

DOCKETED

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U.S. Tire Manufacturing Background and Perspectives

Tracey Norberg
CEC Tire Efficiency Workshop
February 18, 2021

Presentation Overview



USTMA/Overview

What does your tire do?

How are tires regulated?

Tire design for the marketplace

Questions and Discussion

USTMA Full Corporate Members

BRIDGESTONE



Continental 

KUMHO TIRE 
Better, All-Ways




COOPERTIRES



TOYO TIRES[®]
driven to perform[®]



GOODYEAR 
MORE DRIVEN

U.S. Tire Manufacturing by the Numbers

79%*

- USTMA members share of U.S. tire shipments

\$148.4 billion

- Total tire manufacturing industry size in U.S.

737,000

- Total jobs supported by U.S. tire manufacturing

284,000

- Direct U.S. jobs through manufacturing, distribution and retailing

450,000

- Additional U.S. indirect jobs in supplier and related activities

Plant Locations

PLANT LOCATIONS



Tires in Production

P = Passenger
 LT = Light Truck
 TB = Truck Bus
 A = Agricultural
 AC = Aircraft
 E = Earthmover
 R = Racing

Alabama

Michelin North America - Dothan (P/LT)
 Michelin North America - Tuscaloosa (P/LT)
 Goodyear Tire & Rubber - Gadsden (P/LT)

Arkansas

Bridgestone Americas - Russellville
 Cooper Tire & Rubber Co. - Texarkana (P/LT)

Arizona

Goodyear Tire & Rubber - Kingman (AC)

Georgia

Bridgestone Americas - Griffin
 Continental Tire - Barnesville
 Kumho Tire USA - Macon (P/LT)
 Michelin North America - Covington
 Goodyear Tire & Rubber - Social Circle
 Goodyear Tire & Rubber - Stockbridge
 Firelli Tire North America - Rome (P/LT)
 Toyo Tire Holdings of America - White (P/LT)

Iowa

Bridgestone Americas - Des Moines (A)
 Bridgestone Americas - Muscatine (R)

Illinois

Bridgestone Americas - Bloomington (E)
 Continental Tire - Mt. Vernon (P/LT/TB)

Indiana

Michelin North America - Fort Wayne (P/LT)
 Bridgestone Americas - Muncie

Kansas

Goodyear Tire & Rubber - Topeka (LT/TB/E)

Mississippi

Continental Tire - Jackson (TB)
 Cooper Tire & Rubber Co. - Tupelo (P)
 Cooper Tire & Rubber Co. - Clarksdale
 Yokohama Tire Corporation - West Point

North Carolina

Bridgestone Americas - Wilson (P/LT)
 Bridgestone Americas - Oxford
 Bridgestone Americas - Gastonia
 Bridgestone Americas - Kings Mountain
 Bridgestone Americas - Mayodan (AC)
 Michelin North America - Norwood
 Michelin North America - Asheboro
 Goodyear Tire & Rubber - Fayetteville

New York

Sumitomo Rubber North America -
 Tonawanda (P/LT/TB/M)

Ohio

Bridgestone Americas - Akron (R)
 Cooper Tire & Rubber Co. - Findlay (P/LT)
 Goodyear Tire & Rubber - Akron (R)

Oklahoma

Michelin North America - Ardmore (P/LT)
 Goodyear Tire & Rubber - Lawton (P/LT)

South Carolina

Bridgestone Americas - Graniteville (P/LT)
 Bridgestone Americas - Trenton (E)
 Continental Tire - Sumter (P/LT)
 Citi Tire (USA), Ltd. - Richburg (P/LT/TB)
 Michelin North America - Starr
 Michelin North America - Greenville (P/LT)
 Michelin North America - Sandy Springs
 Michelin North America - Spartanburg (TB)
 Michelin North America - Lexington
 Michelin North America - Lexington (P/LT/E)
 Michelin North America - Duncan

Tennessee

Bridgestone Americas - La Vergne (TB)
 Bridgestone Americas - Morrison (TB)
 Hankook Tire America - Clarksville (P/LT/TB)

Texas

Bridgestone Americas - Abilene

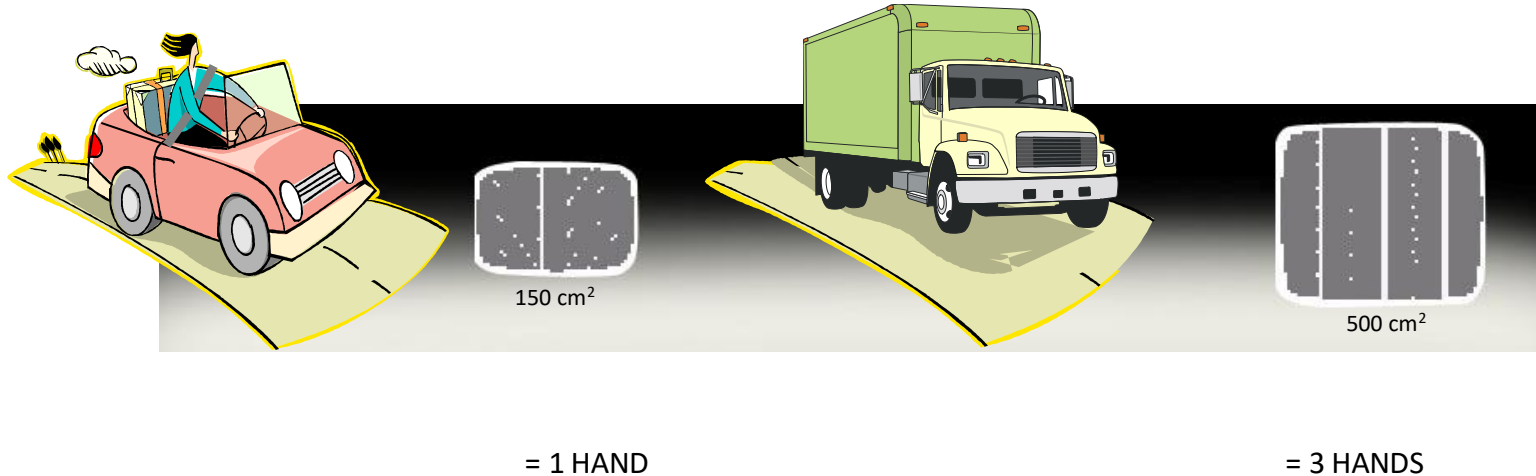
Virginia

Goodyear Tire & Rubber - Danville (TB/A)
 Yokohama Tire Corporation - Salem (P/LT)

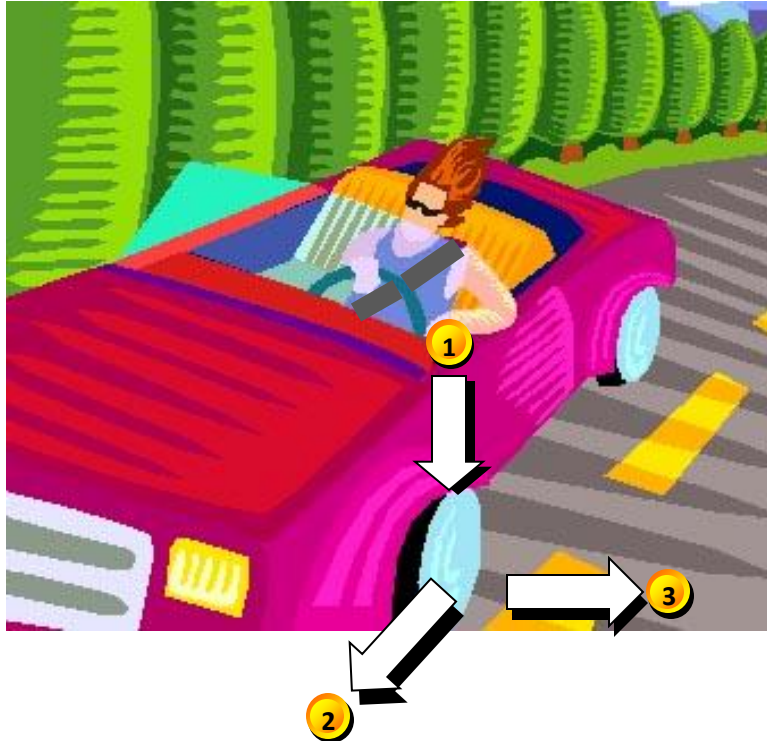
WHAT DOES YOUR TIRE DO?

What Does Your Tire Do?

Your tire is the only thing that connects your motor vehicle to the ground.



What Does Your Tire Do?

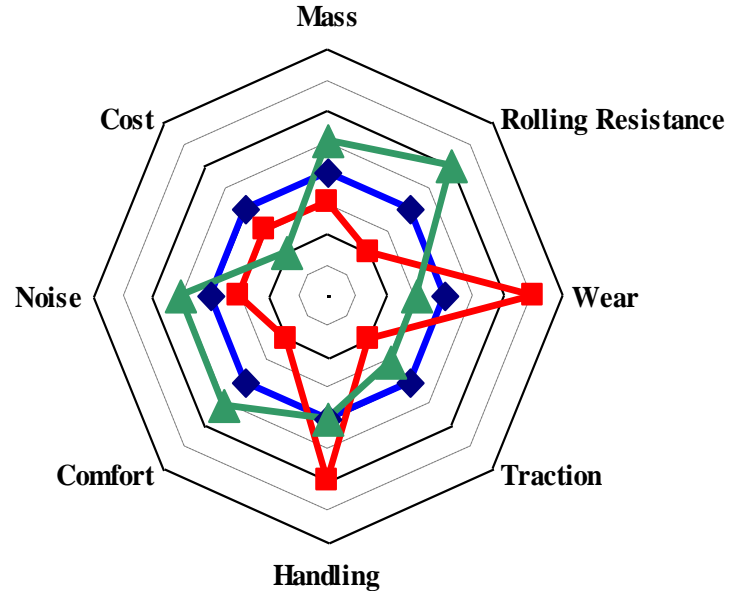


Grip and road handling:

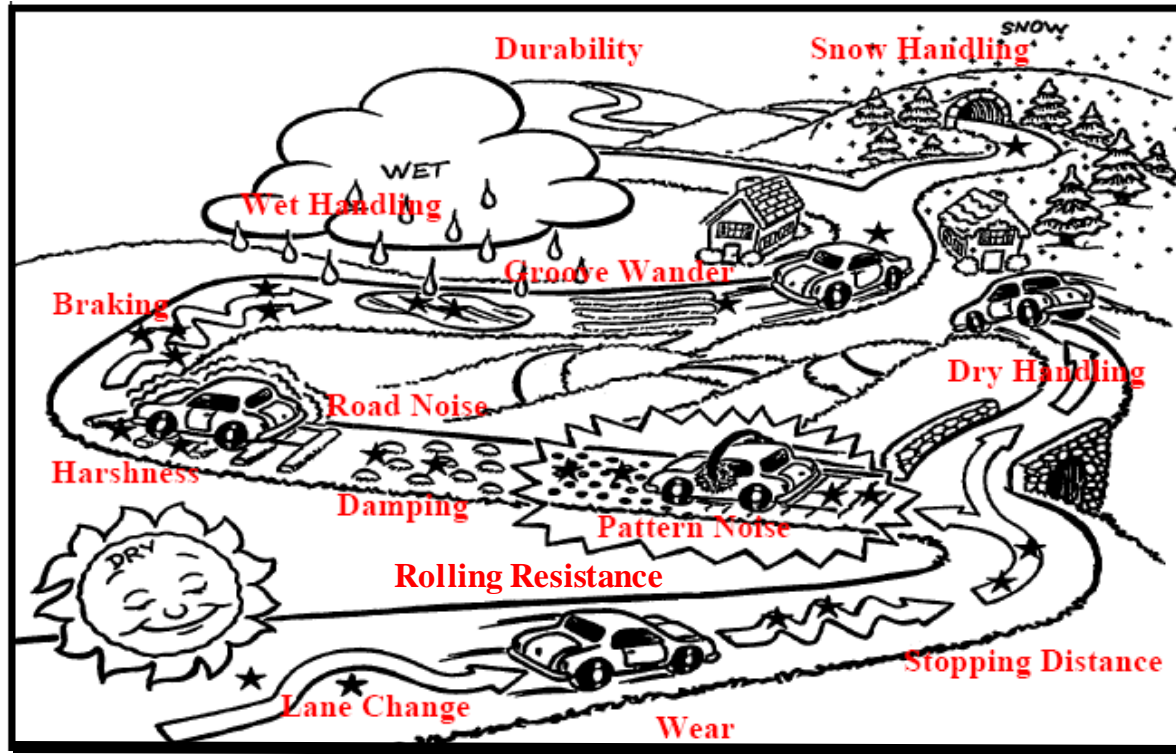
- 1 carry
- 2 drive & brake
- 3 steer

Interaction of Tire Performance Parameters

- Tire design is an exercise in balance and choice
- Improving or optimizing one performance parameter significantly impacts others



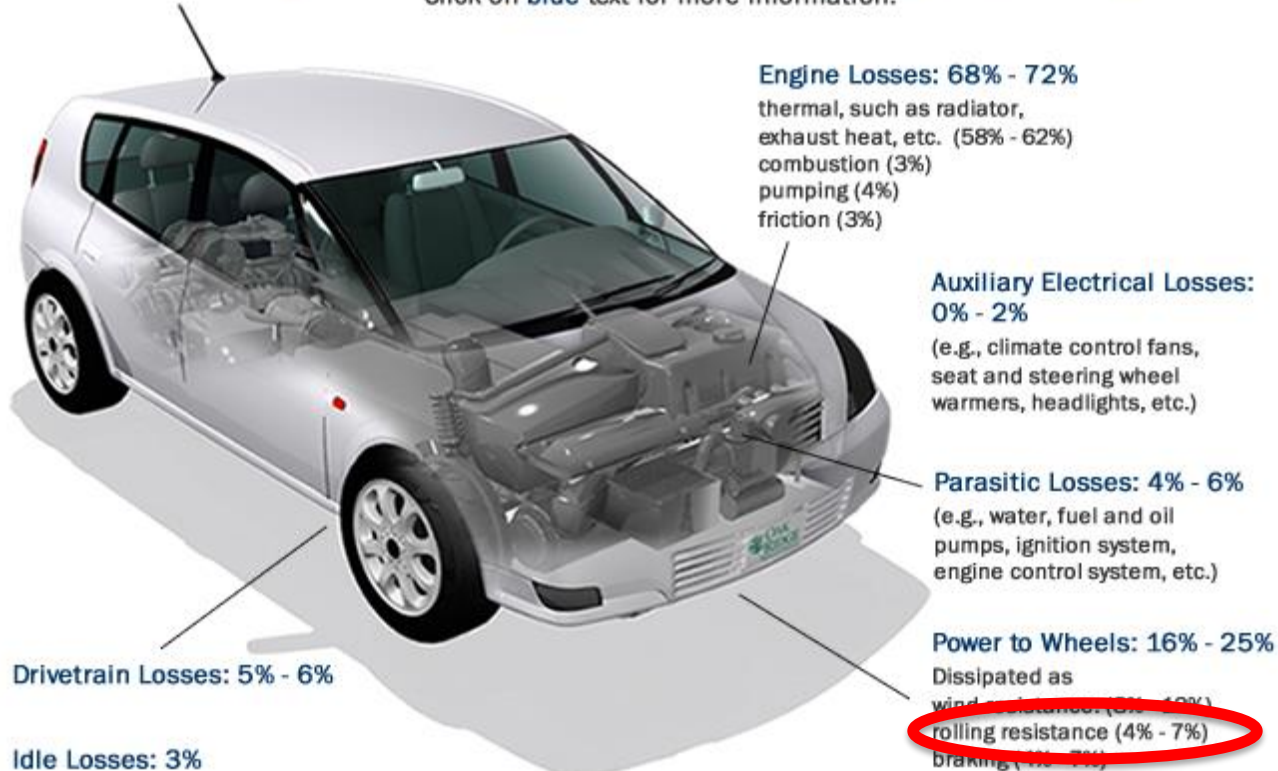
Key Tire Performances



HOW DO TIRES AFFECT FUEL ECONOMY?

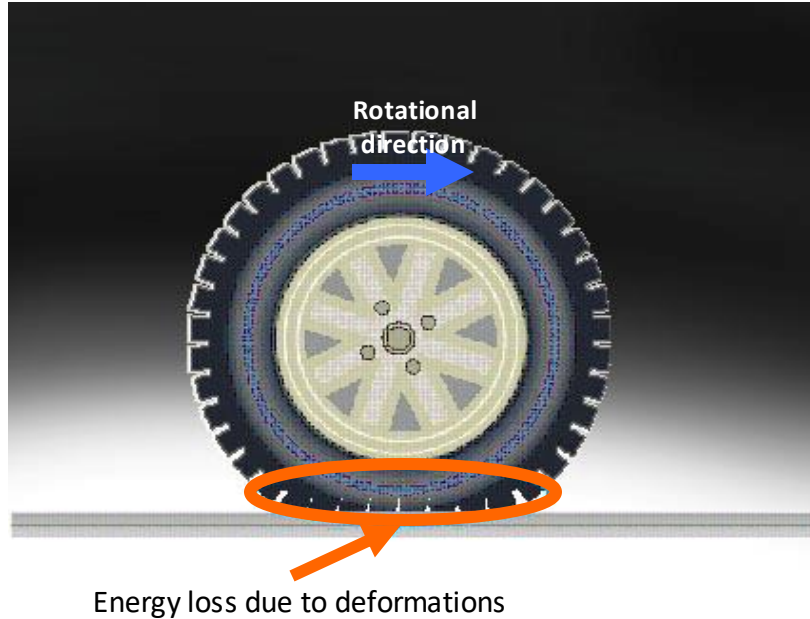
Energy Requirements for Combined City/Highway Driving

Click on blue text for more information.



Source: <https://www.fueleconomy.gov/feg/atv.shtml>

What is Tire Rolling Resistance?



“The force at the axle in the direction of travel required to make a loaded tire roll.”

Source: [Tire and Passenger Vehicle Fuel Economy: Informing Consumers, Improving Performance](#), Transportation Research Board, 2006.

Key Performance Trade-offs



Rolling
Resistance



Wet Traction



Treadwear



HOW ARE TIRES REGULATED IN THE U.S.?

Federal Motor Vehicle Safety Standards affecting tires

Safety Act, 49 U.S.C. §§ 30103-30105 et seq.

FMVSS Number	CFR Citation	Title
Standard No. 109	49 CFR 571.109	New pneumatic and certain specialty tires. (FMVSS 109)
Standard No. 110	49 CFR 571.110	Tire selection and rims and motor home/recreation vehicle trailer load carrying capacity information for motor vehicles with a GVWR of 4,536 kilograms (10,000 pounds) or less.
Standard No. 119	49 CFR 571.119	New pneumatic tires for motor vehicles with a GVWR of more than 4,536 kilograms (10,000 pounds) and motorcycles.
Standard No. 120	49 CFR 571.120	Tire selection and rims and motor home/recreation vehicle trailer load carrying capacity information for motor vehicles with a GVWR of more than 4,536 kilograms (10,000 pounds).
Standard No. 138	49 CFR 571.138	Tire pressure monitoring systems.
Standard No. 139	CFR 571.139	New pneumatic radial tires for light vehicles.

Highlight on FMVSS No. 139

Scope: new pneumatic radial tires for vehicles weighing 10,000 GVWR or less made after 1975, with some exceptions



Key performance tests:

- Endurance/low pressure test – most stringent performance test in the world
- High speed test

Other Requirements

- Physical dimensions
- Marking requirements
- Plunger energy test
- Bead unseating test

Compliance by self-certification: tire manufacturer self-certifies tire that is in compliance with FMVSS by including “DOT” on sidewall of tire; tires subject to NHTSA compliance audits, investigation and potential recall

Consumer Information and Standards

Uniform Tire Quality Grading (UTQG)

- Requires sidewall grading of passenger tires for wet traction, tread wear and temperature

Consumer Tire Information Rule

- Mandated by Congress in 2007
- Requires consumer ratings at point of sale for wet traction, rolling resistance (tire efficiency), and tread wear
- When complete, will assist consumers with comparing tire performances across models, brands and manufacturers

Performance Standards

- 2015 Congressional mandate that NHTSA develop minimum performance standards for tire efficiency and wet grip
- Must evaluate higher speed rated tires to ensure no disparate effect
- Must use ISO 28580 (rolling resistance test method) and UN Regulation No. 117 wet grip test method

TIRE DESIGN FOR THE MARKETPLACE

What is the perfect tire? It depends!

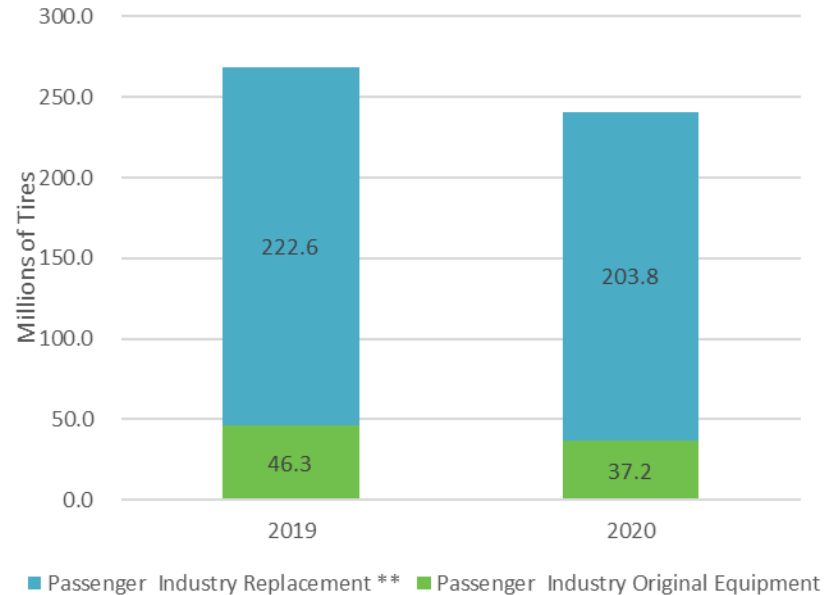
- What kind of vehicle do you drive?
 - The consumer has already made vehicle choice by the tire they are buying replacement tires!
 - Car? CUV/SUV? Minivan? Pickup Truck? Work vehicle? Sports car?
 - Gas engine? Electric vehicle? Hybrid?
- Is the tire original equipment or a replacement tire?
- Where do you live? City? Suburb? Rural? Mountains? Desert?
- How are the roads you use?
 - Well-maintained? Rough? Curvy? Mountainous?
 - Do you need to drive off-road?
- What is your weather like?
 - Do you have different seasons? Rain? Snow? Hot? Cold?
- What kind of driving do you do?
 - Long distances, long commute or trips? Short trips mostly? Some of both? Traffic?
 - Do you use your vehicle for work? Do you haul heavy items?



Original Equipment vs. Replacement Tires

- Original equipment tires
 - Tires designed for specific year/ make/model/trim level of vehicle
 - Focus on fuel economy, ride, noise, “new car feel”
 - Adequate (not optimized) wet traction, treadwear
 - No treadwear warranties – enough to get through a lease period
- Replacement tires (all-season)
 - Tire designed to perform well on wide range of vehicles (as many as 30 fitments for a single tire size/speed rating)
 - Consumers demand optimized treadwear and wet traction performance
 - Expected treadwear warranties between 40,000 – 80,000 miles
- USTMA considers all tires to be replacement tires for purposes of regulation

U.S. Passenger Tire Shipments 2019-2020

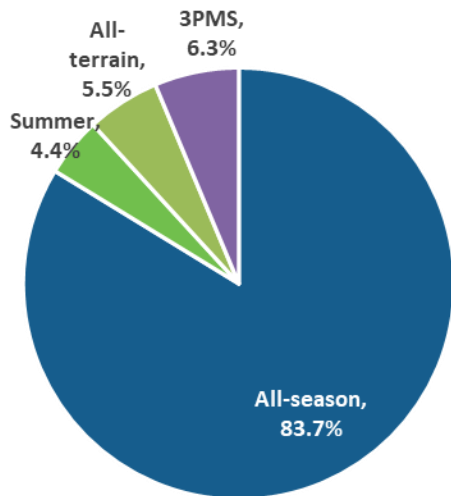


** US Trade Data - Consumption Imports

Source: U.S. Tire Manufacturers Association, 2021.

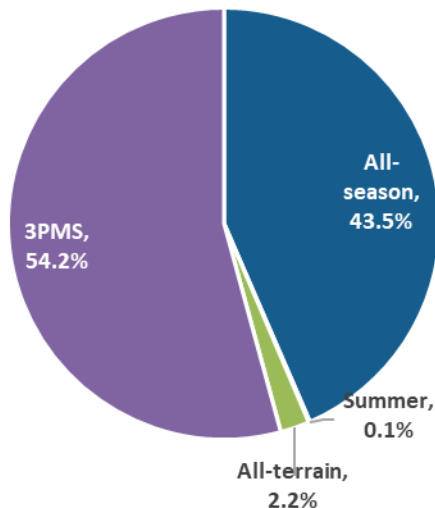
Global Passenger Tire Markets are Very Different

United States



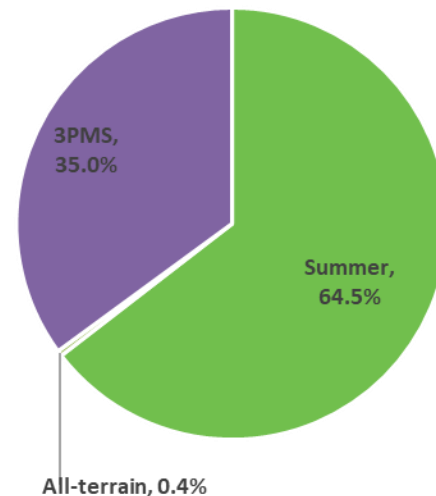
Source: U.S. Tire Manufacturers Association, 2021.

Canada



Source: Tire & Rubber Association of Canada, 2021.

Europe



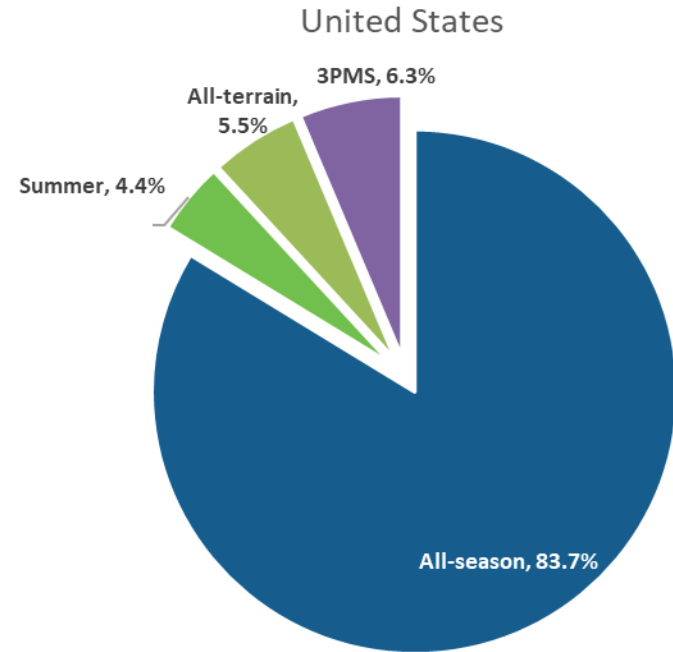
Source: European Tire & Rubber Association, 2021.

Major Passenger Tire Market Segments

Performance Category	U.S. Major Tire Segments			
	All-season	Summer	Winter/Snow	All-Terrain Tires
Ride and Comfort	Best	Better	Fair	Fair
Handling	Good	Best	Good	Good
Wet traction	Good	Best	Better	Good
Dry traction	Good	Best	Good	Good
Treadwear	Best	Fair	Fair	Better
Winter traction	Good	Poor	Best	Better
Off-road	Fair	Poor	Good	Best

Relative Size of Major U.S. Tire Segments

- Several sub-segments exist within each major market segment
- All-season is largest market segment in the U.S.
- All-season can be used to illustrate examples of subsegments in next slide



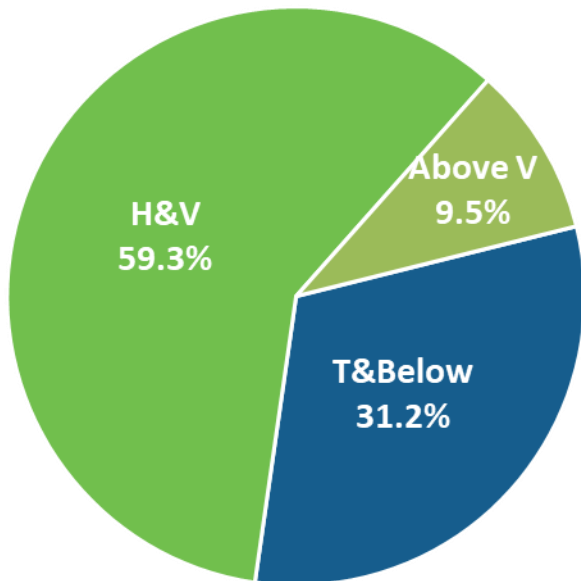
Source: U.S. Tire Manufacturers Association, 2021.

All-season Tire Segment

Performance Category	All-season sub-segment breakout (illustration)				
	Touring	Grand Touring	Performance	High performance	Ultra-high performance
Ride and Comfort	Good	Best	Better	Good	Good
Handling	Good	Good	Better	Best	Best
Wet traction	Good	Good	Better	Best	Best
Dry traction	Good	Good	Better	Best	Best
Treadwear	Better	Best	Good	Good	Fair
Winter traction	Better	Better	Good	Good	Good

Tire Speed Ratings Also can Segment Tire Performance

USTMA Passenger Tire Speed Rating Popularity
(2019-2020 OE + Replacement)



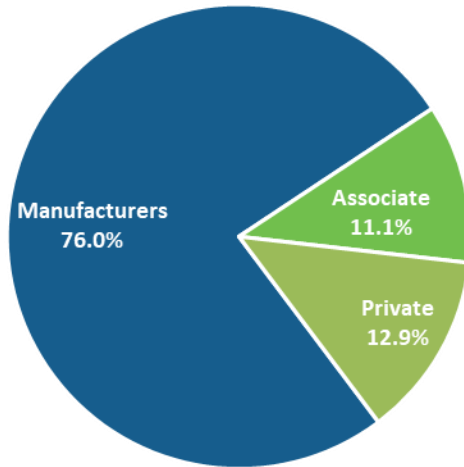
Source: U.S. Tire Manufacturers Association, 2021.

- All speed rating groups are present in both touring and performance sub-segments

Speed Symbol Group	Maximum Speed in group
T & Below	190 kph/118 mph
H&V	240 kph/149 mph
Above V	>240 kph/149 mph

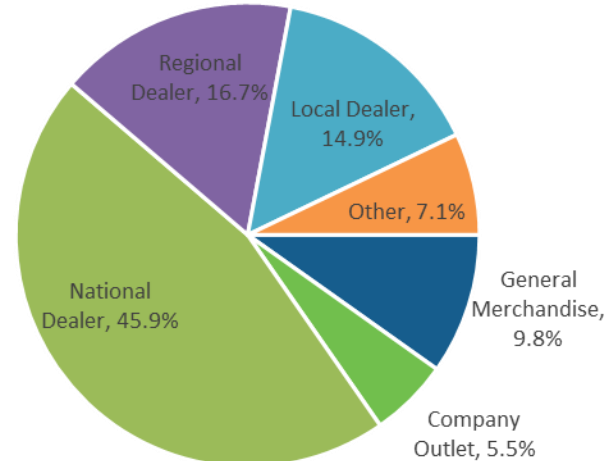
2020 USTMA Passenger Tire Replacement Shipments by Brand Type and Channel Type

2020 USTMA Replacement Tire Shipments
by Brand Type



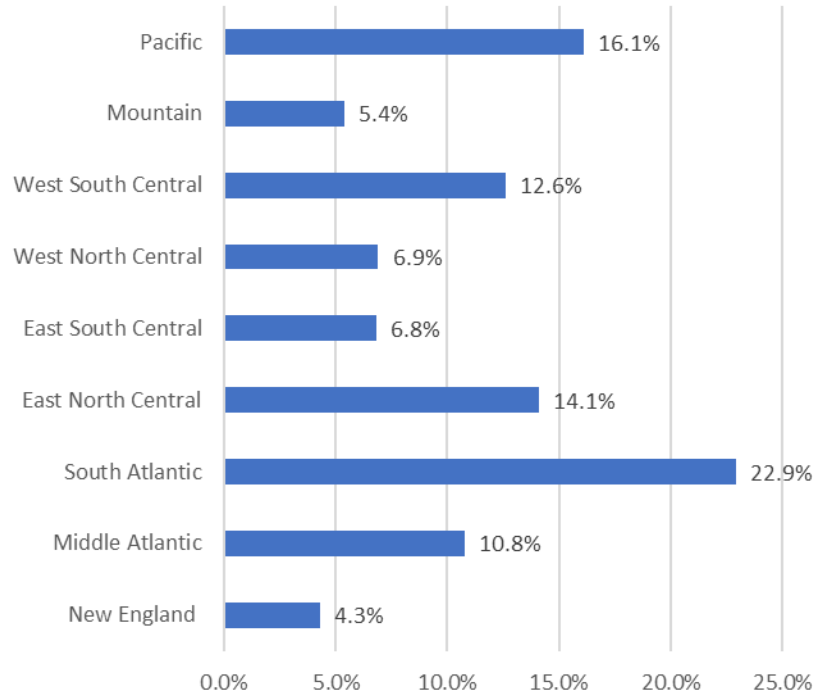
Source: U.S. Tire Manufacturers Association, 2021.

2020 USTMA Replacement Tire Shipments
by Channel Type



Source: U.S. Tire Manufacturers Association, 2021.

USTMA Passenger Tire Replacement Shipments by U.S. Region



Source: U.S. Tire Manufacturers Association, 2021.

U.S. Regions

New England

(Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont)

Middle Atlantic

(Pennsylvania, New Jersey, New York)

South Atlantic

(West Virginia, Delaware, Maryland, Washington DC, Virginia, North Carolina, South Carolina, Georgia, Florida)

East North Central

(Illinois, Indiana, Michigan, Ohio, Wisconsin)

East South Central

(Alabama, Mississippi, Kentucky, Tennessee)

West North Central

(Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota)

West South Central

(Arkansas, Louisiana, Oklahoma, Texas)

Mountain

(Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming)

Pacific

(Alaska, California, Hawaii, Oregon, Washington)

Summary

Tires are complex, highly engineered products designed to deliver performance meeting needs of a range of customers

- Safety is the primary consideration in tire design
- When a tire is optimized for one performance, other attributes are affected

U.S. tire market is unique

- Dominated by all-season tires, unlike the EU tire market where summer and winter tires are most popular
- OE and replacement market tire markets are distinct, with different tire attributes
- Replacement tire customers value long tread life, all-season traction and price

USTMA looks forward to working with CEC on this proceeding and welcomes the opportunity to provide further education, information and data throughout the process

Thank you!

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