vehicle through a captive lender have a make loyalty rate that is

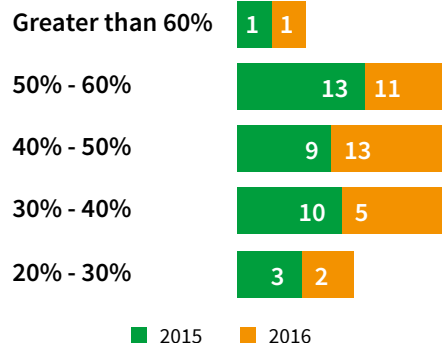
9 percentage points

higher than those who finance through a non-captive lender



Benchmarking loyalty performance

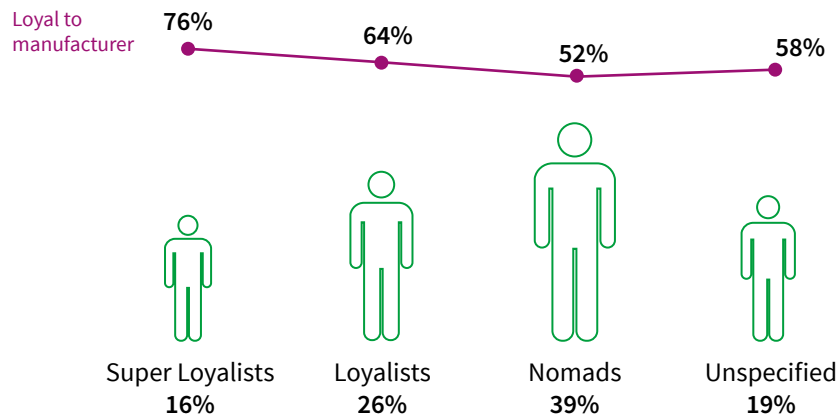
of makes per loyalty rate range



8.3 million customers returned to market in the 2016 model year

52.8% of those customers repurchased from a brand they already own

Understand what "type" of loyal customers are returning to market



Percentage of return to market population



As the number of platforms is reduced and suppliers consolidate, it has never been more essential to have access to **new intelligence on vehicle components and systems**

China will surpass Europe by 2020 in terms of turbocharger demand with a compound annual growth rate of

20.4% through 2021

In Norway, plug-in electric vehicles (PEV) have nearly **30%** market share



48V electrical networks will be installed in more than **13 million vehicles** in 2025, with significant growth in non hybrid applications



Aluminum

brake calipers will nearly double by 2022

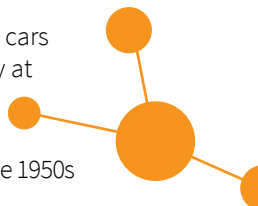


Top-10 suppliers

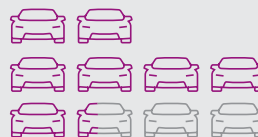
of door trim panels will control nearly 75% of the market by 2022 versus 70% in 2015

Steel content in cars remains roughly at

60%, the same as in the 1950s



74%



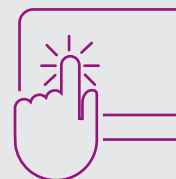
of new car intenders who currently own a vehicle with an infotainment system are willing to pay for software updates that improve or add functionality to their vehicle



Global demand for head-up display system is expected to grow from 2014 to 2021 at a compound annual growth rate of **24.2%** to 8.7 million units

Projection-capable head unit systems will become more mainstream in the market by 2022, with a

10x increase of their penetration rate (to 56%) versus 2015



Increased penetration of LEDs in headlamp applications will generate

USD4 billion

in incremental business opportunities for headlamp suppliers by 2022



76 million autonomous vehicles will be sold globally through 2035

Global OE light vehicle

HFO-yf refrigerant usage will surpass HFC-R134 in 2023



SupplierInsight, from IHS Markit, provides comprehensive coverage of vehicle components and systems

Browse through all SupplierInsight's assets at ihssupplierinsight.com

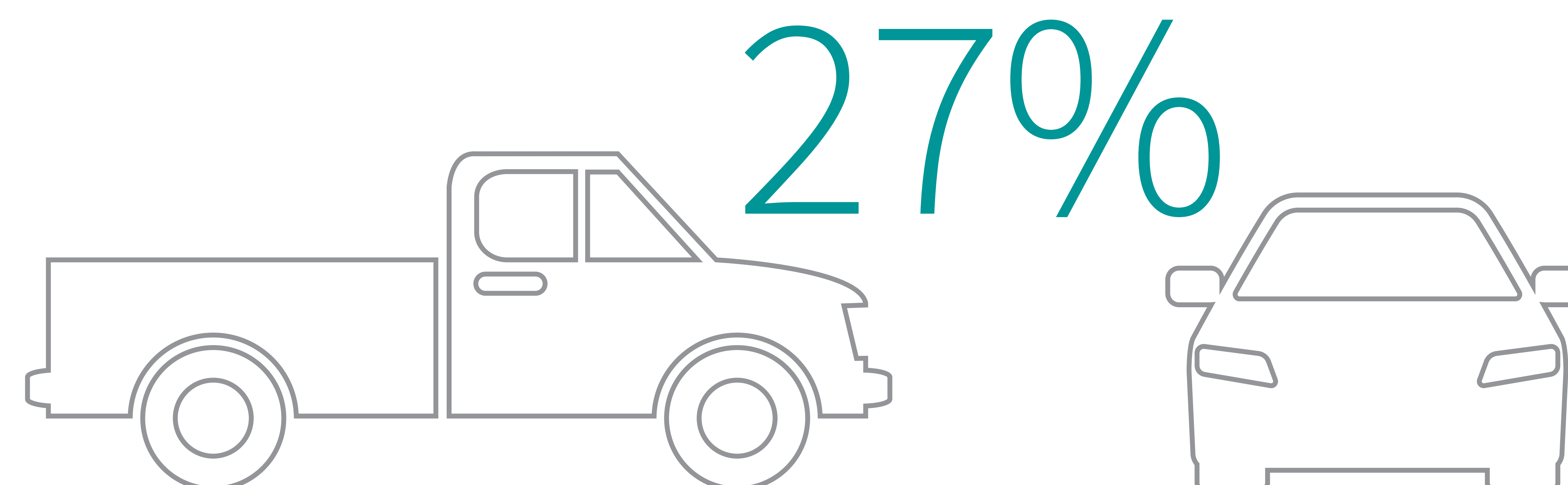
View a demo of SupplierInsight IHS.com/supplierinsight



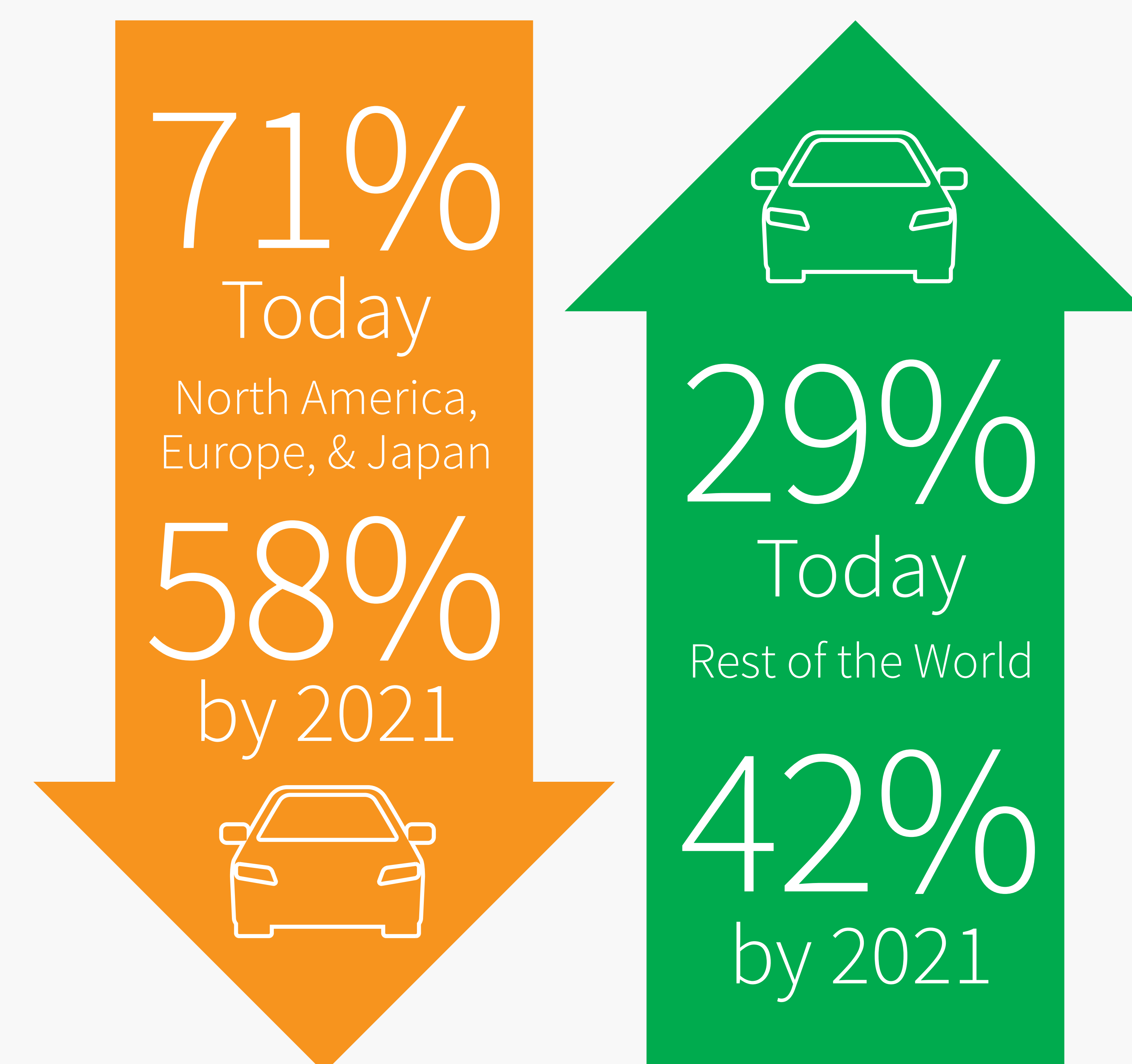
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Aftermarket Opportunities –
Will you capitalize on the growth in
vehicles in operation (VIO)?

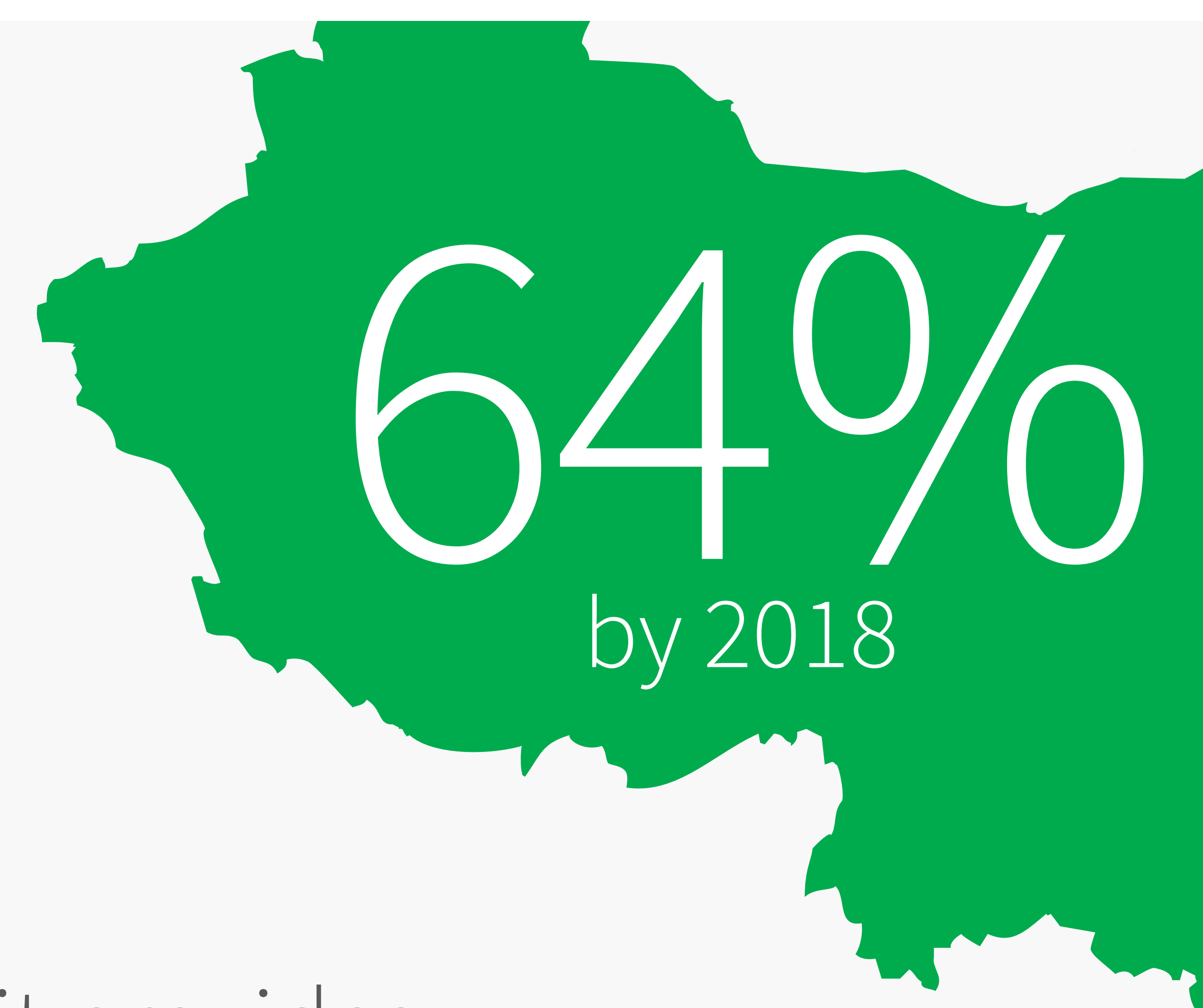
The global vehicle population of cars and light trucks
will grow 27% over the next 7 years



Global light vehicle population
mix is changing



In China,
VIO will
Increase



IHS Markit provides
detailed VIO Data for

95% of the
1.3 Billion
vehicles around the world



Nearly

60%

of light vehicles
will be produced on
global platforms by 2021

