



Goodyear SUV / 4x4 Press Event



MADE TO FEEL GOOD.



Welcome to the Goodyear Innovation Center Luxembourg

GOODYEAR

INNOVATION CENTER

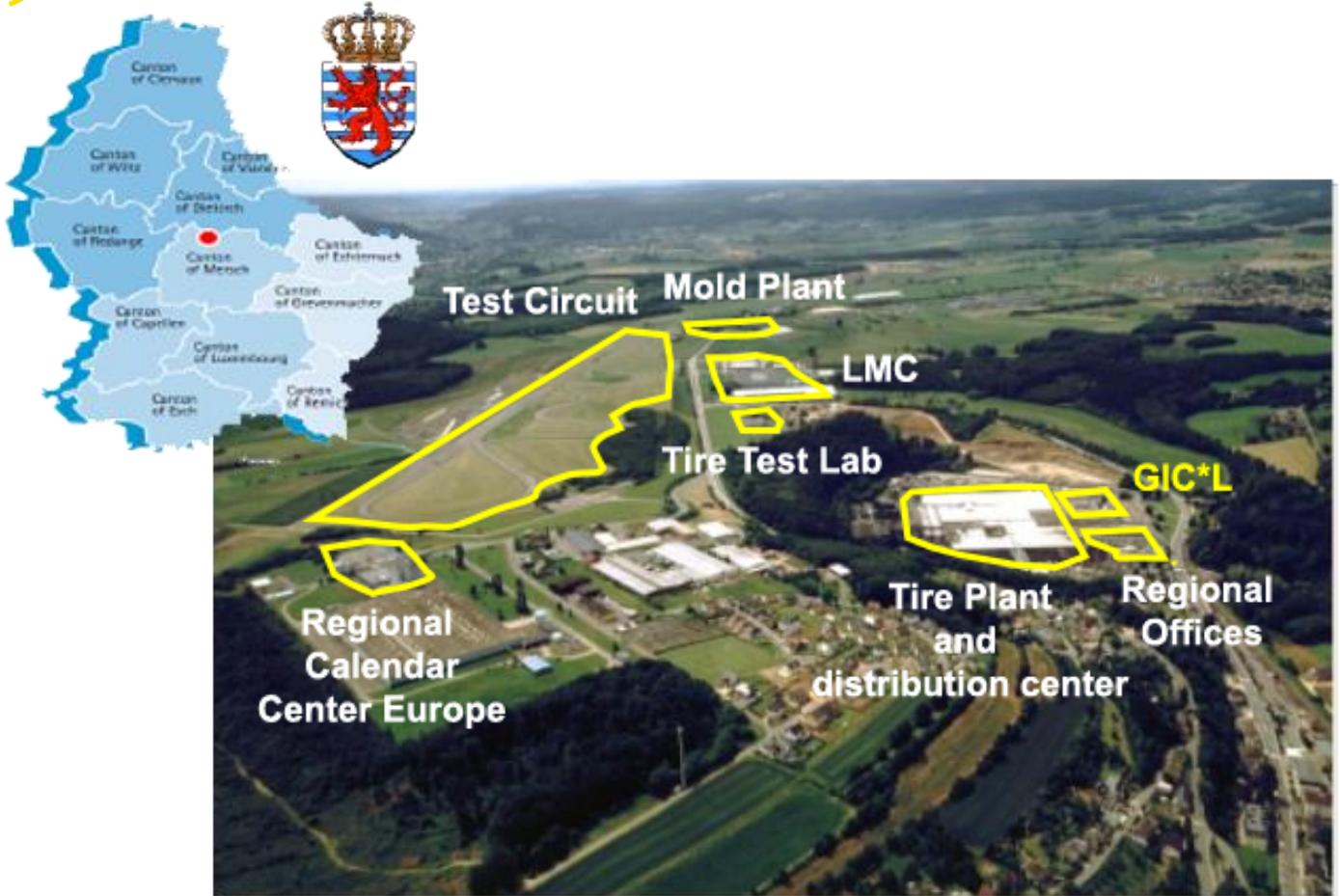


Herman Vereecken

Manager Communication Strategy & Deployment GIC*L and DDC*H
Goodyear Innovation Center Luxembourg



Goodyear complex in Colmar-Berg

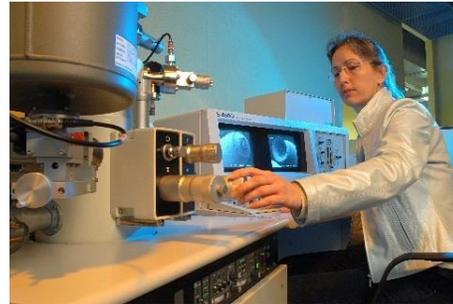


- Test Circuit
- Tire Test Lab
- Goodyear Innovation Center (GIC*L)
- Tire Plant (Truck and Earthmover tires)
- Tire Distribution Center
- Luxembourg Mounting Center (LMC)
- Mold Plant
- Regional Calendar Center *Europe
- EMEA Regional Offices

Goodyear Luxembourg Complex: 3,240 associates



Goodyear Innovation Center Luxembourg



- GIC*L Main building
- Advanced Design Studio
- Material and Chemical Laboratories
- Tire Testing Laboratory
- Test Garage and Test circuit
- Noise and Vibration Laboratory
- Prototype Manufacturing Facility

- **1000+ technicians, engineers and scientists**
- **40+ different nationalities**



Global RDE&Q network



GIC*A in Akron, Ohio USA



GIC*L in Colmar-Berg, Luxembourg



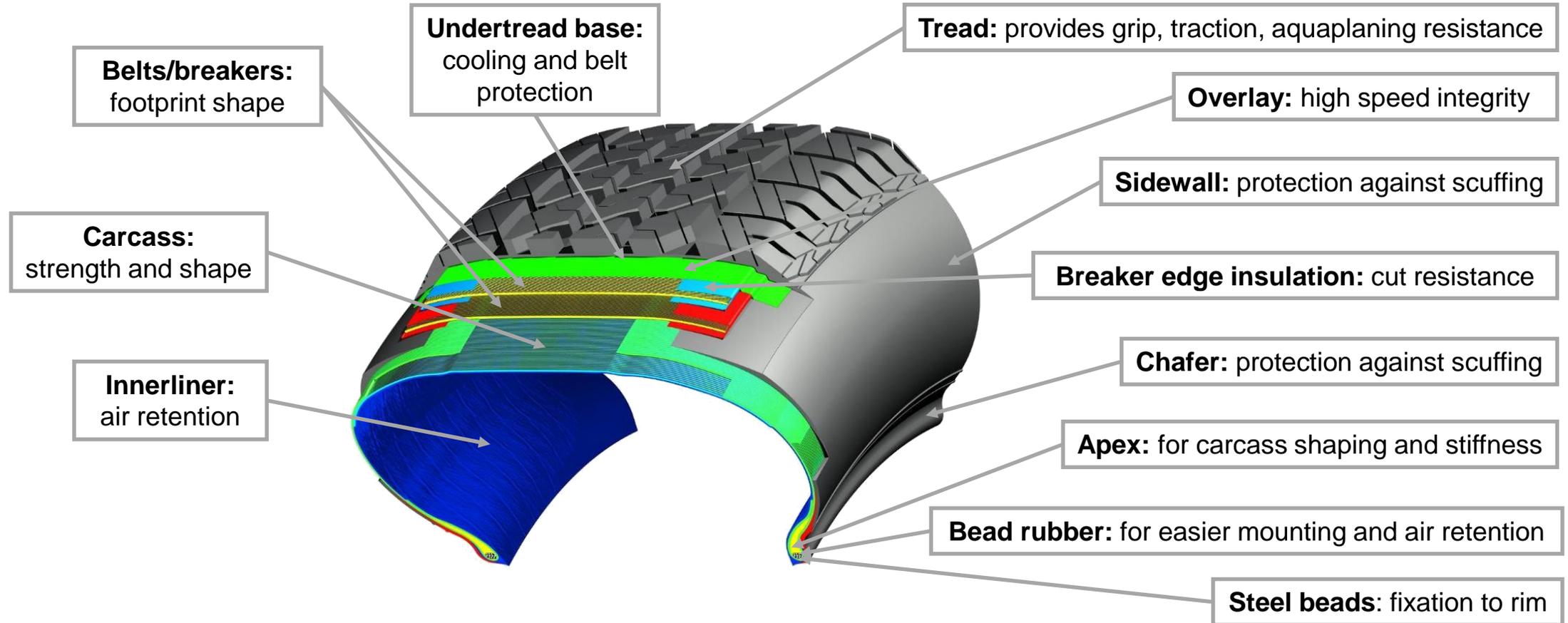
DDC*H in Hanau, Germany



GDC*C in Dalian/Pulandian, China



Tire components and functions

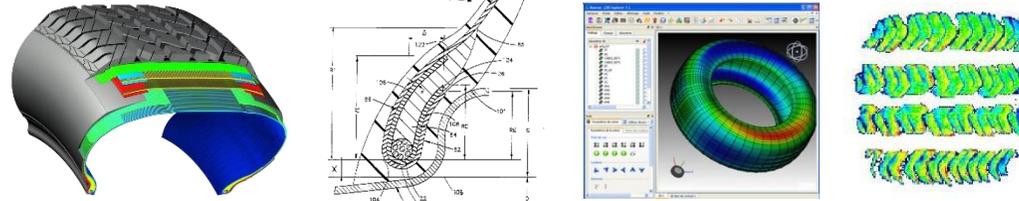


A modern radial tire: approx. 25 different rubber, cord and steel components



GIC*L technical competencies

Tire Engineering & Design



Materials & Compounding Science



Tire Performance Evaluation

Indoor & Outdoor





Goodyear Innovation Center Luxembourg





SUV/4x4 market overview



GOOD YEAR

MADE TO FEEL GOOD.

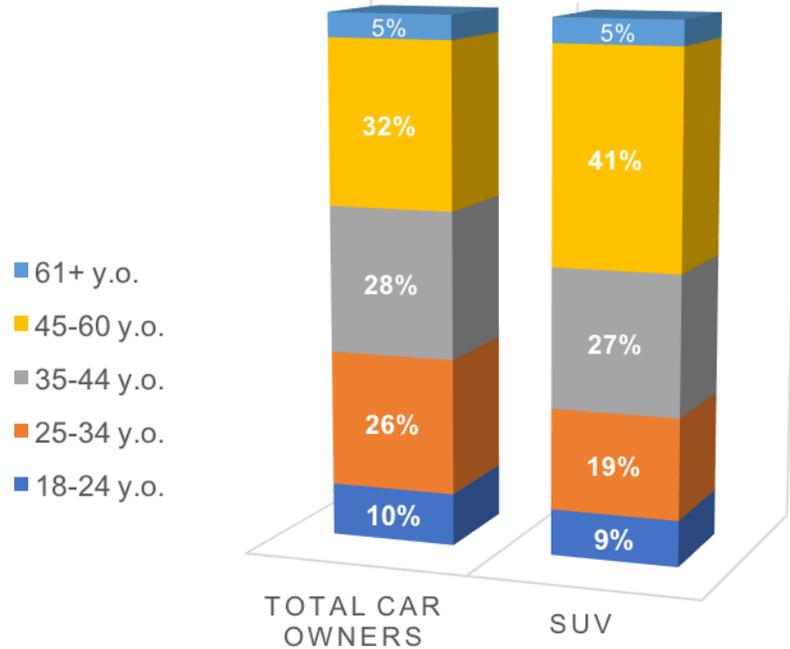
Martijn de Jonge

Brand Director Consumer PBU
Goodyear Europe, Middle East & Africa



SUV/4x4 owners - demographics

Age of car owners



Household annual income index

	Total car owners	SUV/4x4 owners
UK	100	121
Germany	100	116
France	100	122
Italy	100	117
Spain	100	117
Poland	100	133
Russia	100	111

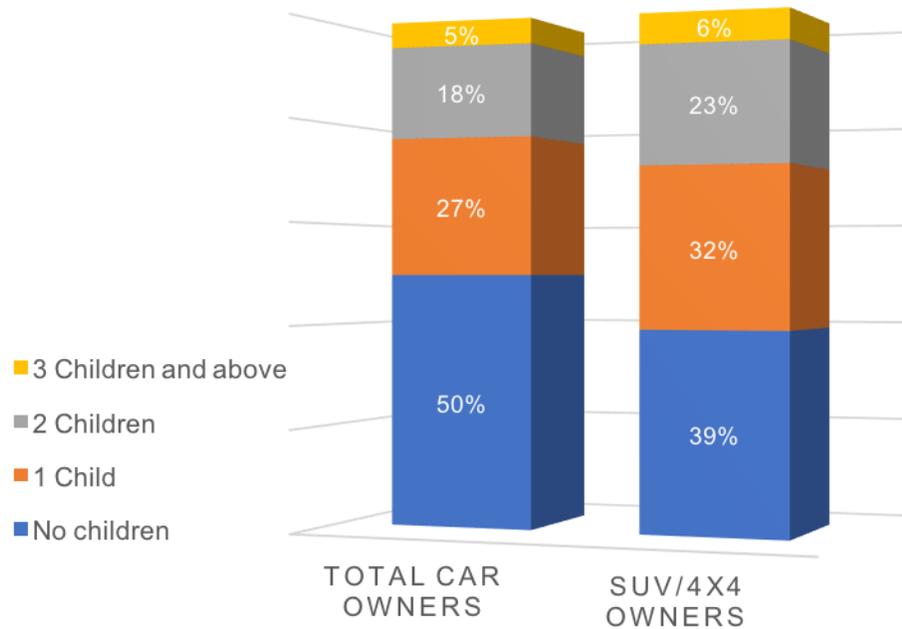
Note: index versus total car owners

SUV/4x4 owners tend to be older and to have a higher disposable income than the average car owner

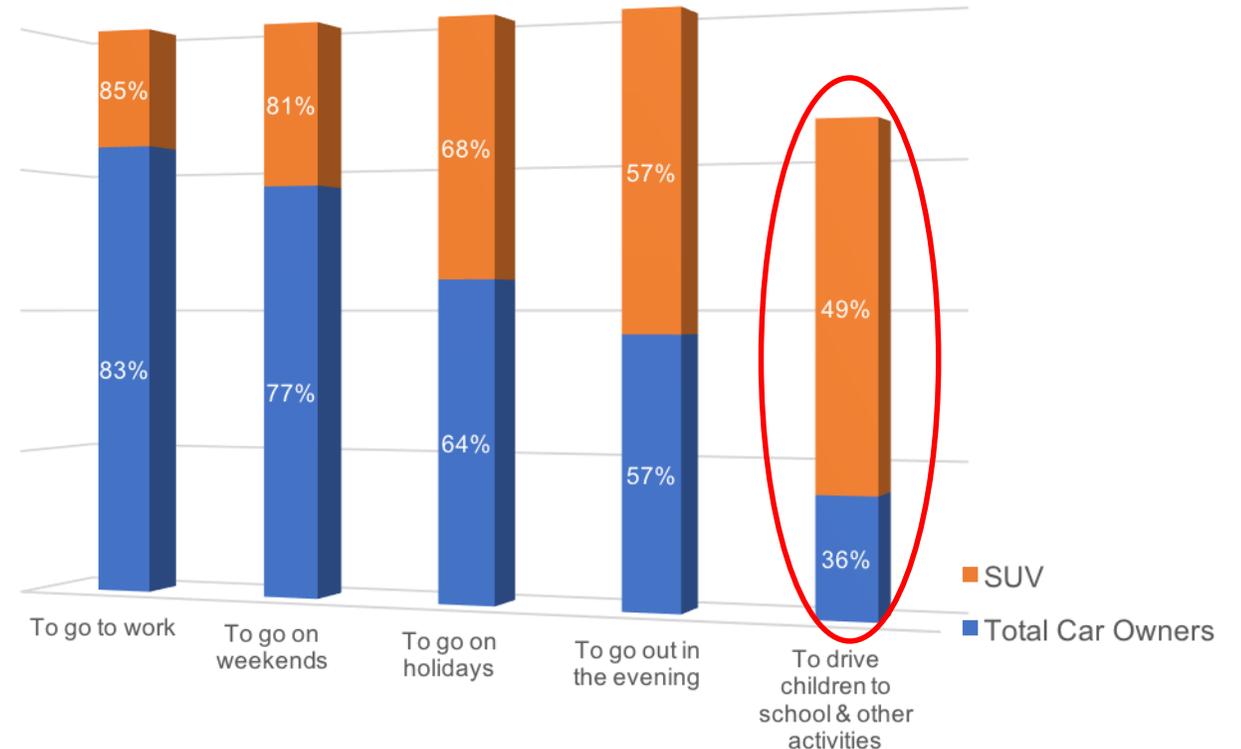


Importance of space & comfort

Number of children in household, by vehicle type owner



Reasons for car usage

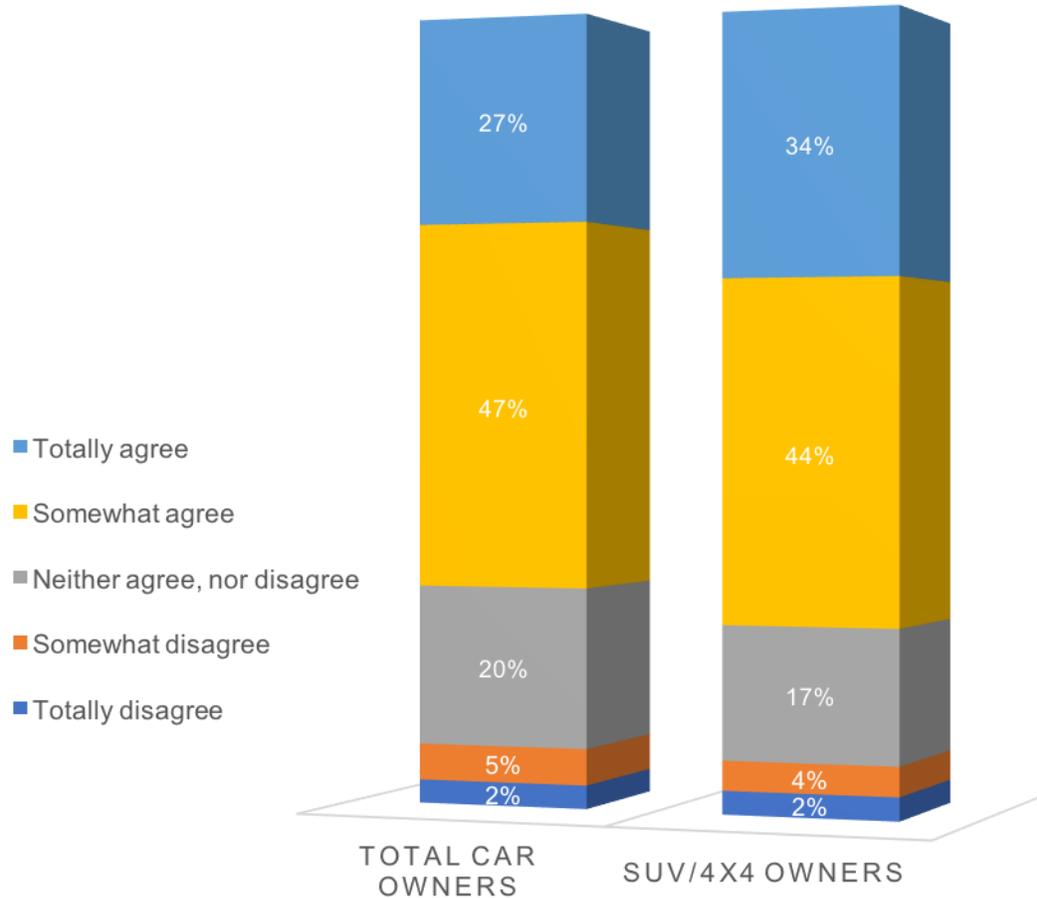


SUV/4x4 owners tend to have larger families, giving priority to space and comfort



Importance of safety

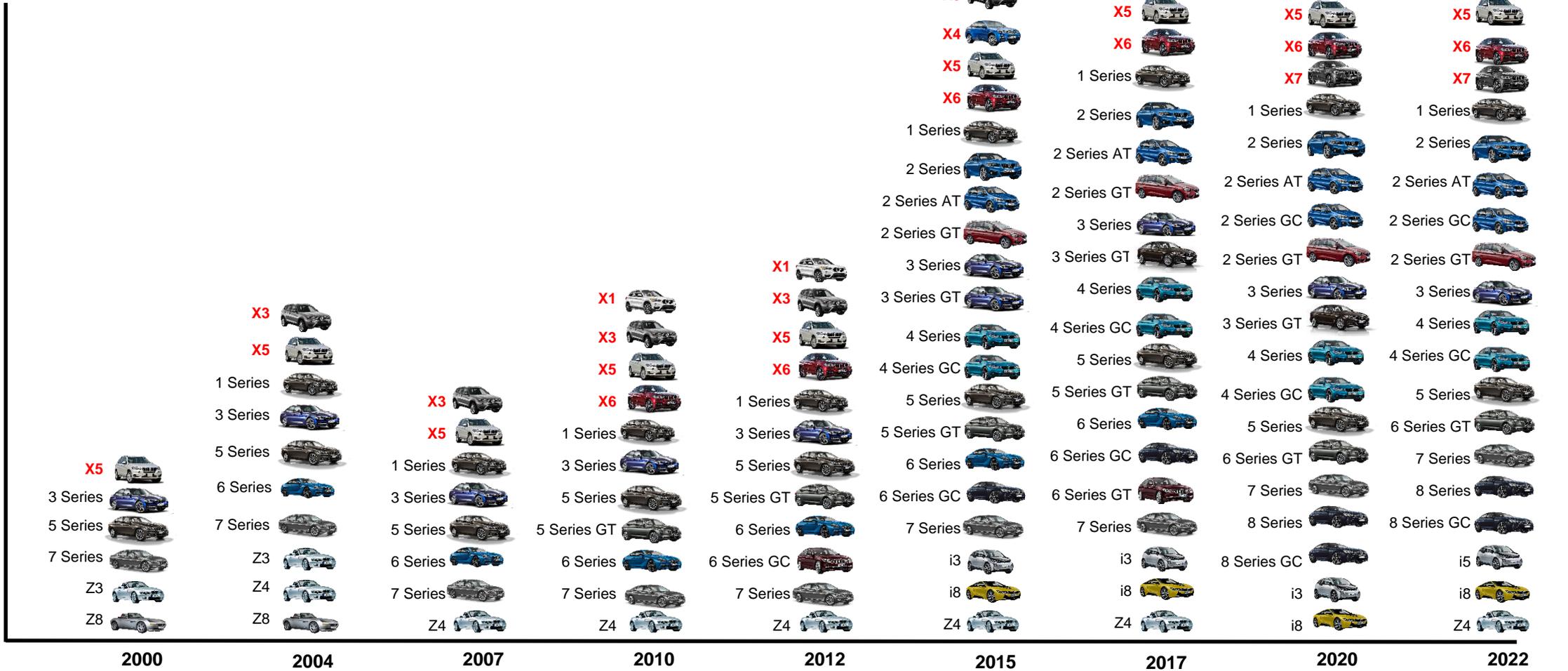
“My car should be equipped with all possible safety features”



Safety is one of the main concerns for SUV/4x4 owners, and a deciding factor for choosing this type of vehicle



OEM portfolio evolution

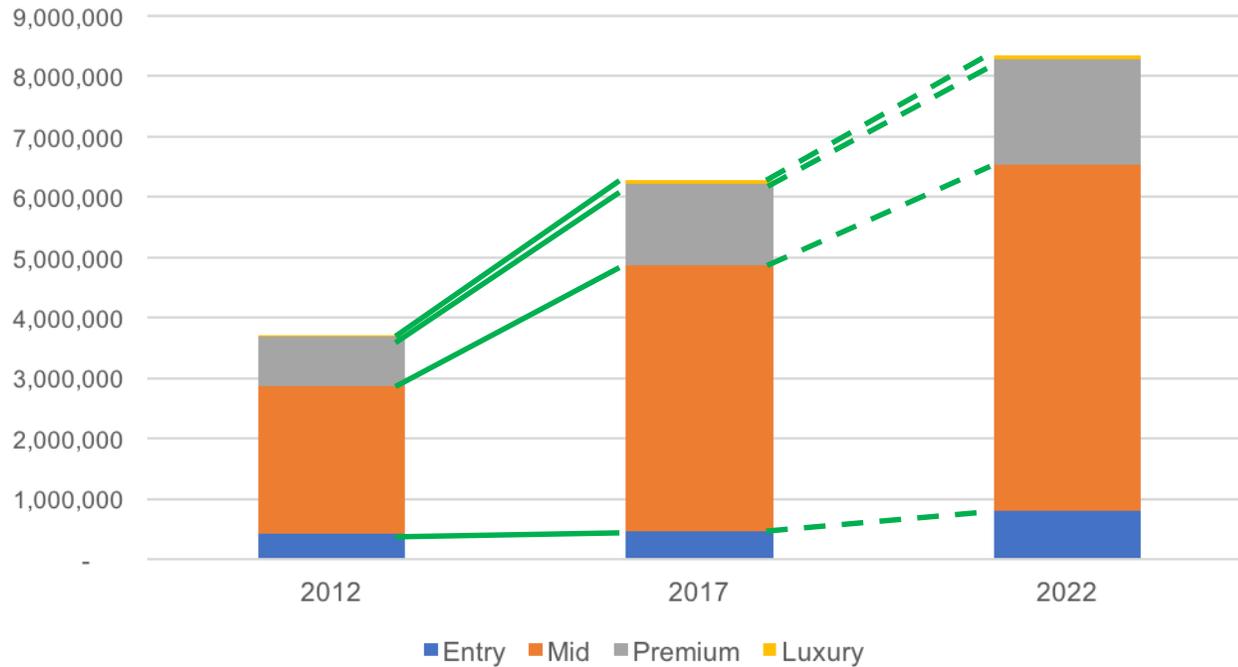


SUV/4x4 models becoming more prominent in OEMs product offering



Market insights – SUV vehicle evolution 2012 - 2022

SUV new vehicle sales forecast - EMEA



	CAGR* 2012 - 2022	vehicle examples
Entry 	6,9%	Skoda Yeti, Renault Captur, Dacia Duster
Mid 	8,8%	Opel Mokka, Nissan Qashqai, Kia Sorento
Premium 	7,8%	Land Rover Range Rover Sport, Audi Q7, BMW X-Series
Luxury 	8,1%	Bentley Bentayga, Maserati Levante, Porsche Cayenne / Macan

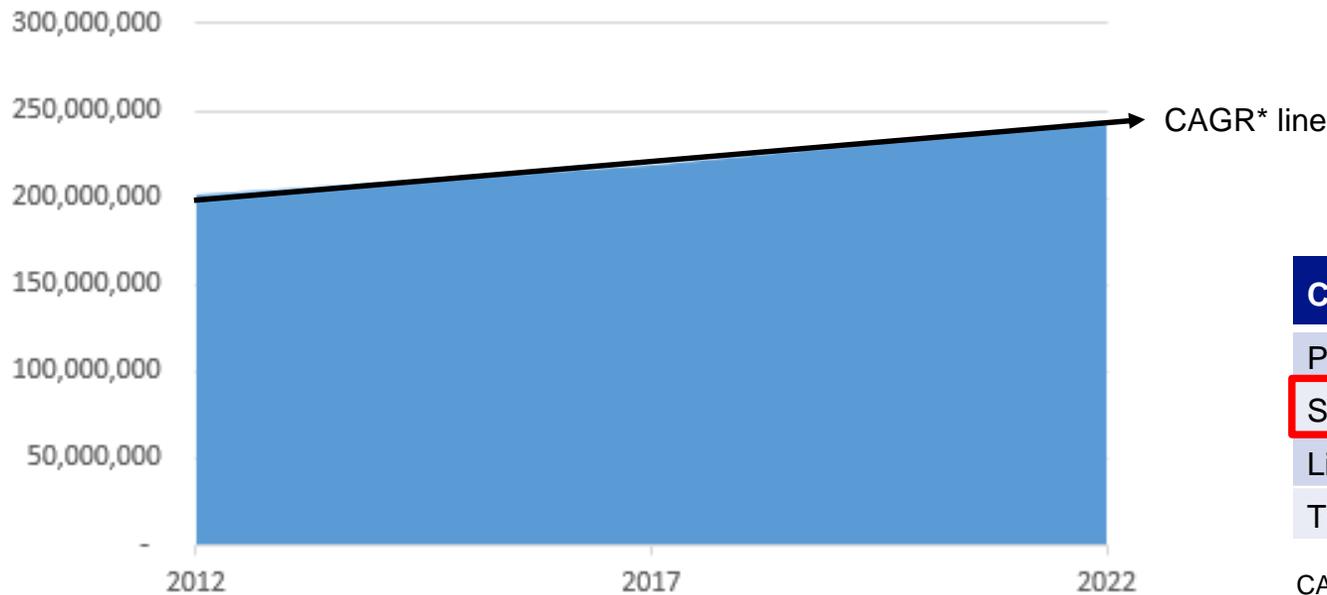
*CAGR: average growth rate over a specific amount of time

SUV sales showing strong growth in all brand and model tiers
Mid tier segment growing most (CAGR: +8.8%)



Market insights – tire industry evolution 2012 - 2022

Total tire industry



CAGR* 2012-2022	
Passenger	1.3%
SUV / 4x4	9.8%
Light Truck	0.9%
Total	2.0%

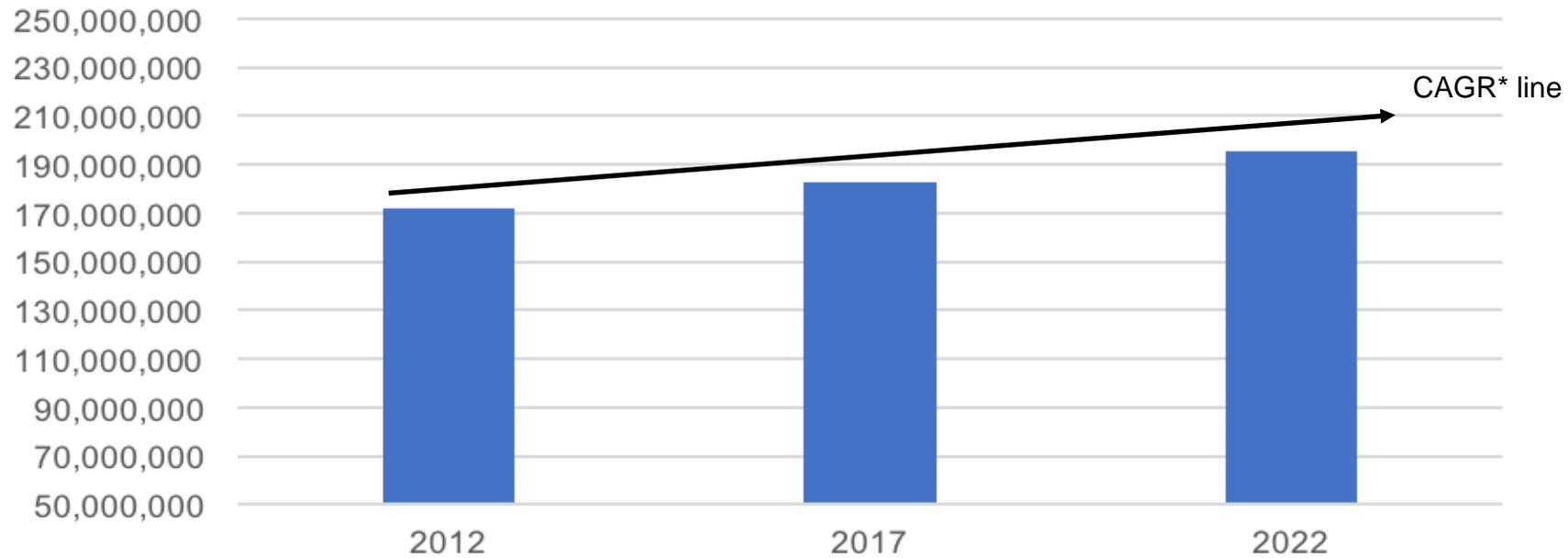
CAGR: Average growth rate over a specific amount of time

Total industry growing at a moderate rate with a CAGR of +2%
Biggest growth in SUV/4x4 segment with a CAGR of almost 10%



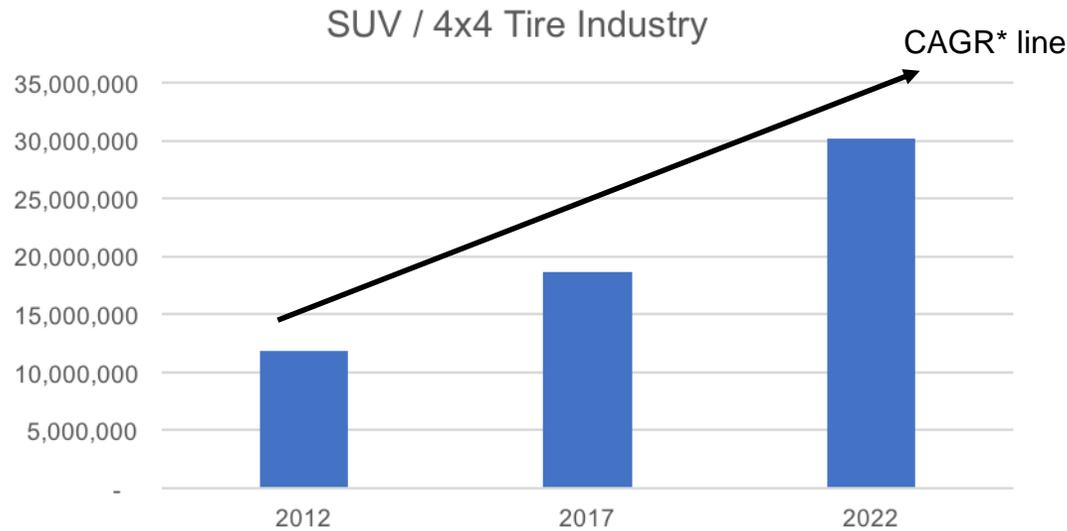
Market insights – tire industry evolution 2012 - 2022

Passenger Tire Industry

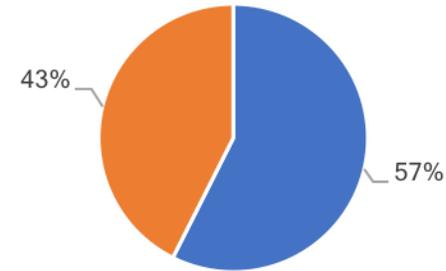




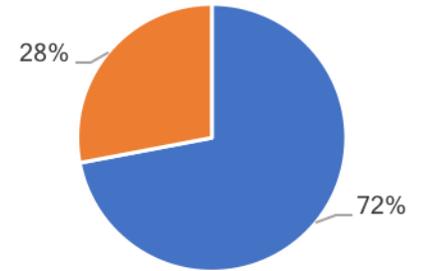
Market insights – tire industry evolution 2012 - 2022



SUV / 4x4 Tire Segment by Rim 2012



SUV / 4x4 Tire Segment by Rim 2017



■ 17" & above ■ 16" & below

SUV/4x4 segment shows accelerated growth (+9.8%) vs passenger (+1.3%) for 2012 - 2022
SUV / 4x4 share of tire market doubles (6% -> 12% or 30Mio) and passenger declines (85% -> 80% or 195Mio)
Biggest growth from bigger rim sizes (≥17" CAGR: +13.9%); already 3/4 of total segment in '17)



Most popular size and type SUV/4x4 – Summer



			2015	2016
1	215/65 R16 98H			
2	235/55 R17 99V			
3	215/60 R17 96H			
4	235/50 R18 97V			
5	225/65 R17 102H			
6	235/65 R17 108V			

Majority of most popular size & type for SUV/4x4 vehicles are all 17” and above

All 17” and above rim sizes are growing



Most popular size and type SUV/4x4 – All Season



				2015	2016
1	215/65 R16 98H	  			
2	225/65 R17 102H	  			
3	235/55 R17 99V	  			
4	215/65 R16 102V	  			
5	225/60 R18 100H	  			
6	255/55 R18 109V	  			

Majority of most popular size & type for SUV/4x4 vehicles are all 17" and above



Most popular size and type SUV/4x4 – Winter



			2015	2016
1	215/65 R16 98H			
2	235/55 R17 99V			
3	215/60 R17 96H			
4	215/70 R16 100T			
5	235/60 R18 107H			
6	225/60 R17 99H			

Majority of most popular size & type for SUV/4x4 vehicles are all 17” and above

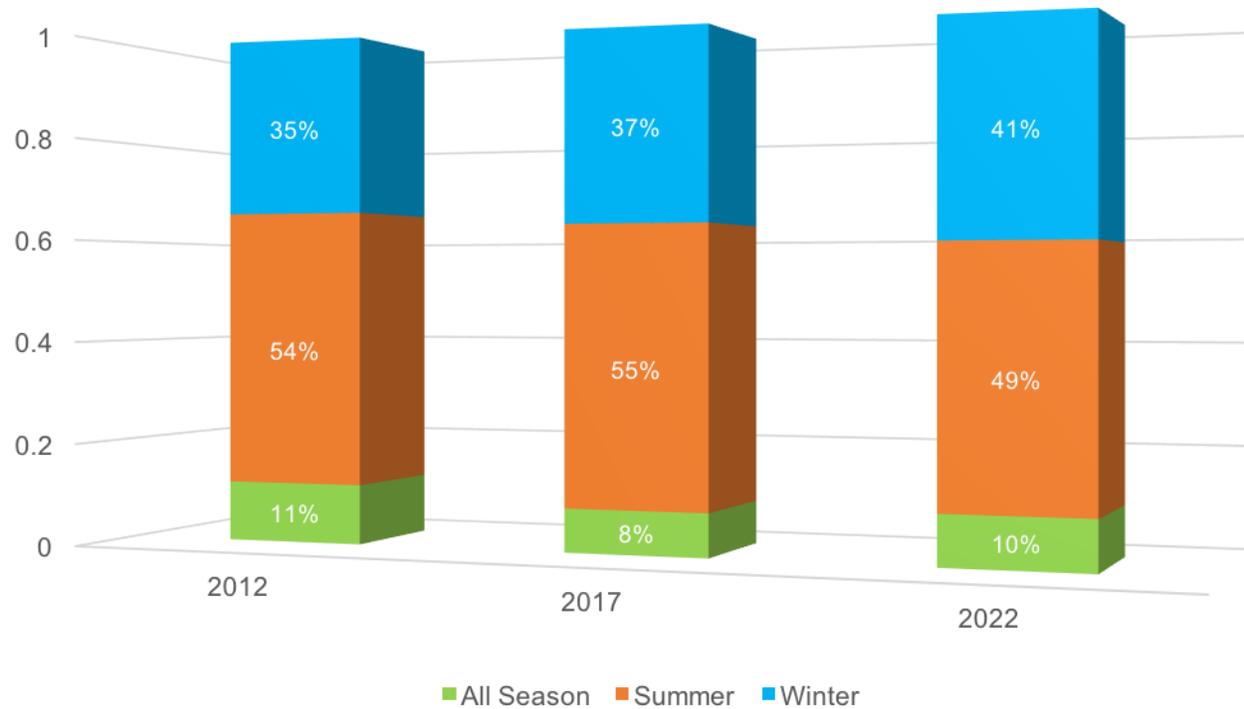
All 17” and above rim sizes are increasing



Market insights – SUV / 4x4 tire market

Seasonal split 2012 - 2022

SUV/4x4 tire market split by season evolution



SUV/4x4 winter biggest growth 2022 vs 2012

(CAGR: +11.7)



Product overview



MADE TO FEEL GOOD.

Elena Sperotto

Marketing Product Manager
Goodyear Europe, Middle East & Africa



4x4 vs SUV vs sedan

4x4

Leisure
Fun
Adventure
Freedom
Professional usage



*Off Road Performance
Traction
Durability*

sedan

Family
Performance
Sport Performance



*Performance
Driving experience*

SUV

Leisure
Family
Performance
Lifestyle
Status

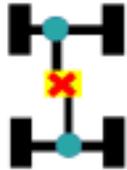


*On Road Performance
Safety*



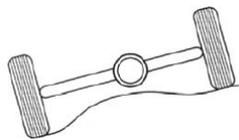
4x4 vs SUV – basic vehicle differences

4x4

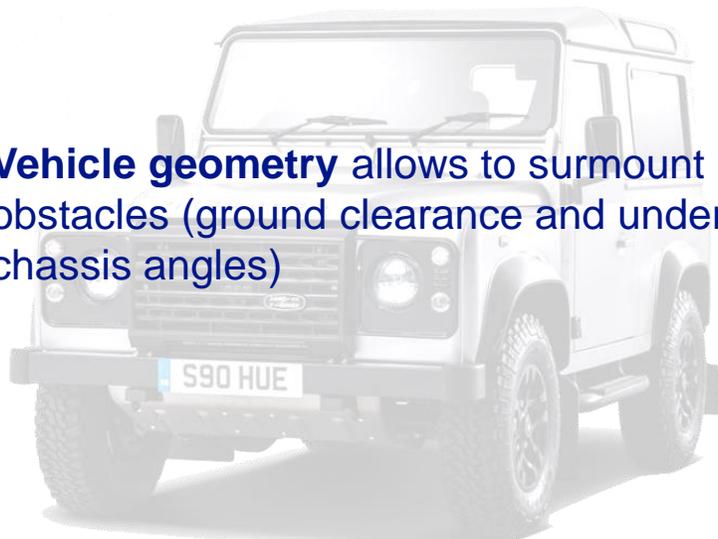


Two or more differentials. **Part-time or full-time 4 wheel drive**, for maximum stability and grip on all surfaces

Generally **Solid Axle suspension**: clearance below axle is maintained but 'harder ride'



Vehicle geometry allows to surmount obstacles (ground clearance and under chassis angles)

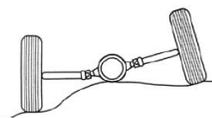


SUV

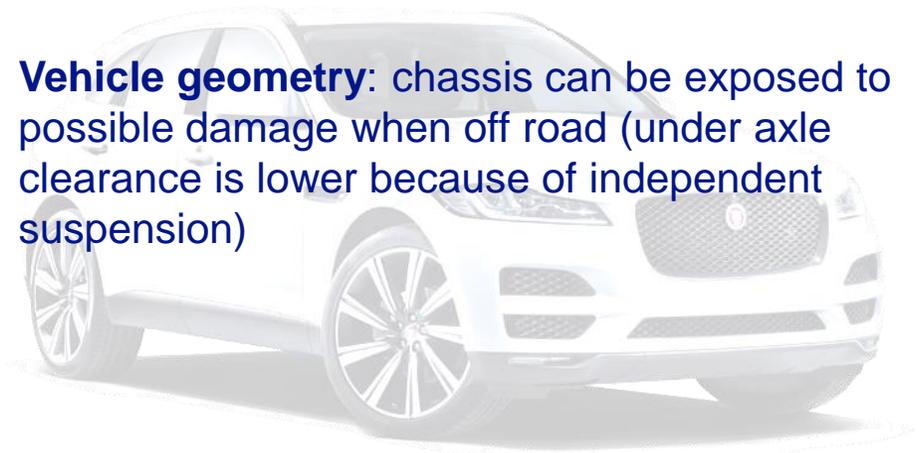


Often **Automatic All Wheel Drive** (electronically controlled)

Generally **Independent Axle suspension**: handling and comfort, but chassis exposed to possible damage when off road



Vehicle geometry: chassis can be exposed to possible damage when off road (under axle clearance is lower because of independent suspension)





SUV/4x4 tire requirements



	OFF Road	ON/OFF Road	ON Road
Load carrying capacity	Dark Green	Dark Green	Dark Green
Cushioning ability	Light Green	Medium Green	Dark Green
Torque transmission	Dark Green	Dark Green	Dark Green
Steering response	Light Green	Medium Green	Dark Green
Road holding ability	Light Green	Medium Green	Dark Green
Traction on all surfaces	Dark Green	Medium Green	Light Green
Durability	Dark Green	Medium Green	Light Green
Out-of-rut grip	Dark Green	Medium Green	Light Green
Grip	Dark Green	Dark Green	Dark Green
Sidewall protection	Dark Green	Medium Green	Light Green
Puncture resistance	Dark Green	Medium Green	Light Green



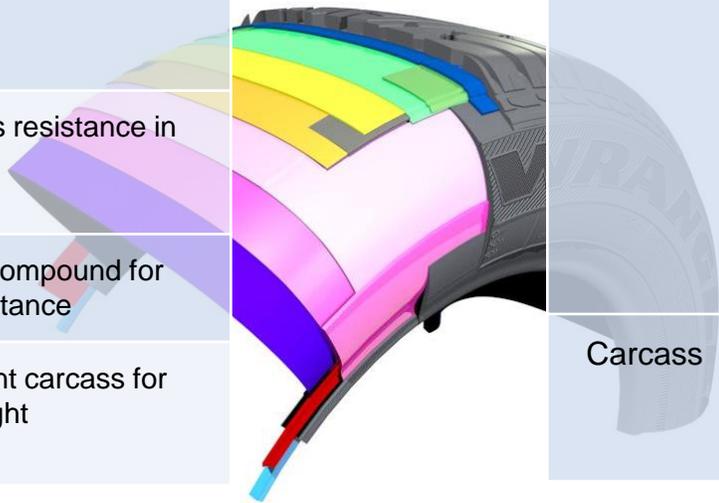
SUV/4x4 tire features

4x4

	Feature	Benefit
Tread pattern	Grooving	Water evacuation - self cleaning of tread and grip on soft surfaces
	Aggressive lug patterns	Off-road traction
	Large shoulder notch	Increase mud evacuation and off road traction
Materials	Kevlar reinforced layer	Punctures and cuts resistance in tread area
	Durawall technology	Tougher sidewall compound for cut/punctures resistance
Carcass	Higher number of plies	Strong and resistant carcass for higher vehicle weight

SUV

	Feature	Benefit
Tread pattern	Long shoulder blocks	Shorter dry braking
	Large contact area with the road	Handling, cornering and steering also at higher speeds
Materials	Special cords in various layers of construction	Improved handling, braking and high speed stability
	'Grip booster' compounds	Special resins to increase wet and dry grip
Carcass	Tuned bead area shape	Improved steering precision and handling





What are OEMs looking for ...

- ULRR (Ultra Low Rolling Resistance) with no trade off on other performance criteria
- Handling for UHP and UUHP (Ultra Ultra High Performance) tires
- Noise (interior and exterior) and vibration reduction – for comfort target but also for upcoming UNEC* regulation





SUV/4x4 OE fitments



Alfa Romeo
Stelvio



Audi
Q3



Audi
Q7



BMW
X5



BMW
X6



Jaguar
F Pace



Jeep
Renegade



Land Rover
Discovery



Land Rover
Discovery Sport



Land Rover
Range Rover



Land Rover
Range Rover Evoque



Maserati
Levante



Nissan
Qashqai



Nissan
Terrano



Opel
Mokka



Peugeot
2008



Porsche
Macan



Porsche
Cayenne



Renault
Kadjar



Seat
Ateca



Tesla
Model X



Toyota
Land Cruiser



VW
Touareg



VW
Amarok





SUV/4x4 tire portfolio

Summer
ON - ROAD 



Eagle F1
Asymmetric SUV



Eagle F1
Asymmetric 2 SUV



Eagle F1
Asymmetric 3 SUV



Eagle F1
Asymmetric SUV AT



Efficient Grip
SUV



Wrangler
HP All Weather



Vector4Seasons
Gen-2 SUV

All Season   

ON/OFF - ROAD



Wrangler
All-Terrain Adventure



Wrangler
Duratrac

OFF - ROAD



Wrangler
MTR

Winter 



UltraGrip Performance
SUV Gen-1



UltraGrip Ice
SUV



UltraGrip Ice Artic
SUV



New Goodyear Wrangler All-Terrain Adventure

Winner
ALL-TERRAIN TEST
DRIVE OUT
"The best All-Terrain tyre"

OVERALL RESULT:	
Goodyear Adventure All Terrain	97.46 %
Goodyear Adventure All Terrain	93.07 %
BF Goodrich T/A KO2	92.31 %
Yokohama Geolandar A/T-S	91.70 %
Hankook Dynapro ATM RF10	88.91 %
General Grabber AT3	86.48 %
GT Radial Adventuro AT	85.93 %
Continental CrossContact AT	



Resist punctures and cuts for confident off-road driving



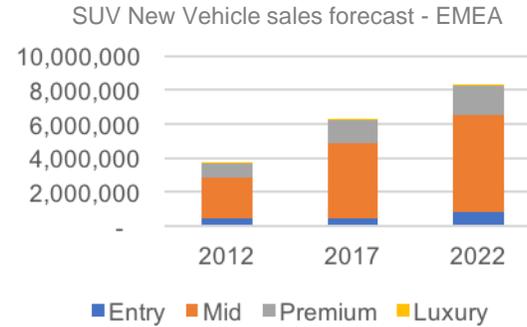
Offers toughness and helps resist cuts in the sidewall area





Key take-aways

- 1. SUV segment is growing
- 2. Tire market follows this growth
- 3. Goodyear's portfolio covers wide SUV/4x4 range





**#GoodyearSU
V4x4**

All press information is available on:

<http://news.goodyear.eu/events/goodyear-suv-4x4-press-event-june-27-28-2017>