Global Automotive Industry Outlook, 2019

Executive Committee Meeting
Vijayawada

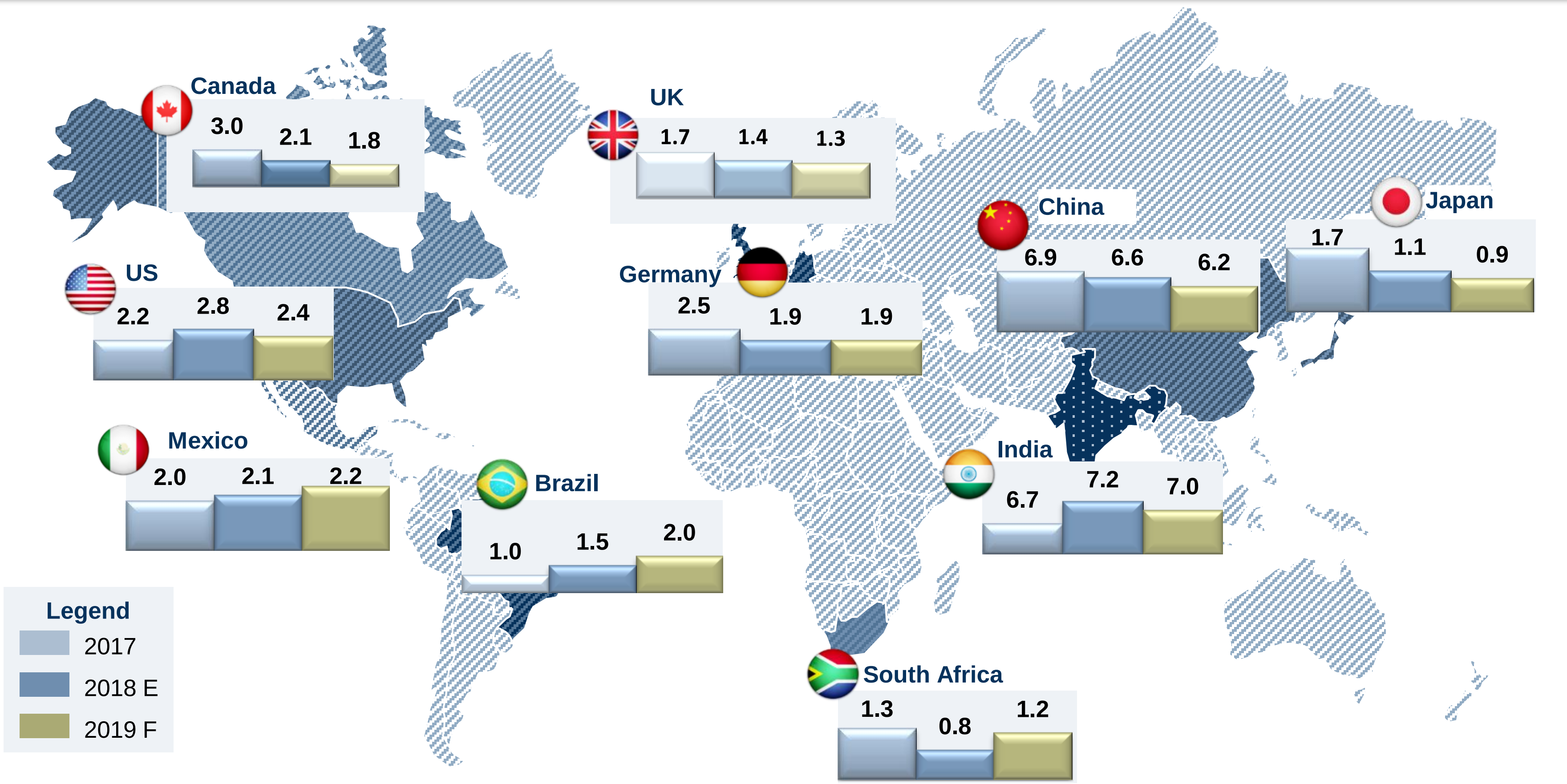
ACMA
Automotive Component Manufacturers Association of India

March 2019

World GDP Growth Snapshot

The 2019 growth slowdown is expected across global economic heavyweights – China and the US, with additional tariffs from 2018 to continue to hurt growth.

GDP Growth Rate of Key Select Economies, Global, 2017–2019



Note:

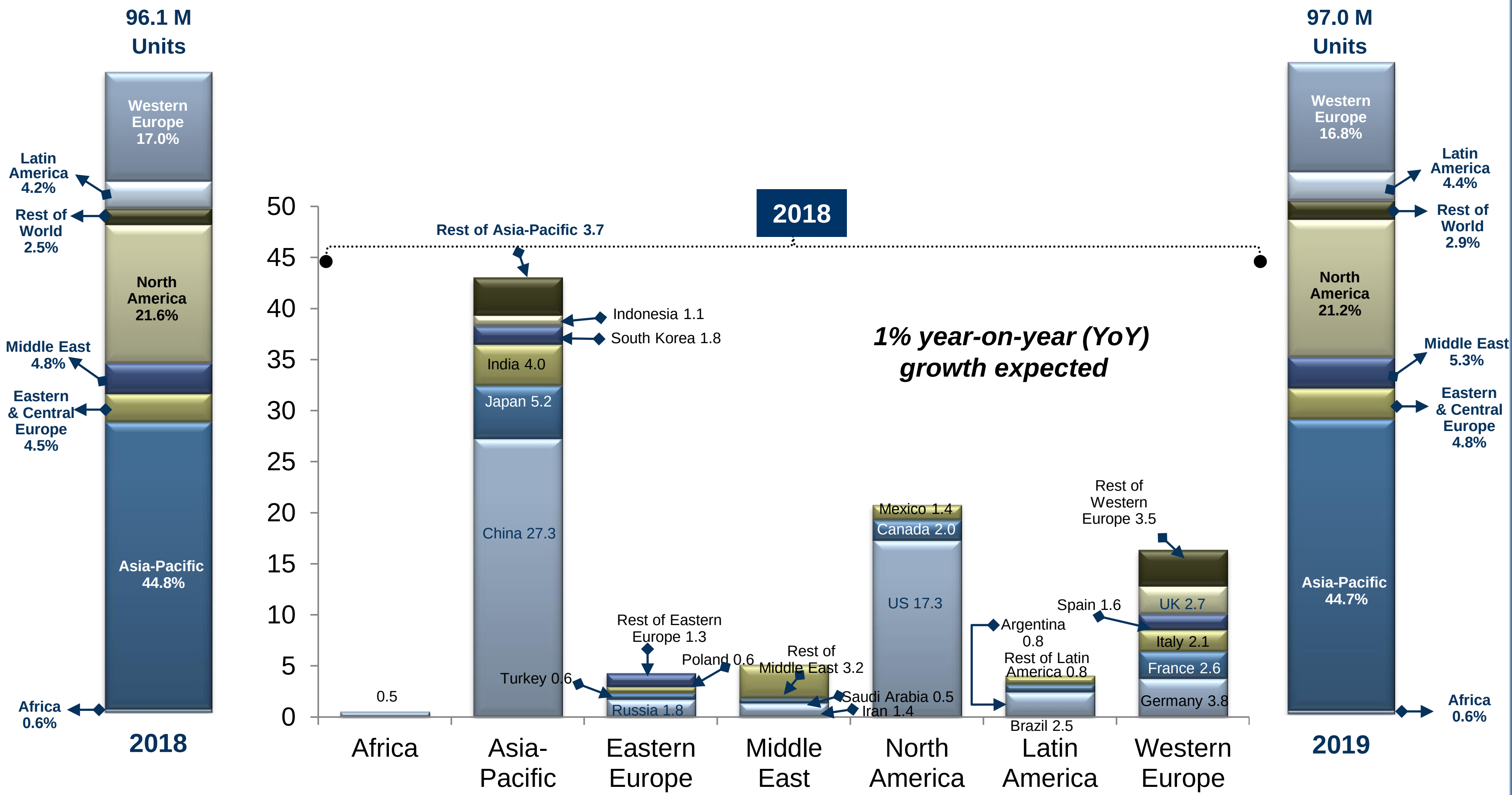
- GDP Growth Rate is represented in percentage terms.
- E represents estimates and F forecasts.
- The UK's forecast is based on the assumption that a no deal scenario does not unfold.
- India's data are presented for fiscal years. For example- 2017 data refer to data for the fiscal year April 2017– March 2018.

Source: Frost & Sullivan

Global LV Sales by Region in 2018 and 2019—Snapshot

Global LV sales is expected to continue growing in 2019 because of Eastern Europe and South America, while sales in North America would slow

Automotive Industry Outlook: LV Sales, Global*, 2018, 2019



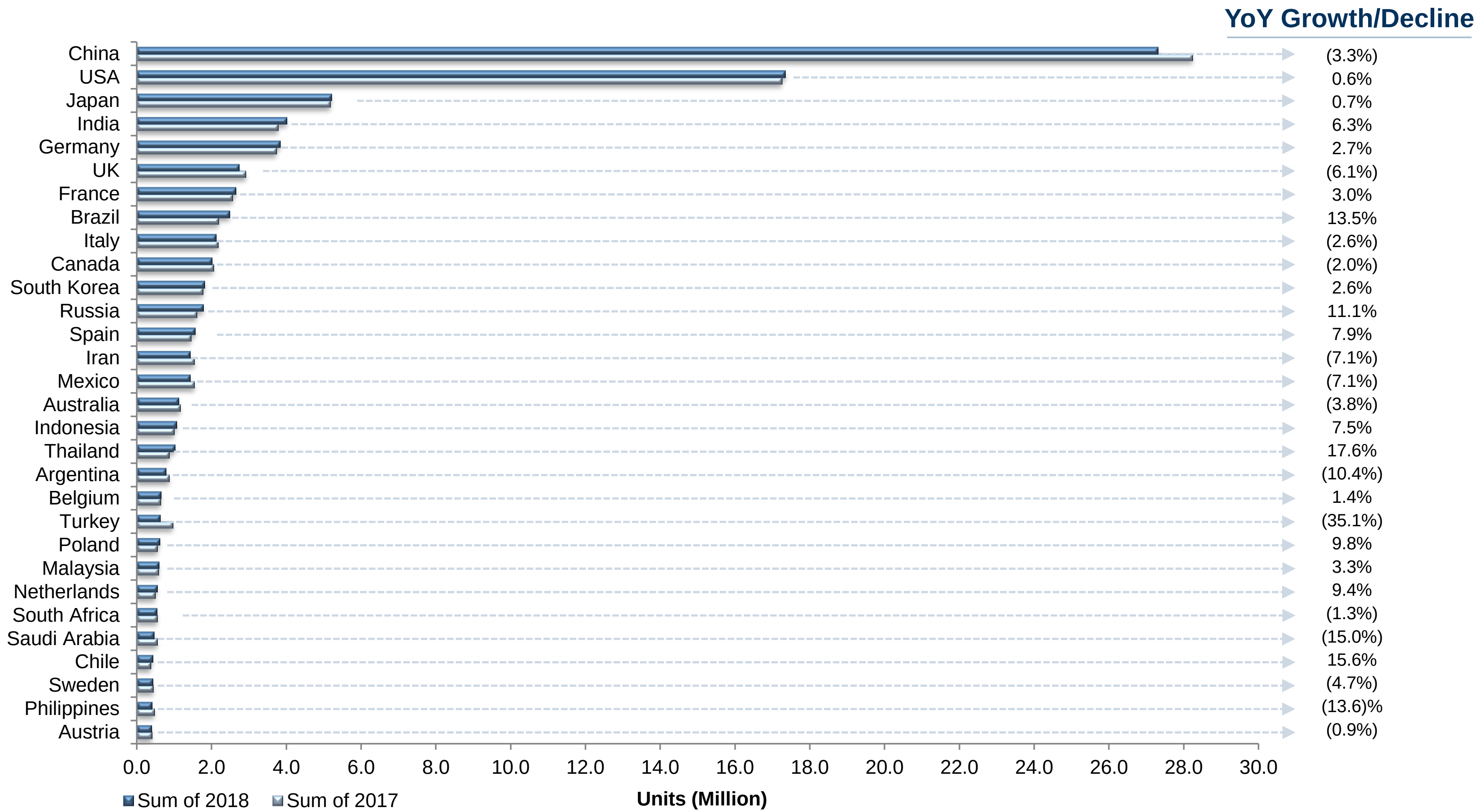
Key: Sales data published by respective automotive associations of countries might vary because of difference in reporting structure.

*Rest of World breakdowns are not available
Source: Frost & Sullivan

Global LV Sales of Top 30 Automotive Markets

China and the United States contributed close to 47% to global LV sales in 2018; top 6 markets constituted about 64% of the total LV sales.

Automotive Industry Outlook: LV Sales by Country, Global, 2017 and 2018



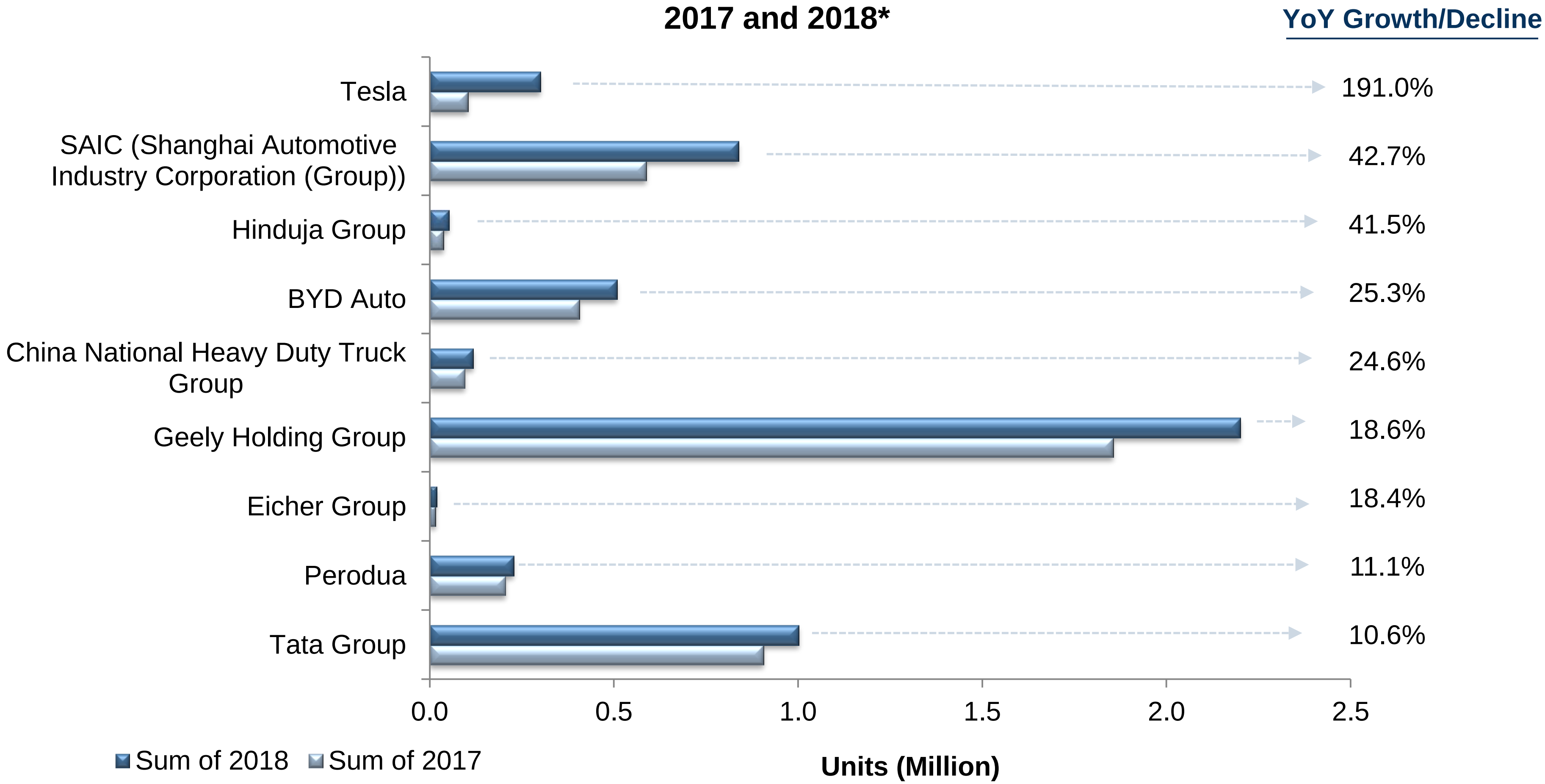
Key: Sales data published by respective automotive associations of countries might vary because of difference in reporting structure.

Source: Frost & Sullivan

LV Sales of Top OEMs Witnessing Double-Digit Growth Globally in 2018

Four out of Nine OEMs were China based; Tesla is becoming seller of not just EVs but also of all luxury cars

Automotive Industry Outlook: LV Sales by OEM Groups with Double-Digit Sales Growth, Global, 2017 and 2018*



* Sales data published by the OEM groups might vary because of difference in reporting structure. Frost & Sullivan's calculation includes passenger and LCV with gvwr of up to 6 MT.

*GM sales includes Opel and Vauxhall sales until 2016; RNMA includes sales of Mitsubishi since 2016; PSA sales includes Opel and Vauxhall since 2017.

Source: Marklines ; Frost & Sullivan

Big Data Powering Automotive Businesses

'Internet of Things' will form the foundation for transformative automotive products that include vehicle and device connectivity, autonomous driving, electric powertrains, and shared mobility.

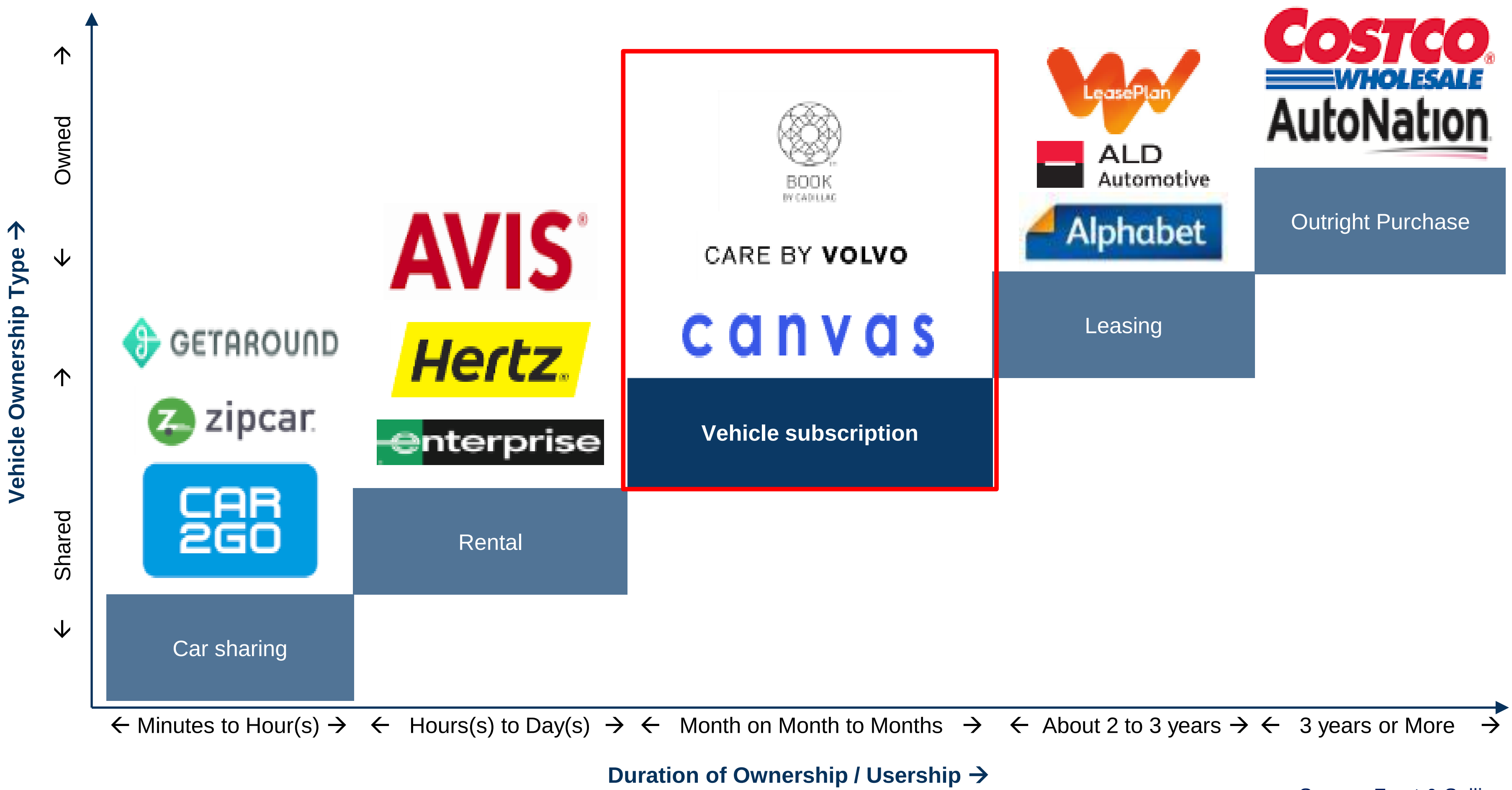
Automotive IOT Platforms	aws	IBM Watson	HARMAN A SAMSUNG COMPANY	Microsoft Azure	cisco Jasper
Description	Server less IoT applications	Cloud Data Analysis	Management of connectivity, analytics, applications	Comprehensive end-to-end IOT solutions platform	Automated connectivity management platform
Solution Type	Cloud based platform	Cloud based platform	Cloud based platform	Cloud based platform	Cloud based platform
Current IOT Solutions	Connected vehicles solution + customer engagement + autonomous driving	AI Assistant + Cognitive computing vehicle-to-cloud solution	AI Assistant + Big data platform + OTA service + Car-as-a-service + V2X Connectivity + Reporting + Maps-as-a-service	Azure IOT Solution Accelerators + Azure IOT Hub + Azure Edge + IOT Central (SaaS solution)	Control Centre; Premium services Smart Security & Traffic Segmentation
Key Customers	OLA, Uber, Lyft, BMW, Honda	BMW, Airwire Technologies, Honda R&D	18 Global OEMs (Names not disclosed)	Rolls Royce, MapBox, Renault Nissan	Audi, BMW, Daimler, FCA, Ford, GM, Hyundai, Honda, Jaguar, Mitsubishi, Volvo, Renault Nissan, Volkswagen
Key Partnerships/ Acquisitions	Collaborated with Deloitte for IOT Analytics	Collaborated with GM OnStar Go Platform	Acquired by Samsung in 2017	Collaborated with Dell Technologies for end-to-end IOT solutions	Collaborated with Hyundai to develop smart vehicle solutions

Source: Frost & Sullivan

Introduction to New Vehicle Usership/Ownership Models

Over 50 vehicle subscription offerings expected in the market in 2018

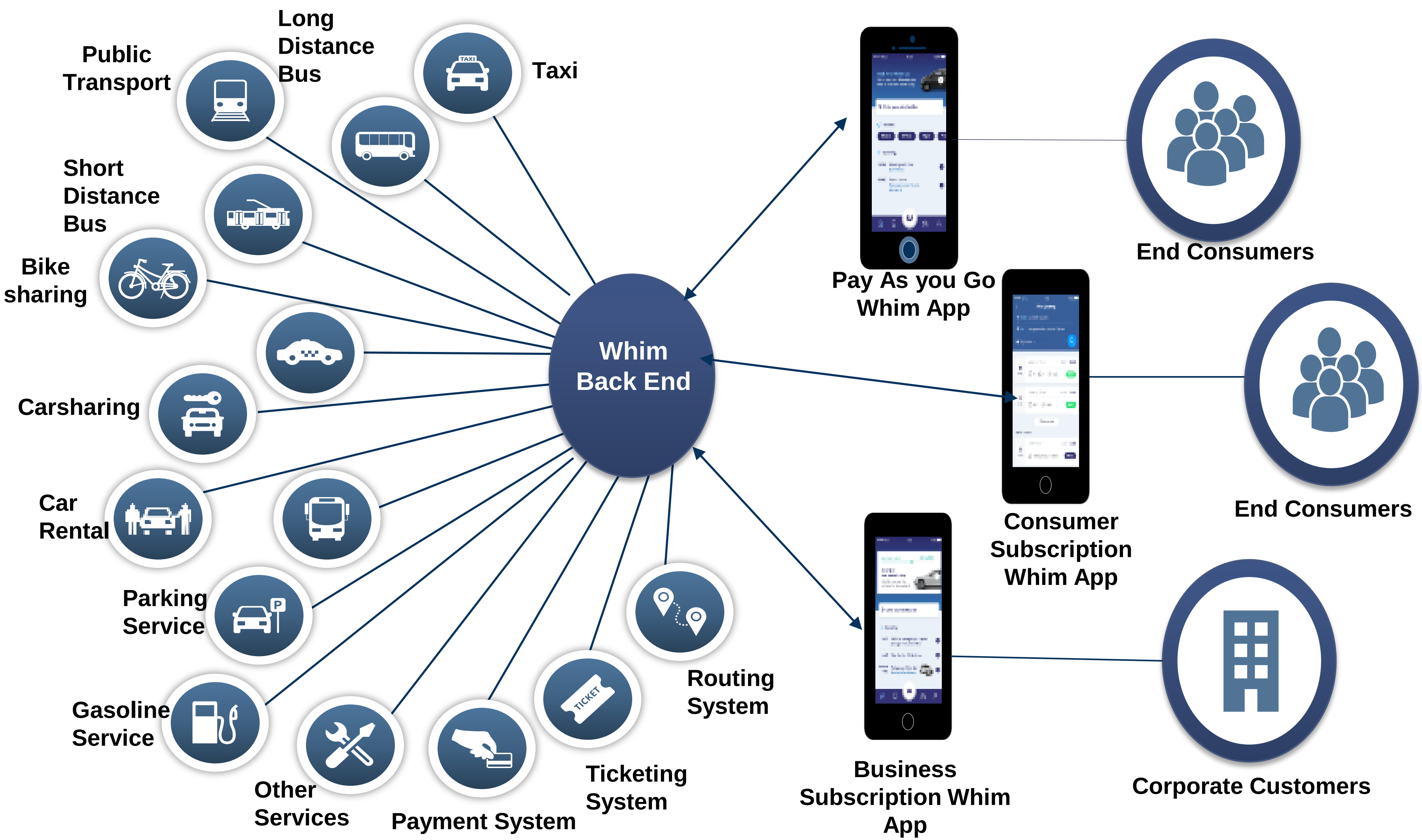
Vehicle Subscription: Introduction to Vehicle Retailing Formats, Europe and North America, 2017-2018



Source: Frost & Sullivan

MaaS Solutions " The Whim App"

For about one 180 euros, consumers can have unlimited access to public transport services plus limited access to taxis and shared cars for a given number of kms.



Source: Frost and Sullivan

Case Study: Audi ‘A-la-carte’ On-Demand Features

Free trial for a month, one month at $0.99, and monthly and annual subscription options. Lighting and Range extension announced

Autonomous

Autonomous Parking
Cost: $5/Use

Piloted Driving
Cost: $1,500 / $50 a month

Powertrain

Off-Road Package
Cost: $1,350 / $45 a month

Range
Extensions

Connectivity

Navigation
Cost: $50/ $2 a Day

Navigation
Cost: $240 a Year

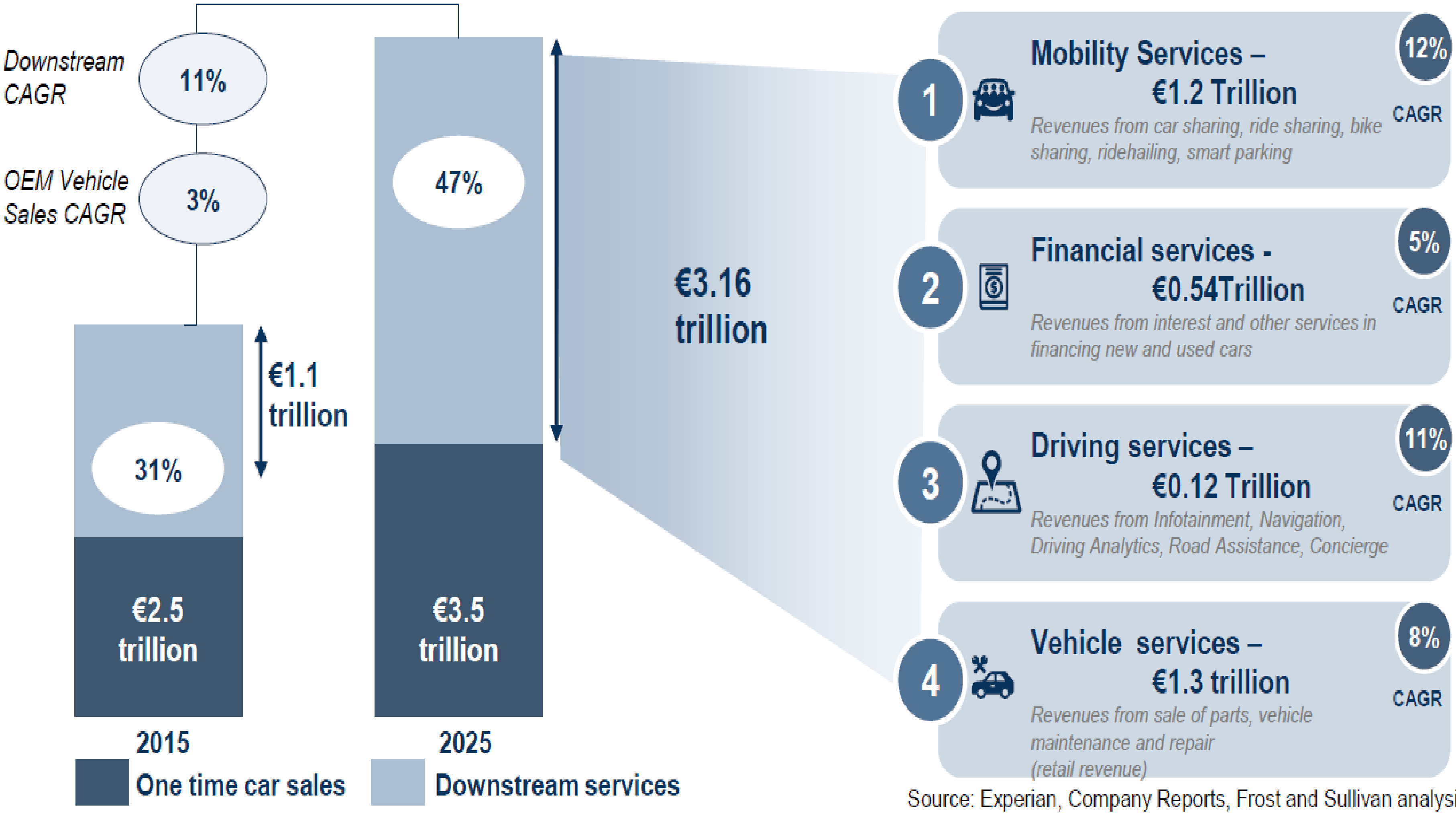
Others

Raceday package
Cost: $7/Session

Tow Assist
Cost: $0.20/Mile

Downstream Services Market to Grow Aggressively in Future

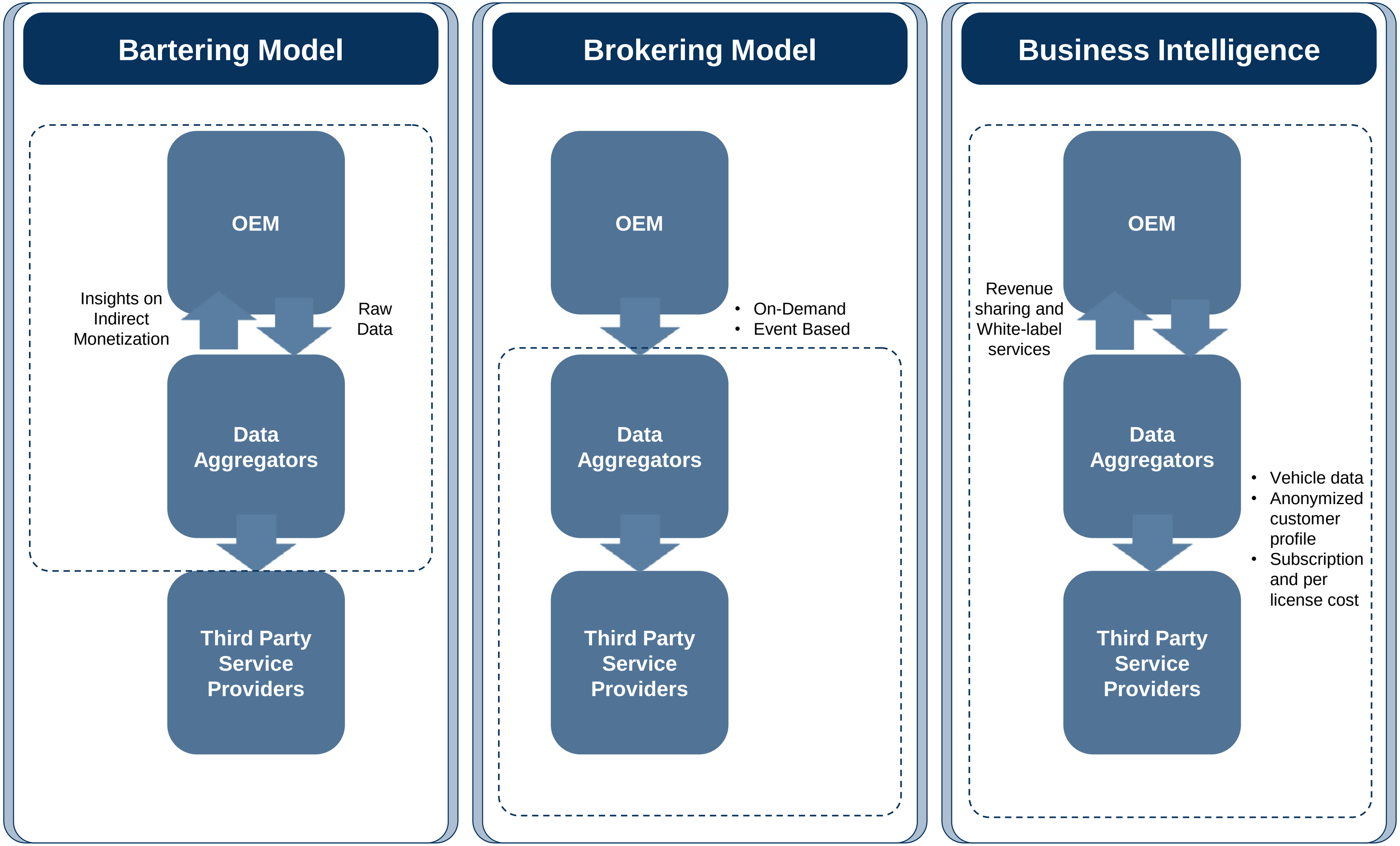
New revenue streams from Driving, Vehicle and Mobility services expected to grow to over EUR 3 Trillion by 2025



Source: Experian, Company Reports, Frost and Sullivan analysis

Three B's of Data Monetization

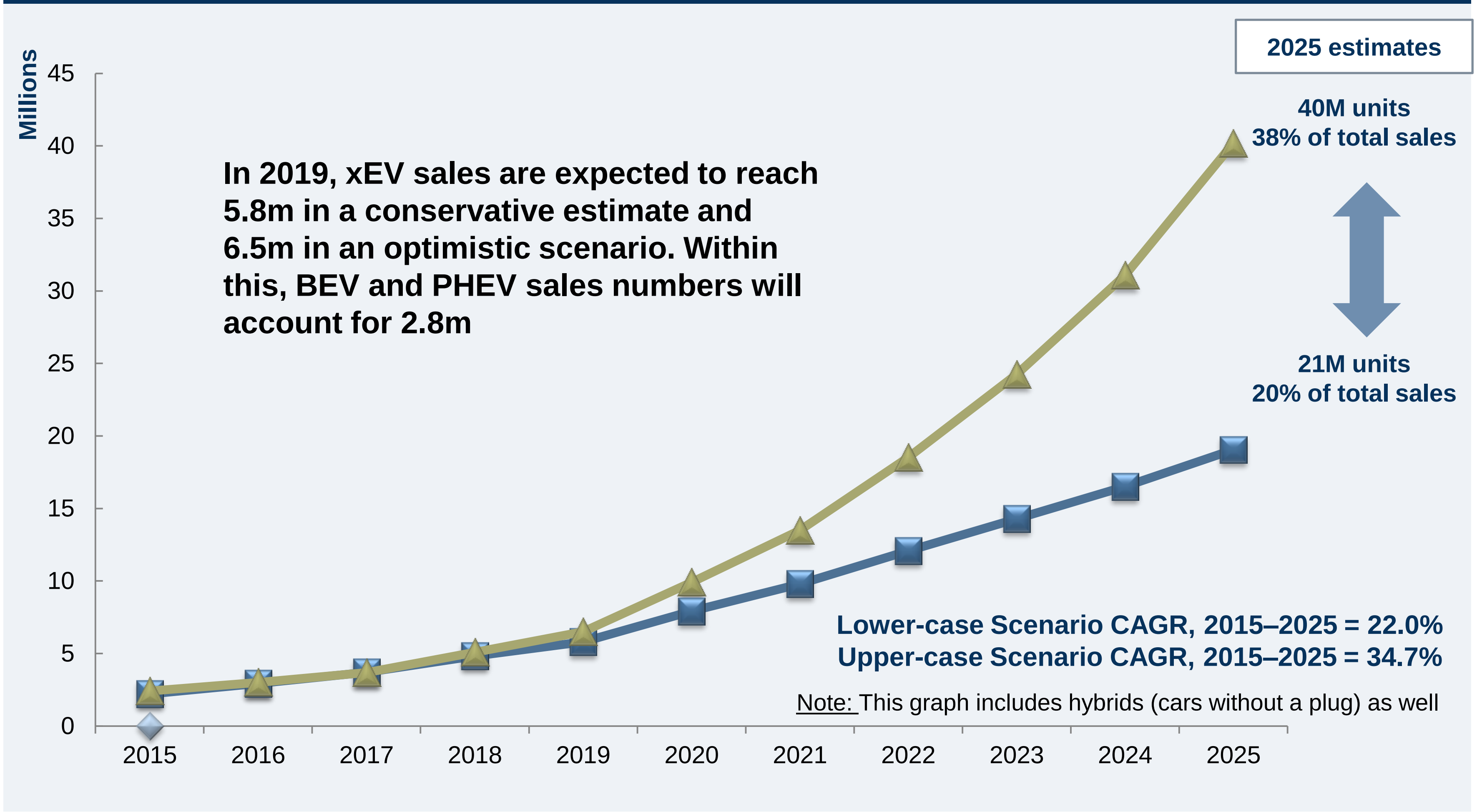
Business model adoption largely hinges on use cases, more established use cases like insurance and FNOL involve a direct OEM play utilizing existing connected service infrastructure



Total xEV Market Scenario Analysis

In an upper-case scenario for xEVs, all of the OEMs are expected to comply with emission targets; Technological advancements, economic factors and consumer acceptance of xEVs are key factors for determination

Automotive Industry Outlook; Unit Shipment Sales Scenario Analysis, Total Market, Global 2015–2025

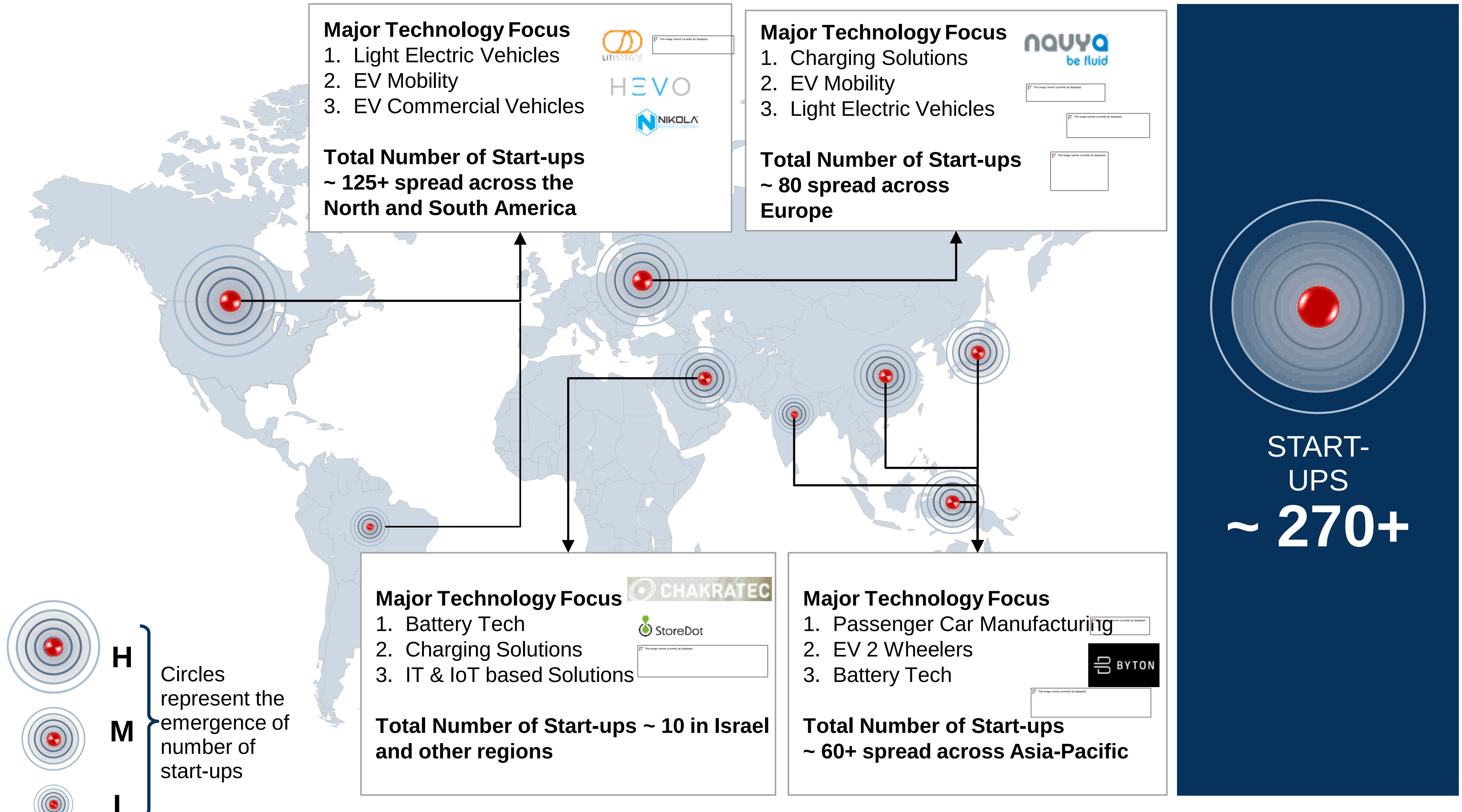


Source: Frost & Sullivan

EV Start-up Hotspot by Region

Number of startup's focusing on charging solutions and battery tech followed by light electric vehicle makers are higher in each of the regions.

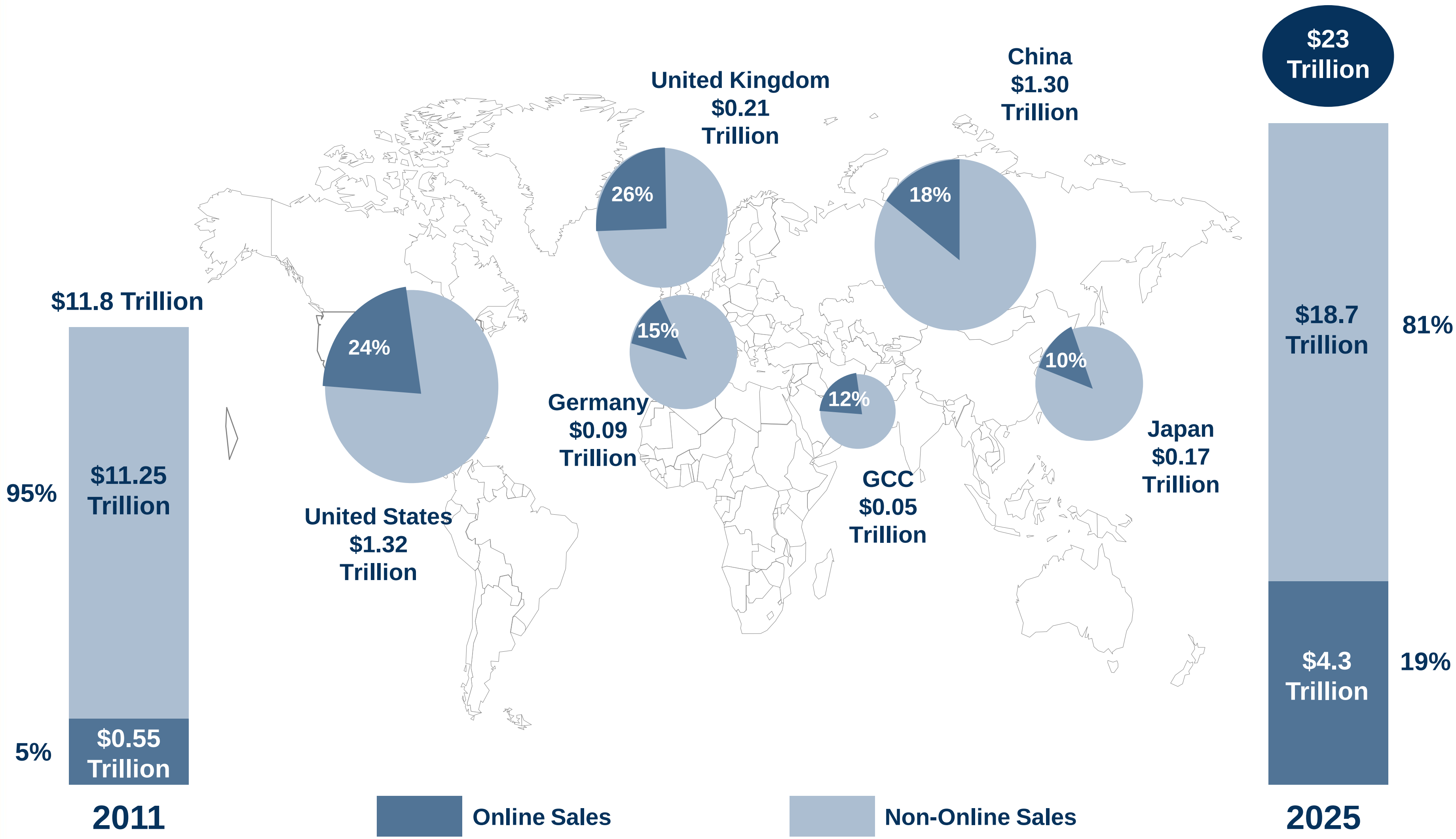
Automotive Industry Outlook: EV Start-up Hotspot by Region, Global, 2018



Source: Frost & Sullivan

Future of Clicks in Retail Industry

Global Online Retail Sales To Reach $4.3 Trillion By 2025 Accounting for 19% of Total Retail



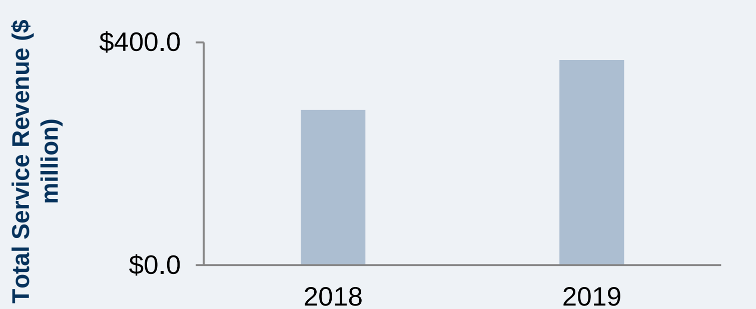
Uberisation of Vehicle Services

F&S expects between $350-$400 million worth of vehicle service jobs to be booked online from service marketplaces in 2019 alone

Automotive Aftermarket: Uberisation of Vehicle Services, Global, 2019

	U.S.	Europe	China	India
Current Intensity	Medium	High	Low	Low
Key Companies	Openbay, Repairpal	Whocanfixmycar, Autoscout, Autobutler	Tuhu, Yangchewuyou, Taobao, baichebao	Pitstop, CarCrew, Cartisan
Notable Investors	Shell Ventures	Shell Ventures, PSA, BMW iVentures	Didi	
Key Partners	Uber, eBay	Eurorepar, Autoscout24	eCommerce players driving investments	
Trends				Localized service marketplaces with city limits

Automotive Aftermarket: Total Service Revenue, US, UK, France, Germany, 2018-19



Source: Frost & Sullivan analysis

Global Aftermarket Revenue Market Size Potential

Global automotive aftermarket revenue from replacement demand to increase by 4.2% during 2019.

Automotive Aftermarket: Manufacturer-level Replacement Parts Revenue by Category, Global, 2018–2019

Base Year/Forecast	2018 $ Revenue	2019 $ Revenue	CAGR (2018-19)
Tires	$88.0	$91.8	4.4%
Batteries	$16.4	$17.2	5.2%
Brake Parts	$25.2	$26.4	4.7%
Filters	$13.4	$14.1	5.0%
Collision Body Parts	$37.6	$39.8	5.8%
Starters and Alternators	$8.5	$8.7	2.3%
Lighting	$6.8	$7.2	4.5%
Exhaust Components	$9.4	$10.0	5.7%
Spark Plugs	$3.2	$3.3	3.6%
Others	$197.3	$203.8	3.3%
Total (Usd billion)	**$405.70**	**$421.9**	4.0%

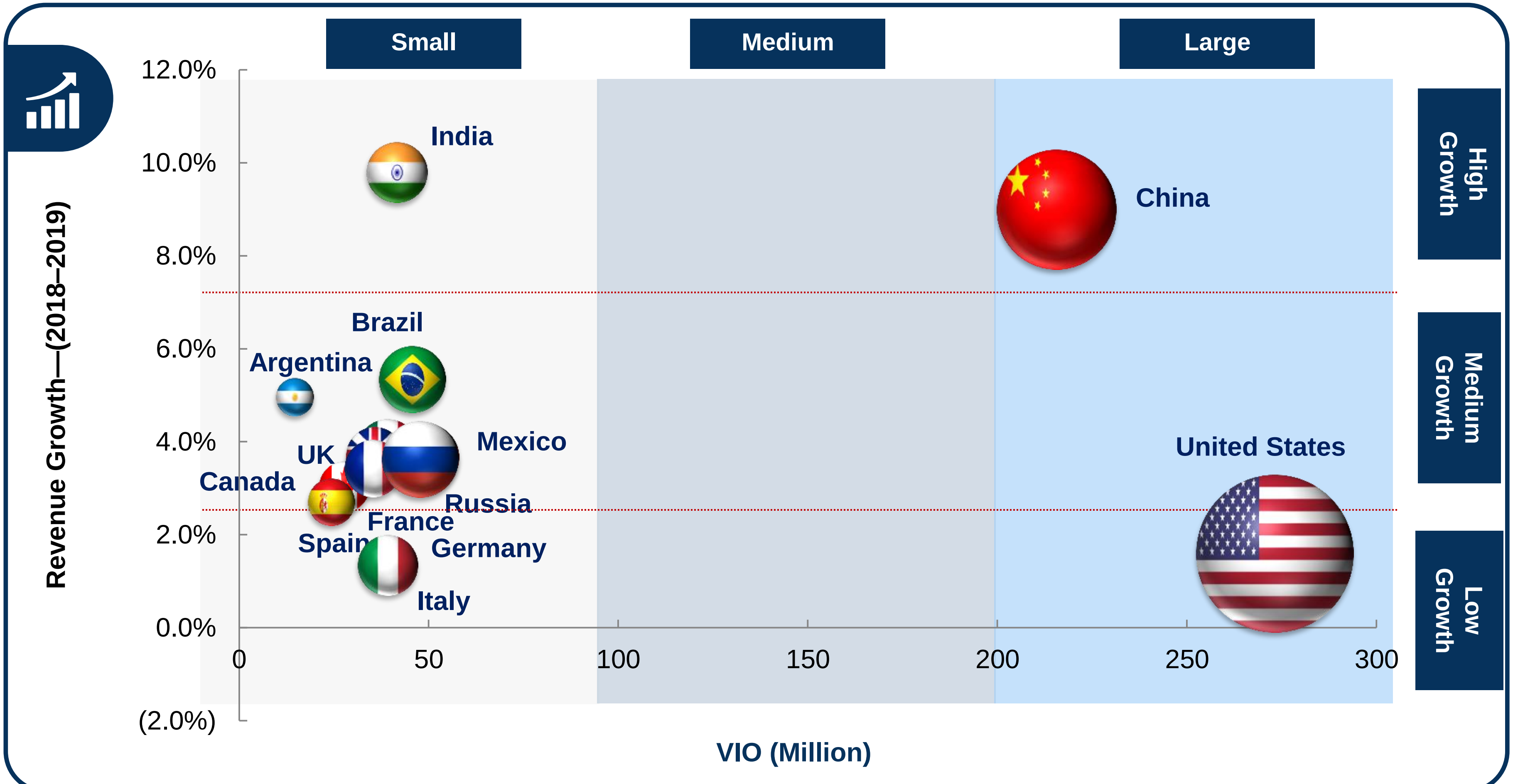
*Others include steering system hard parts, Remanufactured engine and transmission, Remanufactured rack and pinion steering gear, HVAC and engine cooling components light vehicle exhaust emission control systems, fuel delivery systems, engine control units, ignition parts, automotive sensors, ignition wire sets, fuel pumps, selected automotive Remanufactured pumps, sports compact underhood components, belt, hoses, gaskets and seals, battery, carburetor, gauge, and internal engine hard parts

Note: All figures are rounded. The base year is 2018. Source: Frost & Sullivan

Global Aftermarket—Growth Opportunity Analysis

Albeit slower than last year, India and China both will be the growth engines for aftermarket replacement revenue during 2019

Automotive Aftermarket: Regional Growth Opportunity Analysis, Global, 2019



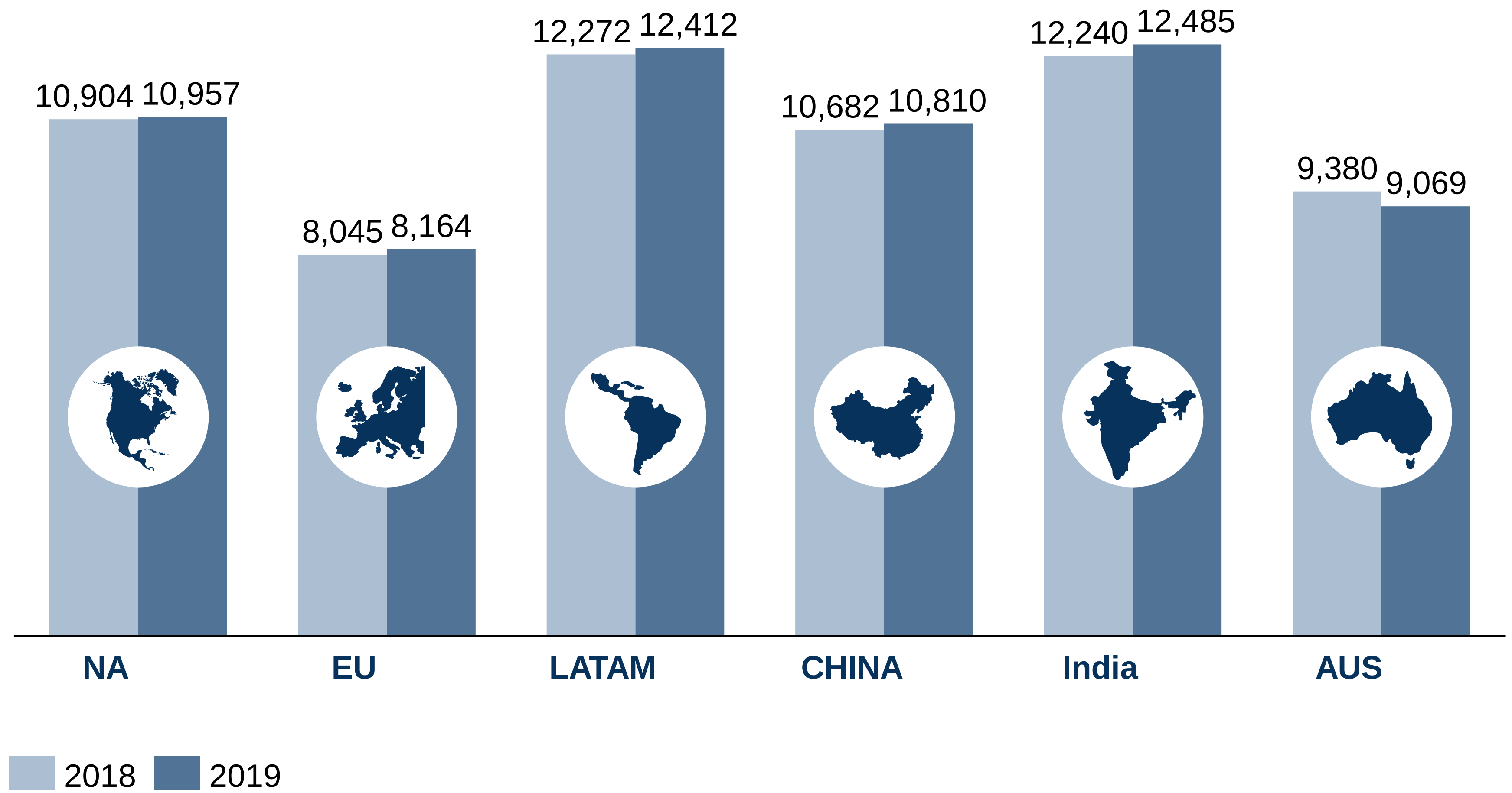
Key: Size of the bubble is representative of the regional aftermarket revenue in 2018

Note: All figures are rounded. The base year is 2018. Source: Frost & Sullivan

Global Average Annual Miles Driven— 2018 and 2019

Improving road infrastructure in developing countries like China and India will propel the average annual miles driven in 2019, which will thereby contribute to increase in aftermarket replacement and services demand

Aftermarket Outlook: Average Annual Miles Driven, Global, 2018 and 2019

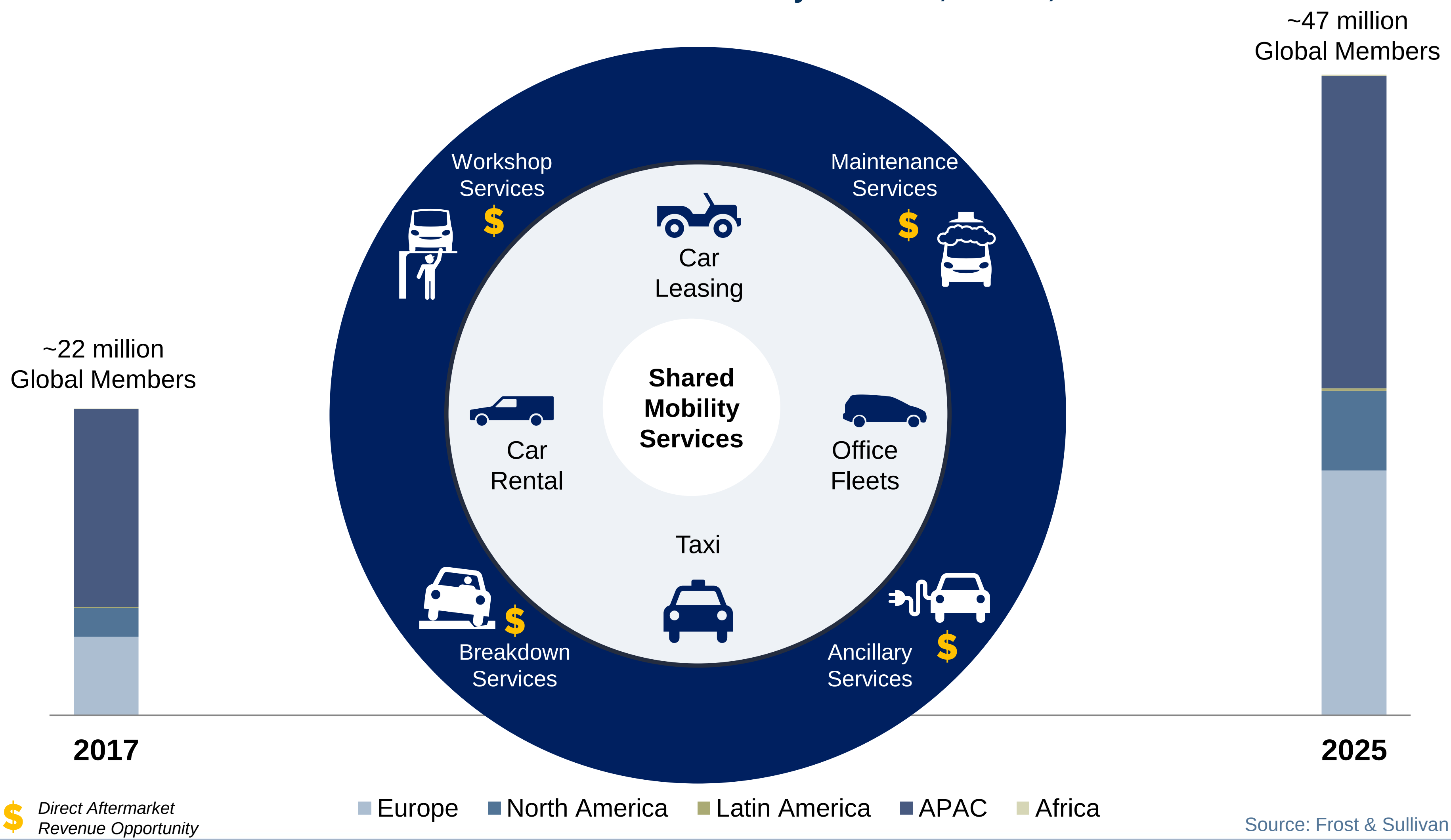


Source: Government Sources, Ministry of Transportation, DOT, BITRE, Frost & Sullivan

Shared Mobility Services

Advent of shared mobility services have presented the IAM service providers with an opportunity to target their customer acquisition and service efforts in a more concentrated manner

Automotive Aftermarket: Shared Mobility Services, Global, 2017–2025



Source: Frost & Sullivan

Aftermarket Trends (2020 and Beyond)

In the long term, aftermarket will witness disruption in both customer acquisition and service delivery with the adoption of digital solutions which are already being tested out in different ways across multiple markets

	Trend	Trend Strength	Trend Impact
1	**ADAS Sensors & Recalibration Demand** Proliferation of ADAS enabled vehicles in the vehicle parc will incrementally contribute to workshop's repair business especially in case of any collision related repairs		
2	**Data Monetization Gains Traction in Repair Management** Variety of market new business models and market participants will gain popularity. These particularly include aftermarket-focused data brokers like Caruso (Germany), service marketplaces and other digital participants (example		
3	**Shared Mobility Servicing** Changing vehicle ownership in the wake of shared mobility will change the way drivers spend on vehicle servicing thereby crafting new service model requirements.		
4	**Impact of Blockchain** Blockchain application particularly in Parts Authentication through "Digital Twining" likely to substantially decrease seepage of counterfeit parts in the aftermarket supply chain.		
5	**Voice Strategy** Voice assistants are penetrating our lifestyle in more ways than one, and with the adoption of these AI enabled solutions in both new and legacy vehicles, aftermarket downstream participants will find new channels to market		

Source: Frost & Sullivan

The Four Future Scenarios of Mobility

Multimodality of Mobility

Platformisation of Transport

Technological Singularity in Mobility

Transcendental Mobility