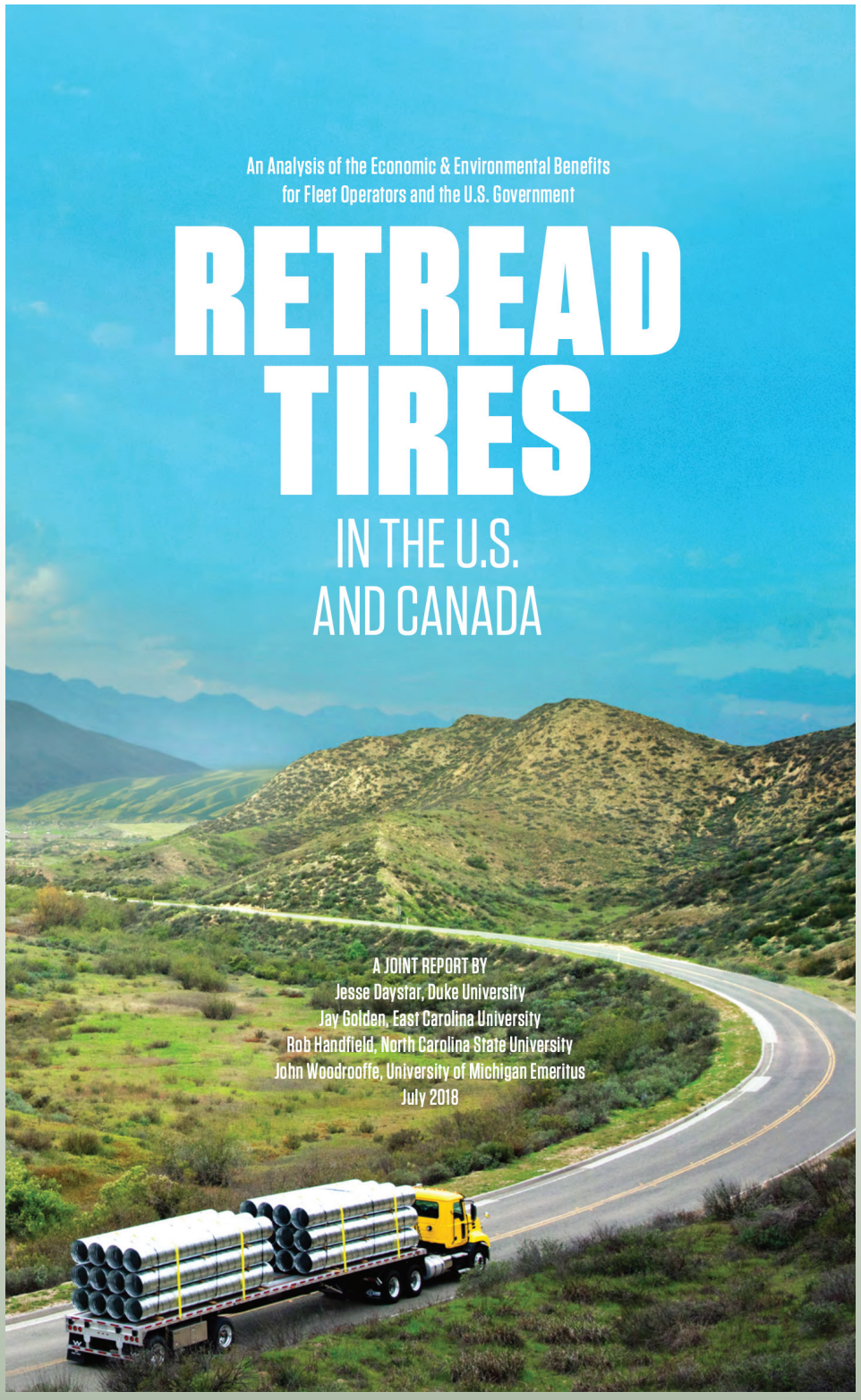
The State of Retread Tires in the United States & Canada

2024 Addendum to the 2018 Report



Overview

Led by Professor John Woodrooffe, the 2018 publication of *The State of Retread Tires in the United States and Canada: An Analysis of the Economic & Environmental Benefits for Fleet Operators and the United States Government* was the result of industry-wide coordination with business leaders, experts, and scholars from the Duke Center for Sustainability & Commerce, N.C. State Supply Chain Resource Cooperative, and the University of Michigan Transportation Research Initiative.

With an eye on economic, environmental, and national security risks and opportunities, the following addendum seeks to provide lawmakers with a snapshot of the state of the American tire retreading industry in 2024.

About the Author

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Mr. John Woodrooffe is a Research Scientist, Director of the Commercial Vehicle Research and Policy Program, and Head of Vehicle Safety Analytics at the University of Michigan Transportation Research Institute. He has over 30 years of experience in vehicle-related research and is an international expert in large vehicle transport safety, efficiency, vehicle productivity, and progressive regulatory issues.

Retread in Focus: The Facts

America Depends on Retread

» Retread is the largest remanufacturing sector in the U.S., employing over 51,000 workers and supporting more than 268,000 jobs across the broader $28.4 billion U.S. tire industry (Daystar et al, 2018).

» Operating under franchise agreements with large tire companies (e.g., Bridgestone, Continental, Goodyear, Michelin), retreads are a nearly 100% domestically produced product (with U.S. and foreign content) manufactured by small independent businesses, typically employing 10-60 workers.

» Approximately 15 million tires are retreaded annually in the U.S. (Modern Tire Dealer, 2023).

» U.S. truck and bus fleets are prolific users of retreads, retreading each tire 2-3 times on average.

» Nearly 90% of U.S. fleets with 100+ trucks rely on retreaded tires due to their financial, operational, and sustainability benefits (Daystar et al, 2018).

» Retreads are a vital economic and national security asset, helping keep America's trucks on the road during unprecedented supply chain and geopolitical disruptions.

Financial & Environmental Benefits of Retread

» Truck tires are commonly covered under a limited warranty and designed to be retreaded up to three times, extending a tire's life by 300% or more and keeping fleets on the road at a lower cost per mile. Bridgestone, the largest producer and retreader of commercial tires in America, estimates that premium tires are retreaded an average of 2.1 times.

» Tires are the 3rd highest expenditure for fleets, behind people and fuel. Annually, retreading generates nearly $3 billion in cost savings.

» Retreading reduces energy use by 30%, and requires approximately 15 gallons less oil to produce one retread than manufacturing a new truck tire (NHTSA, 2008).

» A typical retread commercial tire saves (on average) 90-100 lbs. of material. Capable of being retreaded 3 times or more, a single premium tire can save upwards of 300 lbs. of materials versus non-retreadable tires.

» Retreaded tires typically have lower rolling resistance, which can result in improved fuel economy and cost savings.

The Threat of Low-Cost Imports to the U.S. Economy

» For every new premium tire sold in the U.S. and Canada, 1.1 retreads are produced, whereas less than 0.4 retreads are made for every new ultra-low-cost import (Daystar, 2018). The rise of ultra-low-cost tire imports has eroded the market and hastened the decline of the U.S. retread industry.

» The number of tire retreading facilities in the U.S. has dropped from over 3,000 in 1982 to an estimated 500 in 2023. The growth of low-cost import tires is accelerating this trend and increasing the likelihood of further plant closures (Modern Tire Dealer, 2023).

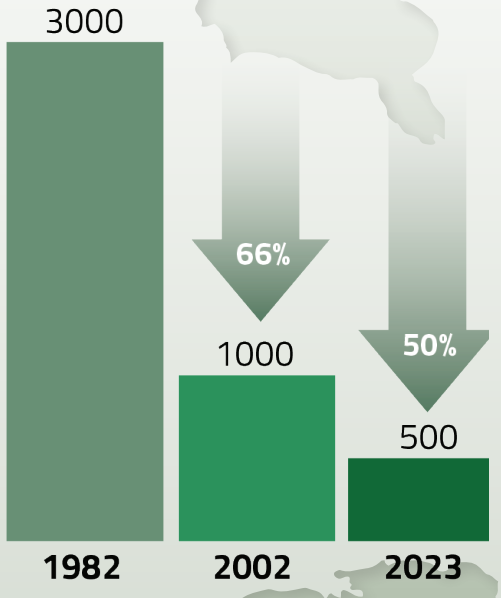
» Due to differences in quality, low-cost tire imports are often deemed unsuitable for retreading and, therefore, discarded after a single use. As they are typically not retreaded, low-cost imports account for a disproportionate share of the more than 270 million tires sent to U.S. scrap yards and landfills in 2021 (USTMA, 2022).

WHO DEPENDS ON RETREAD?

Retreads account for nearly 44% of commercial truck tires in the U.S. and Canada. Common Users: Long-haul carriers, package delivery fleets, waste fleets, U.S. military, school buses, government fleets, and more.

In 2022, trucks moved more than 72% of the nation's freight by weight, nearly half of which was on retreaded tires (American Trucking Associations, 2023; Daystar et al, 2018).

DECLINING NUMBER OF RETREAD FACILITIES IN THE U.S.



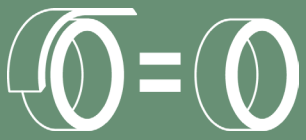
(Modern Tire Dealer, 2023)

Retread Explained: Safety and Process

MODERN RETREADING

includes a 10-step process* that requires multiple inspection points and highly automated advanced manufacturing technology.

AS SAFE AND RELIABLE AS A NEW TIRE



Leading manufacturers maintain the controls, licenses, and certifications (e.g., ISO 9001:2000) to help ensure the quality and safety of the retreading process and finished products. In addition, unlike new tires coming off the line that are subject only to visual inspection, retreads undergo rigorous visual and electronic analyses to ensure they adhere to strict standards. Studies conducted by the National Highway Transportation Safety Administration (NHTSA), the American Trucking Associations, and the states of Arizona and Virginia concluded that a well-maintained retreaded tire offers equivalent reliability to a well-maintained new tire (Daystar et al, 2018).

See State of Retread Tires in the United States and Canada 2018 page 11.

Stepping Up Quality and Safety: Innovation and Investment

Retread industry innovations enable fleet managers to follow their tires throughout the retreading process and equip them with data and insights to make more informed decisions. Most importantly, retread solutions ensure that the trucks and drivers who rely on retreaded tires operate safely and efficiently.

"In addition to advancing retreaded tire quality and safety, the retreading industry continues to explore and invest in automation and ergonomic manufacturing enhancements to improve worker health, safety, and productivity."

– Jason Roanhouse, Vice President of Operations, Bridgestone / Bandag

1 INITIAL INSPECTION

The tire is visually examined using a 7-step rotation to fully analyze if the tire is capable of being retreaded and to identify if there are any repairs that are required.

2 ELECTRICAL INSPECTION

An electrical current is applied to the inner cavity of the tire. A sensor is used to detect any voltage that penetrates the tire, identifying penetrations that may be invisible to the naked eye.

3 SHEAROGRAPHY

In most modern retread facilities, a shearography machine is used to scan the tire from side to side. The machine generates detailed images that are used to identify any underlying damage.

4 BUFFING

The remaining tire tread is physically abraded to remove the rubber and to create a uniform surface upon which the retread will be applied.

5 SKIVING REPAIR

Repairs are made as needed, including to any damage uncovered during the buffing process.

6 APPLYING CUSHION

An extruder will apply a thin and uniform layer of specialized uncured rubber, called the cushion, over the crown of the casing. Once cured, this material is what secures the new tread to the casing.

7 BUILDING

During the "building" process the new tread is applied - most often by a computer-controlled machine - to the casing.

8 ENVELOPING

The tire and its new tread are encased in a flexible rubber envelope that will ensure uniform pressure across the surface of the tire, pressing the tread and casing together during the curing process.

9 CURING

The tire tread is cured to the casing using a combination of temperature, pressure and time within a pressurized chamber.

10 FINAL INSPECTION

As a final check, the operator will examine the final product to ensure the quality of the retread. The operator will also verify that the customer specifications are met.

* Source: Bridgestone Bandag, LLC

Retread's Value Proposition for America: Improved Security and Sustainability

The Economy

Directly employing 51,000+ workers and supporting more than 268,000 jobs across the broader tire industry, retreading is the largest remanufacturing sector in the U.S. In addition to its contribution to the American economy, retreading is a key differentiator for the premium domestic tire industry and a critical component of good fleet management; nearly 90% of fleets with more than 100 trucks across the U.S. and Canada run on retreaded tires because of their affordability and reliability.

"As a manageable and trackable asset, fleets invest in premium tires because they plan to extend and optimize via retreading. Lower-cost imports are typically used once and then discarded. Therefore, the retread and domestic tire industries should be seen as mutually reinforcing. When there is no way to get the tire retreaded, the odds of fleets investing in premium retreadable tires decrease dramatically."

– Executive, Pomp's Tire Service, Inc.

The Environment

In 2021, over 270 million tires were sent to U.S. scrap yards and landfills, many of which were low-cost, single-use imports (USTMA, 2022). Taking upwards of 50 to 80 years to decompose, once entering the waste stream, tires present a unique challenge with far-reaching environmental health and safety consequences.

As scrap tires break down, they release chemicals and heavy metals into the soil, polluting water sources and endangering nearby and downstream life. Incinerating tires releases hazardous compounds—gases, heavy metals, and oil. Notably, tackling intentional or uncontrolled tire fires is challenging, intensifying respiratory and environmental risks (U.S. EPA, 2016). Amid these issues, retreads show potential as a promising solution.

By reusing the existing casing and replacing only the worn-out tread rubber, retreading significantly reduces the amount of raw materials, energy, and emissions required. Commonly covered under a limited warranty and designed to be retreaded up to three times, retreading can extend a tire's life by 300% or more, helping keep tires out of the waste stream. With nearly half of all commercial trucks in the U.S. and Canada running on retreads, this translates to an estimated annual savings of 217.5 million gallons of oil and 1.4 billion pounds of waste (Bridgestone, 2018).

The retread industry is an excellent example of the circular economy in action, with most retreaders using recycled rubber and a growing number of facilities operating on solar power. In addition, as the largest remanufacturing sector in the US, the retread industry takes its role in environmental health and safety seriously, investing in research and innovation to eliminate the use of harmful chemicals and improve sourcing, manufacturing, use, and end-of-life.

With approximately 15 million commercial tires retreaded annually across the U.S., retreads are making a difference and proving its case as a safe, reliable, and more environmentally friendly alternative to lower-cost, single-use tire imports.

Opportunity to Tackle Waste and Improve Sustainability in Last Mile Delivery

Bridgestone estimates that last-mile delivery vehicles replace tires as often as every three to four months, meaning a single vehicle can use more than 30 sets of tires over its lifetime. With less than 5% of last-mile delivery vehicles running on retreaded tires, the rapid electrification of LMD fleets, coupled with the burgeoning demand for LMD services, presents a tremendous opportunity for retread, a more environmentally friendly solution to the tire waste problem.*

**Class 2-3 delivery vans. Per Bridgestone testing. Actual results may vary.*

ENVIRONMENTAL BENEFITS

OF RETREAD TIRES COMPARED TO LOW-COST, SINGLE-USE TIRES

As reported in a study by Ernst & Young (2016) that compared a well-manufactured tire which could be retreaded to that of an ultra-low-cost import from Asia, their research found that in Europe the retread tire:

- Reduced CO_2 emissions by **24%**
- Reduced natural resource extraction **70%**
- Reduced water consumption by **19%**
- Reduced air pollution by **21%**
- Reduced land use by **29%**

Similarly, our research found considerable environmental benefits of U.S. assembled retread tires throughout the tire's service life. These include:

- **RESOURCE EXTRACTION**: Reduce resources required by **66%**
- **MANUFACTURING**: Significant reductions in oil, water, energy & emissions
- **USE PHASE**: Retread tires can have similar fuel economy as new tires
- **NEXT USE PHASE**: Lowers the amount of tires that have to be managed

The Reality of Retread in 2023

Showing Weakness But Showcasing Value

Over the last 14 years, low-cost imports have grown at a staggering 7% compound annual growth rate (CAGR), surging to 11% between 2012 and 2022 (Panjiva, 2023). As retread industry strength is highly correlated to the volume and velocity of low-cost imports, this unprecedented growth has considerably impacted the demand for retreads, leading to a significant drop in U.S. retread manufacturing facilities from over 1,000 in 2002 to an estimated 500 in 2023 (Modern Tire Dealer, 2023).

Recent retread strength can be attributed to challenges faced by low-cost tire importers, namely tariffs imposed on Chinese truck and bus tires in 2019 and pandemic-induced supply chain disruptions in 2020 and 2021, reducing the flow, availability, and affordability of low-cost imports. Yet, amid these fluctuations, the proliferation of imported tire brands and the emergence of subsidiaries operating out of Thailand and Vietnam has created a new set of challenges for the industry in recent years.

"It was simple – for several months, a significant portion of the market disappeared, and when domestic tire suppliers could not ramp up production quickly enough to keep up, retread was the only viable (and affordable) option. Were it not for retread shops, many trucks would have sat idle. It is time to include U.S. dependence on imported tires in the U.S. supply chain security discussion."

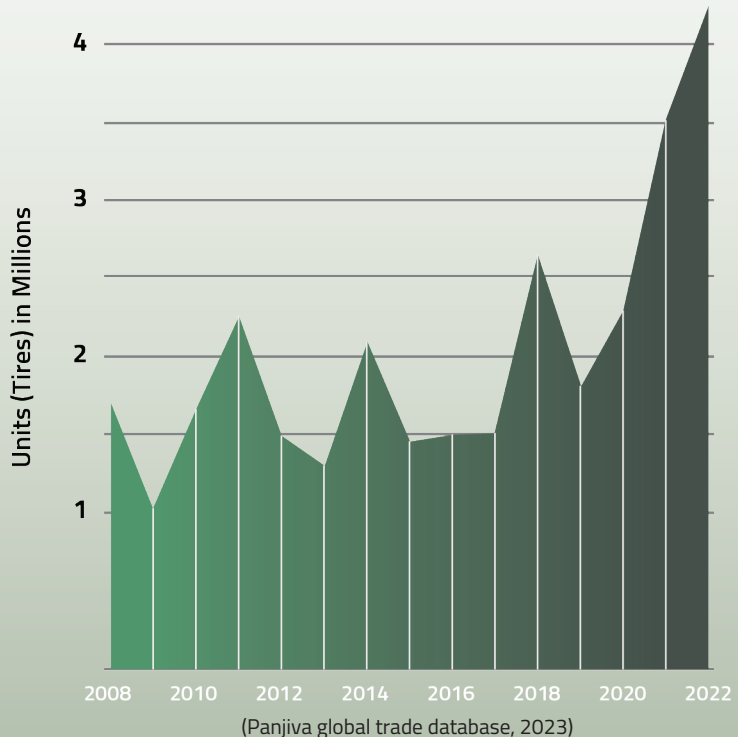
– Executive, Resley Tire Co. Inc.

Citing the rise of subsidiaries and the unprecedented flood of low-cost imports in 2021 and 2022 coupled with flat global demand, analysts forecast that market oversupply and exceptionally low pricing will accelerate retread's decline in 2024 and 2025.

These developments underscore the U.S. retread industry's challenges and the importance of legislation addressing the economic and environmental risks posed by low-cost tire imports.

Driven primarily by operators out of Southeast Asia, the post-Covid flood of low-cost tire imports to U.S. markets paved the way for eight of the ten largest exporting countries to post double-digit yearly increases in 2022 (Modern Tire Dealer, 2022; Tire Business, 2023).

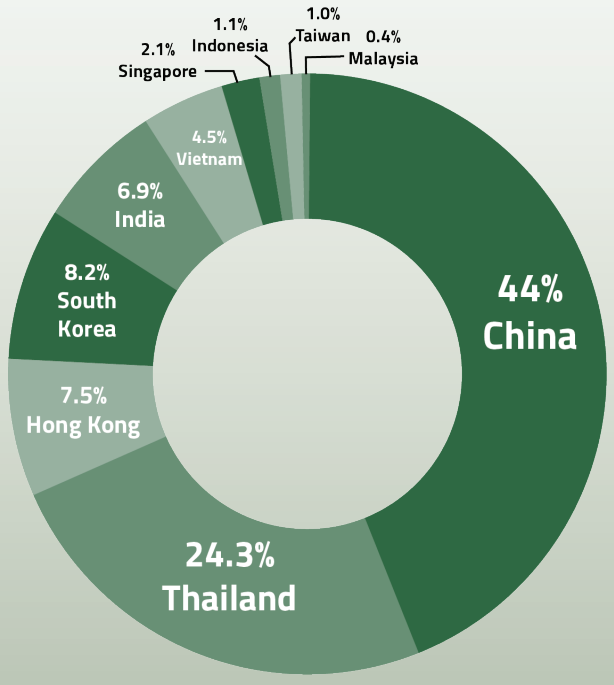
U.S. IMPORTS OF LOW-COST COMMERCIAL TIRES*



(Panjiva global trade database, 2023)

*Based on average commercial tire weight (50 kilograms / 110 pounds).

COUNTRIES LEADING LOW-COST COMMERCIAL TIRE IMPORTS TO THE U.S.*



Share of low-cost commercial tire imports to the U.S. among top exporting countries from 2008 to 2022 (Panjiva global trade database, 2023).

*Based on average commercial tire weight (50 kilograms / 110 pounds).

In Support of Retread: A Call to Action

Important for the Economy, Environment, and National Security

Retreaded tires are a nearly 100% domestically produced product (with U.S. and foreign content) made by small businesses, collectively employing more than 51,000 workers. In use by almost half of all commercial trucks in the U.S. and Canada and credited with generating more than $3 billion in fleet cost savings and the avoidance of 1.4 billion lbs. of landfill waste annually, retreads are designed to be a safe, cost-effective, environmentally friendly, and sustainable choice to help keep fleets on the road, materials moving, and products affordable.

However, despite the economic and environmental benefits, over the last 20+ years, low-cost tire imports have eroded the share of retreaded tires and forced facilities to shutter, putting thousands of skilled laborers out of work.

Facing the combined pressures of increasing labor and energy costs with declining demand, retread business owners urge lawmakers to address the economic, environmental, and national security risks associated with America's increasing dependence on low-cost imports and ensure U.S. retread readiness in future crises.

Trouble Ahead: What You Need to Know

- **Market Realities: Retread strength is highly correlated to the volume and velocity of low-cost imports, and their unprecedented growth has adversely impacted U.S. retread demand and manufacturing capacity.**
- **The Time to Act Is Now: Low-cost imports to the U.S. grew at a staggering 11% Compound Annual Growth Rate (CAGR) between 2012 and 2022. This unprecedented growth, coupled with the post-pandemic surge beginning in 2021, represents an existential threat that, if unaddressed, will have profound consequences for retreading in 2024 and beyond.**

With the U.S. retread industry at risk, it is imperative that lawmakers support the industry with pro-retread policies, such as tax incentives for the purchase of retread tires. This measure will increase retread demand and protect American jobs and the environment.

The passage of this legislation will help secure U.S. supply chains, ensure economic stability, and preserve precious non-renewable natural resources.

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HOW TO CITE THIS REPORT

J. Woodrooffe (2024).
2024 Addendum to the 2018 The State of Retread Tires in the United States & Canada.

ACKNOWLEDGMENTS

Input and funding of this report partially provided by Bridgestone Bandag, LLC in cooperation with industry experts, academia and Bandag franchisees.