



ASSOCIATION OF  
AMERICAN RAILROADS

POLICY &  
ECONOMICS

# Rail Transportation and the U.S. Economy: Fueling Growth, Trade, and Opportunity

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## Executive Summary

Rail transportation<sup>1</sup> is a critical pillar of the U.S. economy, powering industries, facilitating trade, and supporting high-wage jobs — all while operating on a self-funded infrastructure network that reduces strain on taxpayer-funded roads and highways. From moving bulk commodities to handling intermodal freight, rail enables the seamless movement of goods across the country and beyond, making it an essential link in global supply chains.

### *Rail Economic Impact at a Glance*

- **\$233.4 billion** in total economic output, driving business activity across multiple industries.
- **153,000 direct rail jobs**,<sup>2</sup> with 749,000 total jobs supported nationwide.
- **\$66 billion in total household income**, fueling consumer spending and regional economies.
- **\$25.1 billion in annual tax revenues**, supporting federal, state, and local government budgets.
- **\$26.8 billion in annual reinvestments**, fully funded by railroads, modernizing infrastructure, and ensuring long-term economic resilience.

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<sup>1</sup> For purposes of this study, “rail transportation” is defined as NAICS code 482, which includes linehaul freight railroads, switching and terminal operations, and intercity passenger railroads. In large part because of data availability issues, the focus of this study is on freight railroads. Certain industries that are connected to rail but are part of other NAICS categories are not included in this study, including commuter railroads (part of NAICS 485) and rail rolling stock manufacturers (NAICS 336). Certain positive externalities associated with railroads, such as fuel efficiency, cost, and safety advantages, are also not included for methodological reasons. As such, the economic impacts reported in this study are conservative.

<sup>2</sup> The employment figure of 153,000 in rail transportation, as reported by the IMPLAN model, represents a seasonally adjusted annual average, accounting for both full-time and part-time employees. This model-based headcount potentially under-represents the actual number of rail transportation employees, which the Association of American Railroads (AAR) estimates to exceed 160,000 for 2023. Despite this discrepancy, we have elected to utilize the IMPLAN figure for methodological consistency across our economic impact analysis. Employing the higher AAR estimate would likely yield a proportionally larger total economic impact than detailed in this report.

## *Rail's Role in Global Trade*

International trade is a key driver of U.S. economic growth, and freight rail is vital in keeping American businesses competitive. In 2023:

- **38%** of rail traffic was tied directly to trade-related shipments.
- **543.5 million** tons of goods moved through U.S. ports and across borders via rail.
- **\$29.8 billion** in rail revenue — or 37% of Class I railroad earnings — came from trade-related shipments.

Rail seamlessly connects domestic producers to international markets, ensuring cost-effective exports of agriculture, energy, and manufactured goods. Without rail's efficiency, trade costs would surge, weakening U.S. competitiveness in global markets.

## *Public Benefits: Sustainability, Efficiency, and Cost Savings*

Rail provides far-reaching public benefits, improving supply chain efficiency, reducing environmental impact, and easing pressure on infrastructure.

- **Fuel Efficiency:** On average, rail moves one ton of freight nearly 500 miles per gallon of fuel, making it three to four times more fuel efficient than trucks.
- **Lower Emissions:** Reduces greenhouse gas emissions by up to 75% compared to trucking.
- **Highway Congestion Relief:** A single train can remove hundreds of trucks from the highway, cutting traffic congestion, fuel costs, and road wear and tear.
- **Infrastructure Cost Savings:** Railroads own, operate, and maintain their networks, reducing the need for taxpayer-funded highway expansion.

## *State-Level Contributions: Rail's Broad Economic Footprint*

Freight rail supports high wage jobs and anchors key trade corridors across the U.S. The top five states for freight rail employment — Texas, Illinois, Nebraska, California, and Georgia — demonstrate rail's deep economic integration into industries like agriculture, energy, and manufacturing.

## *Conclusion: Rail as an Economic Engine*

Rail is not just a means of moving goods and people — it is a force multiplier for the U.S. economy. It sustains jobs, reduces business costs, fuels supply chains, facilitates trade, and delivers critical public benefits like lower emissions and reduced highway congestion. As we look toward the future, a strong rail industry is essential to keeping the U.S. competitive, resilient, and vibrant — a pillar in America's economic success.

## Introduction

Rail transportation is an essential foundation of the U.S. economy, providing efficient, large-scale freight movement that supports supply chain reliability, cost-effectiveness, and global trade competitiveness. From agriculture and manufacturing to energy and retail, railroads play a crucial role in connecting domestic production hubs to consumer markets and international trade corridors.

Beyond freight transport, the industry drives significant economic activity. In 2023, rail transportation contributed \$233.4 billion in total economic output, supporting 749,000 jobs, including 153,000 directly employed in the rail sector. The industry also generated \$25.1 billion in federal, state, and local tax revenue, reinforcing its role as a self-sustaining infrastructure network that lessens the burden on taxpayer-funded highways.

Rail's importance extends beyond the domestic economy—it plays a vital role in global commerce. In 2023, 38% of all rail traffic was directly tied to international trade, with 543.5 million tons of goods moving through U.S. ports and across borders via rail. These trade-related shipments accounted for \$29.8 billion in revenue, or 37% of total Class I railroad earnings. Without rail's efficiency in handling bulk commodities and intermodal freight, the cost of U.S. exports would rise significantly, impacting competitiveness in global markets.

This report evaluates the contributions of U.S. rail transportation in 2023, focusing on two primary areas:

1. **Domestic Impact:** Employment, labor income, infrastructure investments, and economic output.
2. **Trade and Global Connectivity:** Rail's role in facilitating efficient, cost-effective international trade.

By quantifying these contributions, this report underscores the indispensable role of rail transportation in sustaining economic growth, enhancing supply chain efficiency, and maintaining the U.S. as a global leader in trade and infrastructure.

# Economic Impact Modeling: Data and Methodology

## *IMPLAN Model Overview*

This study employs an Input-Output (I-O) modeling framework to quantify the economic impact of U.S. Rail Transportation (NAICS Code 482).<sup>3</sup> Specifically, the report utilizes the IMPLAN (Impact Analysis for Planning) model, a widely recognized economic modeling system that maps inter-industry relationships to estimate how economic activity in one sector influences others through supply chain linkages, labor income spending, and capital investments.<sup>4</sup>

IMPLAN's I-O model captures the circular flow of economic activity by tracing how industries interact through backward and forward linkages. This modeling approach allows for a comprehensive assessment of rail transportation's contributions to national and regional economies across multiple sectors.

## *Industry Definition and Scope*

Consistent with IMPLAN's sectoral classification, this study focuses on NAICS Code 482, which includes:

- **Freight Railroads:** Class I and short line railroads responsible for moving carload traffic, bulk commodities, and intermodal freight.<sup>5</sup>
- **Switching & Terminal Operations:** The movement, classification, and handling of railcars within rail yards, terminals, and industrial facilities.
- **Intercity Passenger Rail:** Includes Amtrak and other long-distance passenger services.

## *IMPLAN Model and Data Sources*

IMPLAN integrates a broad set of federal, industry, and institutional data sources to construct a highly detailed economic database. Key data inputs include:<sup>6</sup>

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<sup>3</sup> The North American Industry Classification System (NAICS) is the standard used by federal statistical agencies to classify business establishments for collecting, analyzing, and publishing economic data. Each industry is assigned a unique NAICS code to categorize its primary business activities.

<sup>4</sup> For more information on the IMPLAN modeling process, visit <https://support.implan.com/hc/en-us/articles/360044985833-IMPLAN-Report-Toolkit>

<sup>5</sup> Class I railroads are those with annual revenue in 2023 of at least \$1.05 billion. The six Class I railroad systems account for approximately 93% of U.S. freight rail revenue. The more than 600 short line railroads together account for around 7% of U.S. freight rail revenue.

<sup>6</sup> IMPLAN Data Sources: <https://implan.com/data-sources/>

- **U.S. Bureau of Economic Analysis (BEA):** Industry output and sectoral contributions to Gross Domestic Product (GDP).
- **U.S. Bureau of Labor Statistics (BLS):** Employment levels, occupational wages, and productivity metrics.
- **U.S. Census Bureau:** Business activity, trade flows, and regional economic patterns.
- **U.S. Department of Agriculture (USDA):** Agricultural commodity movements (relevant for bulk freight transportation).
- **U.S. Energy Information Administration (EIA):** Fuel consumption patterns and transportation-related energy expenditures.
- **Railroad Retirement Board (RRB):** Railroad employment and retirement benefits data.

IMPLAN classifies economic activity into 546 distinct industry sectors, allowing for a comprehensive analysis of rail transportation's economic contributions. This segmentation ensures that rail's impact is captured both directly (within the industry) and indirectly (across dependent industries and incorporating consumer spending effects).

### *Scope of Economic Impact Analysis*

To provide a comprehensive assessment of the rail transportation industry's role in the U.S. economy, this study examines four key impact categories:

1. **Operational Expenditures:** Includes direct spending on labor, fuel, maintenance, leasing, and contracted services essential for rail operations. These expenditures generate multiplier effects as suppliers and service providers reinvest revenue throughout the economy.
2. **Capital Investments:** Includes infrastructure spending on track and infrastructure enhancements, signaling technology, rolling stock procurement, intermodal terminal expansions, and other capital categories. These long-term investments contribute to improved safety, construction sector employment, supply chain demand, and enhanced transportation efficiency.
3. **Employment & Labor Income:** Evaluates the total employment impact, including:
  - a. **Direct Jobs:** Rail transportation employment across freight and intercity passenger operations.
  - b. **Indirect Jobs:** Employment in supply chain industries that provide inputs to rail transportation operations.

- c. **Induced Jobs:** Jobs created by labor income spending, as rail transportation workers and supply chain employees reinvest their wages into the economy.
4. **Railroad Retirement Benefits:** The vast majority of railroad retirement benefits are managed outside the Social Security system and are self-funded. A unique economic contribution of rail transportation, these benefits represent a substantial source of household income, stimulating consumer spending, and local economic activity. Their inclusion provides a more complete assessment of rail transportation's financial impact on workers and retirees.

By incorporating both direct and spillover effects, this analysis offers a robust, data-driven perspective on rail transportation's role in supporting employment, business activity, infrastructure development, and global trade competitiveness.

## Economic Impact Metrics and Analytical Scope

This study employs IMPLAN's Social Accounting Matrix (SAM) multipliers to quantify the full economic footprint of U.S. rail transportation. The analysis captures three primary impact channels:

### *Direct Impacts*

These stem from economic activities directly tied to rail transportation operations and represent immediate financial transactions within the industry. Key direct impacts include:

- **Employment & Labor Compensation:** Rail transportation directly employs locomotive engineers, conductors, dispatchers, maintenance personnel, and administrative staff, among others, all of whom receive wages and benefits that contribute to household spending.
- **Infrastructure Maintenance & Expansion:** Investments in maintenance and repair of tracks, bridges, signaling and communication systems, rail yards, intermodal terminals, and a wide range of advanced inspection technology used to ensure network safety and efficiency.
- **Equipment Procurement & Servicing:** Railroads purchase, lease, and maintain locomotives, freight cars, passenger railcars, and specialized rail equipment, supporting domestic manufacturing and industrial services.

- **Fuel & Energy Consumption:** The acquisition of diesel fuel, alternative fuels, and electricity for rail operations supports the energy sector and contributes to fuel supply chain demand.
- **Safety & Compliance Investments:** Expenditures on inspection, testing, maintenance, and repair of track, rolling stock, signals, Positive Train Control (PTC) systems, as well as employee training and regulatory compliance measures, help improve operational safety and efficiency.

These activities generate business revenues, employment, and wages that sustain the core functions of rail transportation, reinforcing its role as a foundation of the transportation economy.

### *Indirect Impacts*

Indirect impacts arise from rail transportation's supply chain, encompassing a wide range of industries that provide essential inputs for operations. These upstream activities stimulate economic growth across multiple sectors by supporting jobs, wages, and business revenues. Examples include:

- **Steel Manufacturing & Metal Production:** Rail infrastructure relies on steel production for rail installation and replacement, railcar fabrication, and bridge construction, driving demand in the steel and metalworking industries.
- **Equipment Manufacturing & Maintenance:** Industries that design, manufacture, and maintain railcars, locomotives, and track components provide essential support to railroads.
- **Construction & Engineering Services:** Railroads invest heavily in infrastructure improvements, which sustain construction firms, civil engineering companies, and materials suppliers.
- **Technology & Telecommunications:** Railroads depend on signal systems, radio, and microwave communication, GPS tracking, automated dispatching, and extensive data collection storage, processing, and analytics, generating demand for software developers, IT firms, and telecommunications providers.

These supply chain linkages extend the economic impact of rail transportation well beyond its core operations, benefiting diverse industries that contribute to the efficiency and reliability of rail networks.

### Induced Impacts

Induced impacts reflect the economic activity generated by household spending from wages earned by workers in both railroads and in firms that supply railroads. These multiplier effects extend across communities, supporting a broad range of industries and services. Examples include:

- Housing & Real Estate:** Rail transportation employees and employees of their suppliers spend their wages on rent, home purchases, mortgage payments, and property improvements, contributing to the real estate sector.
- Retail & Consumer Goods:** Household spending on clothing, electronics, appliances, and personal items fuels demand for retail businesses.
- Health Care & Education:** Rail transportation-related earnings support doctor visits, hospital care, insurance payments, college tuition, and childcare services, reinforcing social infrastructure.
- Transportation & Automotive:** Employees use their wages for vehicle purchases, fuel, maintenance, and public transit, further stimulating transportation-related industries.
- Entertainment & Leisure:** Spending on restaurants, tourism, sporting events, and recreation circulates money back into the economy, supporting small businesses and service-sector employment.

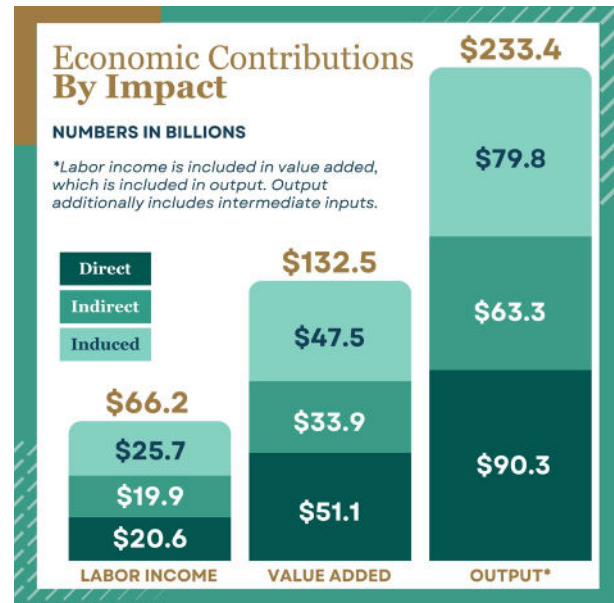


Figure 1a: 2023 Economic Impact Results<sup>7</sup>

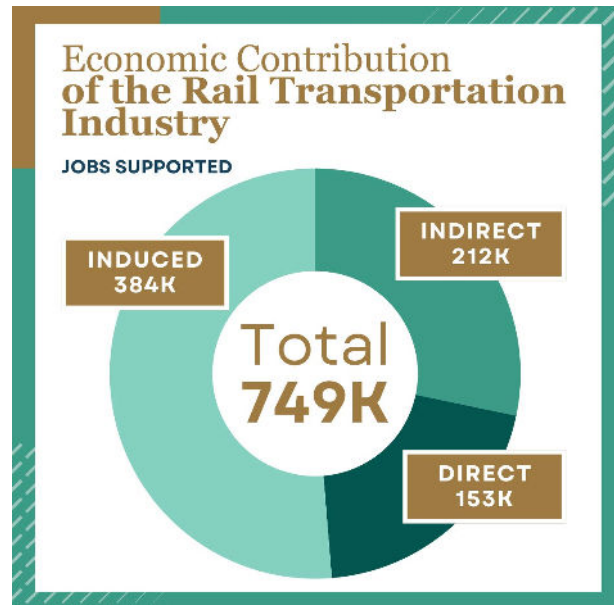


Figure 1b: 2023 Economic Impact Results<sup>7</sup>

Through these purchases, rail transportation wages generate a sustained flow of economic activity that benefits businesses far beyond transportation, reinforcing local economies, and fueling broader local, regional, and national economic growth.

### Limitations and Excluded Externalities

While this study provides a comprehensive assessment of rail transportation’s measurable economic contributions, certain important public benefits are not captured in IMPLAN’s calculations. If these public benefits were monetized, the economic benefits of railroads would be substantially higher than what is presented in this report. As explained further below, these public benefits include:

- **Environmental Benefits:** Freight rail significantly reduces greenhouse gas emissions compared to trucking.
- **Highway Congestion Mitigation & Infrastructure Cost Savings:** Shifting freight from highways to rail reduces highway congestion, pavement wear and tear, and saves taxpayers money through lower highway construction and maintenance costs.

While these factors represent substantial economic and societal benefits, they require a cost-benefit analysis framework beyond the scope of IMPLAN’s Input-Output model, which focuses on measurable economic transactions rather than broader social welfare impacts.

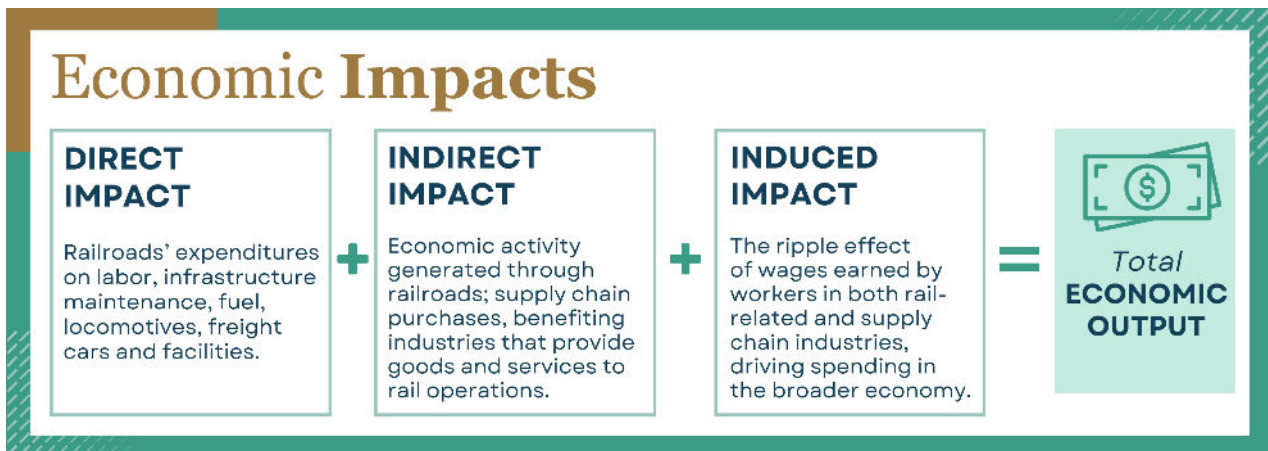


Figure 2: IMPLAN Economic Impact Analysis

<sup>7</sup> IMPLAN® model, 2023 Calendar Year Data, [www.IMPLAN.com](http://www.IMPLAN.com)

# Economic Contributions of U.S. Rail Transportation

The scale and efficiency of rail transportation makes it irreplaceable in the movement of goods and people across the country. In 2023, U.S. rail transportation generated \$233.4 billion in total economic output,<sup>8</sup> with more than \$50 billion in direct value-added to GDP.

For freight rail, the economic and societal importance can be measured in various ways:

- **High-Volume, Long-Distance Freight Transport:** Railroads transport approximately 1.6 billion tons of goods annually across more than 135,000 route-miles of track, supporting a wide swath of industries, from agriculture and energy to manufacturing and retail.<sup>9</sup>
- **Capital-Intensive Investment:** Unlike other transportation modes, railroads own, operate, maintain, and pay for their own infrastructure. Between 1980 and 2024, U.S. freight railroads invested more than \$825 billion (\$1.3 trillion in today's dollars) of private capital into infrastructure and maintenance, funding tracks, bridges, tunnels, locomotives, freight cars, and terminals. Rail delivers efficiency and sustainability benefits, reducing transportation costs and emissions while moving goods at scale.
- **Sustainability Leadership:** Railroads are a key driver of environmental benefits, producing fewer emissions and less land use per ton-mile than other land-based freight modes. This makes rail a critical tool for businesses seeking to reduce their environmental impact and improve sustainability.

## *A Network That Fuels Economic Growth*

For nearly 200 years, rail transportation has been a key driver of industrial growth and regional connectivity. Today, it remains essential to national and international trade, efficiently linking domestic producers to global markets through ports, intermodal hubs, and cross-border corridors.

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<sup>8</sup> Economic output is measured using multiple key metrics to capture the rail industry's contribution to the U.S. economy: **Employment** (seasonally adjusted annual average, including full-time, part-time, and seasonal jobs); **Labor Income** (total compensation, including wages, salaries, payroll taxes, and benefits); **Value Added** (gross contribution to U.S. GDP, including labor income and taxes, but excluding intermediate inputs); **Economic Output** (total economic activity, including business and household contributions); and **Fiscal Impact** (total tax revenues at local, state, and federal levels, including sales, property, and other non-payroll taxes).

<sup>9</sup> [Association of American Railroads State Pages](#), accessed January 21, 2025.

- **Supporting Manufacturing:** Rail ensures the efficient movement of raw materials and finished goods, helping manufacturers maintain efficient production cycles and inventory management.
- **Driving Agricultural Exports:** Rail transports grain, ethanol, fertilizers, and other bulk commodities to export terminals, keeping U.S. agricultural products competitive worldwide.
- **Enhancing Energy Security:** Rail moves coal, crude oil, refined petroleum, and renewable energy components, providing stable, large-scale logistics solutions for the energy sector.
- **Powering E-Commerce and Retail:** Rail plays a crucial role in transporting consumer goods, helping retailers and distributors manage inventory and meet demand efficiently.
- **Boosting Local and Regional Economies:** Rail networks connect remote and rural areas to larger markets, attracting investment in manufacturing, logistics, and infrastructure while fostering economic growth.

### *Economic Multiplier Effect*

The capital-intensive nature of rail operations amplifies its economic impact beyond direct employment and expenditures:

- Every \$1 invested in rail transportation drives \$2.50 in total economic activity, highlighting its powerful ripple effect across the economy.<sup>10</sup>
- Every rail transportation job supports 3.9 additional jobs across the U.S. economy, reflecting the industry's deep supply chain linkages.<sup>11</sup>

### *Employment and Workforce Impact*

Rail transportation is a major source of high-wage, highly skilled employment in the U.S., providing stable and well-compensated jobs across various occupations. In 2023, rail

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<sup>10</sup> This multiplier effect measures the relationship between economic output and rail spending. Formula:  $(\text{Total output} - \text{Spending}) / \text{Spending} = (\$233.4B - \$66.1B) / \$66.1B = \$2.50$ .

<sup>11</sup> This multiplier effect measures the relationship between employment at an industry level and rail employment. Formula:  $(\text{Total employment} - \text{direct employment}) / \text{direct employment} = (749,411 - 152,963) / 152,963 = 3.9$ , where employment numbers come directly from IMPLAN.

transportation directly employed 153,000 workers, distributing \$23.3 billion in wages, benefits, and payroll taxes. These jobs span train operations, engineering, maintenance, logistics, information technology, management, industrial development, accounting, and many other fields, reflecting the advanced and multi-dimensional nature of modern rail operations. Rail transportation employment offers significant compensation advantages over the national average:

- In 2023, the average U.S. Class I freight rail employee earned total compensation of \$149,000. By contrast, according to the Bureau of Economic Analysis, the average total compensation per full-time equivalent U.S. employee in 2023 was \$97,200, 65% of the rail figure.<sup>12</sup>
- In 2023, the Railroad Retirement system provided \$14.1 billion in benefits to over 575,000 beneficiaries, further contributing to household income and consumer spending.

### Total Employment Impact

When factoring in indirect (suppliers) and induced (household spending) effects, the rail transportation industry supported 749,000 jobs in 2023, generating \$66.1 billion in household income. These jobs extend across sectors such as manufacturing, construction, retail, professional services, and logistics.

Rail transportation provides stable, long-term employment opportunities, reinforcing economic resilience across regions that depend on freight movement and transportation networks.

### Capital Investment and Infrastructure Development

U.S. freight railroads operate one of the largest privately funded infrastructure networks in the world, with over 135,000 route-miles of track supporting freight transportation across agriculture, manufacturing, retail, and energy sectors.

In 2023, Class I railroads alone invested \$26.8 billion in capital expenditures and maintenance expenses, funding:<sup>13</sup>

- **Track, Terminal, and Bridge Upgrades:** Adding and renewing track, expanding freight corridors, yards, and intermodal hubs, and strengthening bridges to enhance safety, capacity, efficiency, and resilience.

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<sup>12</sup> U.S. Bureau of Economic Analysis, *National Income and Product Account Tables*, Tables 6.2D and 6.5D.

<sup>13</sup> AAR *Railroad Fact Book* pg. 7, December 2024.

- **Locomotive and Railcar Procurement:** Investing in fuel-efficient locomotives, rolling stock, and emission-reduction technologies.
- **Intermodal Infrastructure:** Expanding containerized freight terminals and port rail connections to improve domestic and global trade flows.
- Structures, signal systems, and other miscellaneous categories.

Unlike trucks, barges, and airlines, America’s privately-owned freight railroads operate overwhelmingly on infrastructure they own, build, maintain, and pay for themselves, enhancing capacity, safety, and efficiency.

### *Economic Activity and Fiscal Impacts*

Beyond direct operations, rail transportation is a catalyst for economic activity across supply chains. In 2023, total rail transportation related business expenditures — including labor, purchased services, and retirement benefits — exceeded \$66.1 billion.<sup>14</sup>

- Labor, purchased services, and fuel accounted for 65% of operating costs, generating economic activity across multiple industries.
- Rail transportation’s supply chain supports thousands of downstream firms, reinforcing its role as an economic multiplier.

The study also estimates fiscal impacts, capturing tax revenues generated at federal, state, and local levels through income, sales, property, and business taxes linked to rail transportation activities.

### *Tax Revenue Contributions*

Rail transportation provides substantial fiscal benefits at the local, state, and federal levels, both through direct tax contributions and by reducing the strain on publicly funded infrastructure. In 2023, the rail industry contributed \$25.1 billion in tax revenues, including payroll, property, income, and fuel taxes, which help fund public services, infrastructure improvements, and economic development.<sup>15</sup>

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<sup>14</sup> Sum of capital and maintenance expenses, total taxes (less payroll taxes), employment costs, and railroad retirement benefit payments.

<sup>15</sup> This includes \$1.6 billion paid by Class I railroads in state and local property taxes on their infrastructure, taxes that other transportation modes that use publicly supplied infrastructure do not pay.

Unlike other freight modes, railroads primarily operate on infrastructure they own, build, and maintain themselves, reducing reliance on taxpayer-funded highways. This self-sufficiency translates into cost savings for government budgets, as shifting freight from highways to rail minimizes road congestion, decreases pavement wear and tear, and lowers the need for taxpayer-funded highway expansion and maintenance. These fiscal contributions extend beyond direct tax payments, as rail-driven economic activity supports employment, supply chains, and regional growth, generating additional tax revenues across multiple industries.

### Industry-Specific Economic Impacts

Rail transportation plays a fundamental role in supporting economic activity across multiple sectors, facilitating supply chain efficiency, industrial output, and trade. In 2023, industries reliant on rail accounted for more than 65% of rail transportation’s total economic output,<sup>16</sup> demonstrating the deep interconnectivity between rail transportation and national economic performance.

### Transportation and Warehousing

Rail transportation provides the capacity, efficiency, and reliability necessary for seamless supply chain operations. As a cornerstone of multimodal logistics, rail facilitates the movement of goods between production points, ports, warehouses, and distribution centers, ensuring stable inventory flows and cost-effective transport solutions.

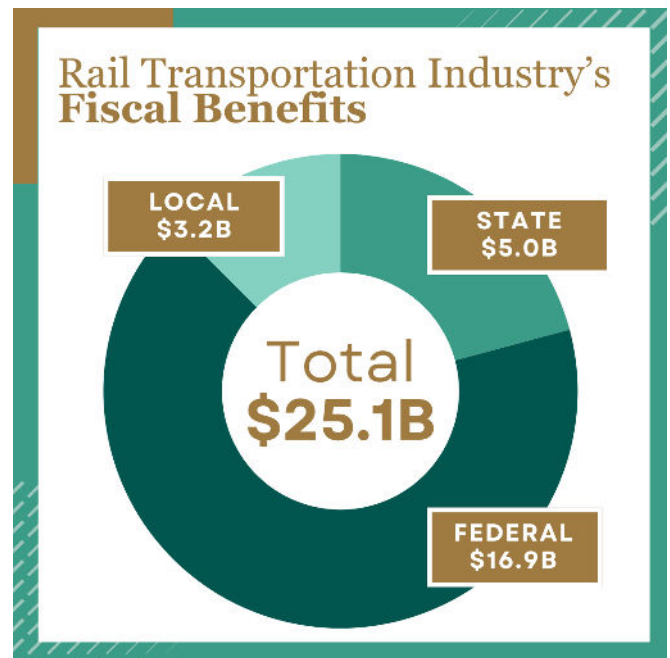


Figure 3: Fiscal benefits (Taxes)

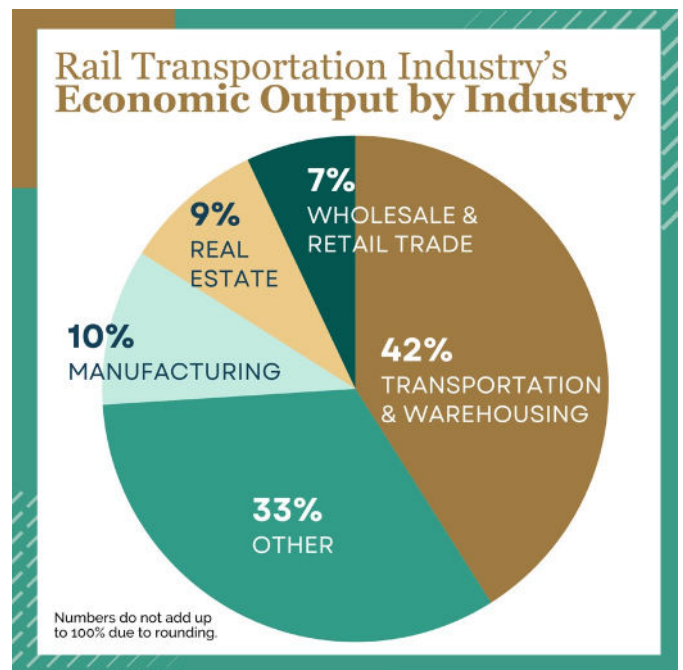


Figure 4: Rail Transportation Industry's Economic Output by Industry

<sup>16</sup> Represented industries are selected based on dollar value associated with total economic output and uniqueness to rail transportation.

- In 2023, transportation and warehousing accounted for 41.6% of rail transportation's total economic output, generating \$99.3 billion in economic activity and supporting 167,200 jobs.
- Every four rail transportation employees generate one additional job within transportation and warehousing, reflecting the broad employment impact of rail.

Rail reduces congestion on highways and alleviates pressure on trucking networks, improving overall freight mobility. By supporting efficient last-mile coordination and intermodal operations, rail strengthens logistics networks and enhances supply chain resilience and cost control.

### Manufacturing

The manufacturing sector remains a cornerstone of U.S. economic activity, contributing \$2.9 trillion to GDP in 2023. The United States accounts for around 16% of global manufacturing output, far surpassing countries like Japan, Germany, and South Korea. Only China produces more.<sup>17</sup>

Rail Transportation is Indispensable to Manufacturing:

- **Raw Materials Transport:** Rail transportation moves agricultural products, coal, metals, lumber, paper, chemicals, fertilizers, and other manufacturing inputs and outputs at a scale and cost efficiency unmatched by other transportation modes, allowing producers to optimize production and enhance competitiveness.
- **Supply Chain Integration:** Rail transportation enables just-in-time production by ensuring reliable, high-volume deliveries, critical for industries such as automotive, steel, and machinery.
- **Global Competitiveness:** Manufacturers and commodity producers (grain, coal, etc.) benefit from rail transportation's long-haul efficiency, allowing them to access national and international markets cost-effectively.

Economic Impact of Rail Transportation on Manufacturing:

- Rail transportation generated \$23.2 billion in economic activity within the manufacturing sector alone.

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<sup>17</sup> [World Bank Manufacturing, Value Added](#), accessed February 13, 2025.

- The industry contributed to the creation of 29,500 indirect and induced jobs in manufacturing.
- For every six rail transportation employees, one additional job was supported in manufacturing.

### Real Estate and Rental and Leasing

Rail transportation plays a critical role in economic development, particularly in sectors where land and infrastructure drive business expansion. Rail corridors influence land use patterns, enhance industrial site value, and support commercial development.

- Rail infrastructure shapes the location of industrial parks, logistics hubs, and commercial facilities, making rail-served sites more attractive for investment.
- The industry owns, leases, and manages significant land assets, facilitating development while generating additional revenue streams.

### Economic Impact of Rail Transportation on Real Estate & Leasing:

- Rail transportation operations generated \$21.1 billion in economic contributions to the real estate sector.
- Approximately 36,000 indirect and induced jobs were supported in real estate.
- For every five railroad employees, one additional job was created in real estate and leasing.

By strengthening commercial development and industrial land values, rail transportation contributes to regional economic growth and infrastructure investment.

### Wholesale and Retail Trade

Rail transportation is essential to the wholesale and retail trade sectors, ensuring the efficient movement of consumer goods across long distances. Retailers and wholesalers depend on rail for large-scale inventory distribution, balancing cost-effective transport with the need for supply chain flexibility.

- Rail transportation connects national and international markets, ensuring product availability across the U.S. economy.

- Intermodal rail plays a critical role, seamlessly integrating with trucking and ocean shipping to enhance distribution speed and inventory management including e-commerce goods.
- Lower transportation costs help retailers maintain stable pricing, supporting consumer spending and economic growth.

#### Economic Impact of Rail Transportation on Wholesale & Retail Trade:

- Rail transportation contributed \$16.6 billion in economic activity to the wholesale and retail trade sectors.
- Approximately 60,800 indirect and induced jobs were supported in wholesale and retail trade.
- For every three rail transportation employees, one additional job was created in retail and wholesale trade.

By stabilizing supply chains and lowering distribution costs, freight rail supports both businesses and consumers, ensuring efficient goods movement and economic stability.

#### *Rail Transportation's Role in Post-Pandemic Supply Chain Resilience*

The COVID-19 pandemic exposed vulnerabilities in global and domestic supply chains, disrupting inventory flows, logistics networks, and consumer markets. Supply chain bottlenecks – exacerbated by factory shutdowns, labor shortages, port congestion, and trucking constraints – highlighted the need for resilient, reliable, high-volume transportation solutions.

The rail transportation industry played a crucial role in restoring supply chain stability by:

- Handling record intermodal volumes, allowing businesses to bypass congested ports and overburdened trucking networks.
- Providing large-scale cargo movement, helping retailers rebuild inventory levels and maintain product availability.
- Ensuring supply chain continuity, offering predictable, cost-effective logistics solutions during economic recovery.

## *Rail Transportation as a Supply Chain Stabilizer*

While railroads faced their own pandemic-related challenges, they demonstrated resilience in maintaining freight flows, reinforcing the importance of rail as a backbone of national logistics infrastructure.

## *State-Level Economic Contributions of Freight Rail Transportation*

The economic impact of freight rail extends across the 49 states with freight rail operations, playing a vital role in industrial growth, employment, infrastructure development, and public revenue generation. The scale and nature of rail's economic influence vary by state, depending on key industries, geographic location, and transportation infrastructure. States with strong manufacturing, agriculture, energy production, and port operations rely heavily on rail transportation to move raw materials and finished goods efficiently, while others benefit from rail's ability to connect retailers and businesses to national and global markets.

### *Leading States in Freight Rail Economic Impact*

While rail's impact is nationwide, certain states are key drivers of rail employment and economic activity. The five states with the highest freight rail employment in 2023 — Texas, Illinois, Nebraska, California, and Georgia<sup>18</sup> — accounted for 34% of all U.S. freight rail jobs. Each rail transportation job supports an estimated 3.9 additional jobs in related industries, generating broad economic benefits across multiple sectors. Below are the highlights of the economic contributions of rail in these key states:

### *Texas: A Freight Rail Powerhouse*

Texas leads the nation in freight rail employment, with 14,900 workers supporting the most extensive rail network in the country. The state ranks first in total rail miles (10,251) and second in both the number of freight railroads (55) and overall rail traffic volume. As a major gateway for North American trade, Texas plays a critical role in cross-border rail movements, handling nearly 90% of U.S.-Mexico cross-border trains through four key crossings. The state's rail system moves essential commodities, including chemicals, petroleum products, crushed stone, sand, and grain. Without rail, accommodating this volume would require more than 21 million trucks.<sup>19</sup> In terms of economic contributions, rail activity in Texas generated \$6.8 billion in household income and supported 58,100 additional jobs across industries.<sup>20</sup>

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<sup>18</sup> Three of these 5 states (TX, NE & GA) are headquarter locations for Class I railroads and contribute to higher employment and retirement beneficiaries.

<sup>19</sup> Assumes 18 tons of freight per truck. Based on data from the Surface Transportation Board (Carloads and Tons Across State, <https://www.stb.gov/reports-data/economic-data/>).

<sup>20</sup> To calculate the household income contribution, the following additional statistics were used: Railroad employees receive average annual wages of \$108,200 per employee. In 2023, there were 40,300 railroad retirement beneficiaries who received \$962 million in payments. According to the BLS,

### *Illinois: The Nation's Rail Hub*

Illinois serves as the central hub of the U.S. freight rail network, with Chicago ranking as the world's single busiest freight rail hub. The state is home to all six Class I railroads, 40 short line railroads, and an extensive network of intermodal terminals and classification yards that facilitate national and international commerce. With 9,900 freight rail employees statewide, Illinois moves vast quantities of intermodal shipments, grain, and coal.

Approximately one in every four U.S. freight trains passes through or near Chicago, reinforcing its role as a key logistics center. The rail infrastructure in Illinois is so vital that without it, more than 23 million trucks would be needed to handle the same freight volume. In 2023, rail activity in Illinois contributed \$4.7 billion in household income and supported 38,600 additional jobs across various industries.

### *Nebraska: A Rail-Driven Agricultural Economy*

Despite ranking 37th in U.S. population, Nebraska is the third-largest rail employment state, demonstrating the essential role of freight rail in supporting the Midwest's agricultural economy. The state employs 8,200 freight rail workers, and over 50% of its originated carloads consist of farm and food products, including grain, soybeans, and ethanol bound for export markets. Nebraska's rail system plays a crucial role in ensuring U.S. agricultural products remain competitive globally.

The scale of freight moved by rail in Nebraska is so significant that shifting it to trucks would require more than 17 million additional vehicles. The economic contributions of rail in the state include \$3.2 billion in household income and 32,000 additional jobs supported in agriculture, logistics, and other industries.

### *California: A Global Trade Leader*

As a key rail gateway for international trade, California links the U.S. to global markets via its West Coast ports. With 6,900 freight rail employees, the state plays a pivotal role in moving intermodal containers, consumer goods, food products, and chemicals. Rail networks in California support major ports such as Los Angeles, Long Beach, and Oakland, ensuring seamless connectivity between ocean shipping, trucking, and inland distribution centers.

The efficiency of rail transport significantly alleviates congestion on the state's highways — without rail, handling the same freight volume would require more than 8 million additional trucks. In 2023, freight rail in California generated \$3.7 billion in household income and supported 26,900 additional jobs across multiple sectors.

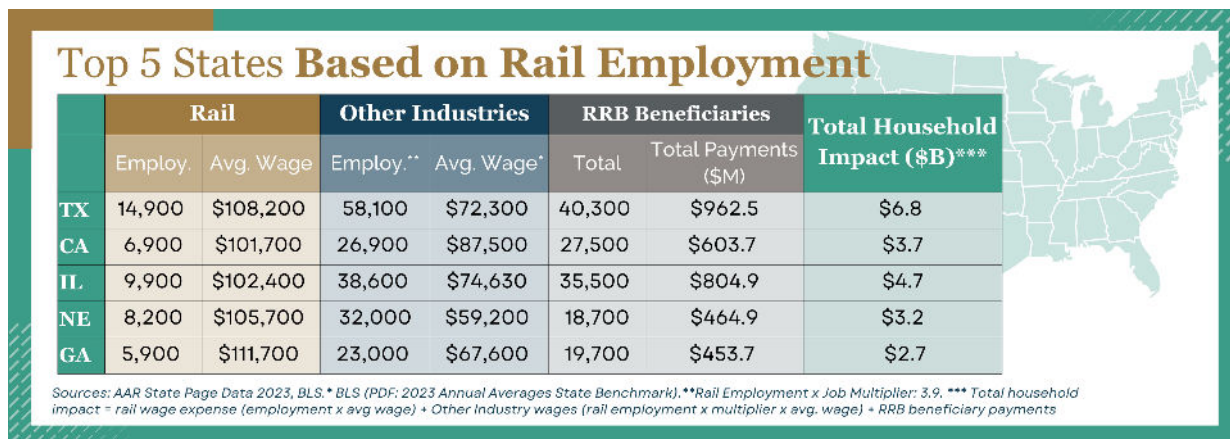
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*the annual wage per employee in Texas was \$72,300. BLS data come from the [Employment and Wages Data Viewer \(All Counties in a State, One industry\)](#); filtered on 2023, annual averages, total, all ownerships.*

### Georgia: A Growing Rail Economy

Georgia’s strategic location in the Southeast makes it a critical corridor for both intermodal and bulk freight movements, particularly with the presence of the Port of Savannah — one of the nation’s busiest container ports. The state employs 5,900 freight rail workers and moves high volumes of intermodal containers, crushed stone, sand, and coal, supporting both manufacturing and energy production. Without rail, nearly 9 million trucks would be needed to transport Georgia’s annual rail freight volume. Rail activity in the state contributed \$2.7 billion in household income and supported 23,000 additional jobs in manufacturing, logistics, and trade.

These five states illustrate rail’s essential role in connecting industries, moving goods efficiently, and sustaining high-quality jobs across the economy. For further details on state-specific rail employment, commodity flows, and infrastructure, refer to the appendix or the AAR’s state fact sheets available on [AAR’s website](#).



**Figure 5: State Impact by Employment**

### Public Benefits: Safety, Environmental, and Infrastructure Efficiency

The societal benefits of freight rail further underscore its critical role in economic sustainability, environmental efficiency, and infrastructure optimization. By reducing fuel consumption, greenhouse gas emissions, highway congestion, and public infrastructure costs, rail transportation enhances the resilience and sustainability of the U.S. freight network.

#### Fuel Efficiency and Emissions Reduction

Freight rail is the most fuel-efficient mode of land-based freight transportation, significantly outperforming trucking in energy efficiency and environmental impact. On average, railroads:

- Are 3 to 4 times more fuel-efficient than trucks, on average.

- Move one ton of freight nearly 500 miles on a single gallon of fuel, on average.
- Reduce greenhouse gas emissions by up to 75% compared to trucking, as emissions are directly tied to fuel consumption.

These environmental advantages have continued to improve over time due to advancements in locomotive technology, fuel management systems, operational efficiency, and emissions reduction initiatives. Railroads have made substantial investments in cleaner, more efficient engines and optimized logistics planning, further minimizing their carbon footprint. The industry continues to invest heavily in research initiatives to further enhance the sustainability and resilience of their operations.

Given the growing emphasis on corporate sustainability goals and regulatory efforts to reduce transportation emissions, rail offers businesses a more environmentally friendly alternative to long-haul trucking.

### Reducing Highway Congestion and Public Infrastructure Costs

Freight rail plays a critical role in alleviating highway congestion and reducing the burden on publicly funded infrastructure. Since a single train can replace several hundred trucks, railroads significantly decrease the strain on the nation's highways and bridges. This reduces:

- **Traffic Congestion:** Freeing up roadway capacity for passenger vehicles and short-haul freight.
- **Roadway Maintenance Costs:** Limiting wear and tear on highways, which are primarily funded by taxpayer dollars.
- **Land Use Demands:** A single railroad track can carry as much freight as multiple highway lanes, preserving space for other infrastructure needs and environmental conservation.<sup>21</sup>

If the current volume of rail freight were shifted to trucks, it would require an estimated 80 million additional truck trips. And since the average length of haul for a rail movement is approximately 1,000 miles, those additional trucks would have to travel long distances across the country. This would place immense pressure on the national highway system, requiring untold billions of dollars in additional highway construction and maintenance spending. By diverting long-haul freight from highways, railroads provide a cost-effective solution that benefits both businesses and the public.

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<sup>21</sup> See <https://transportgeography.org/contents/chapter5/rail-transportation-pipelines/rail-road-spatial-performance/>

## Enhancing Safety and Supply Chain Resilience

Railroads significantly improve freight transportation safety:

- Railroads are safer than many other industries, including other transportation modes.
- Railroads reduce the risk of hazardous material spills, as rail transport is subject to strict safety regulations and specialized handling procedures.

Beyond safety benefits, rail also serves as a critical component of supply chain resilience, providing stability and continuity in times of disruption. Freight rail:

- Reduces dependence on highways, ensuring that businesses have an alternative freight mode during fuel shortages, labor disruptions, or natural disasters.
- Provides a steady, high-capacity option that helps businesses mitigate risk, improve reliability, and maintain more predictable delivery schedules.
- Strengthens national security by offering a redundant and secure logistics network for essential goods such as energy products, agricultural commodities, and industrial materials.
- Vital role transporting large quantities of heavy military equipment enabling effective force projection when needed.

By lowering transportation costs, reducing environmental impacts, and enhancing supply chain resilience, rail transportation amplifies the overall productivity and sustainability of the U.S. economy.

## Railroads and International Trade

International trade is a major driver of U.S. economic activity, with rail transportation playing a critical role in facilitating the movement of goods across domestic and global markets. Freight rail serves as a backbone of North American trade, ensuring cost-effective and efficient long-haul transport for a wide range of commodities, including agriculture, energy, chemicals, and manufactured goods. The ability of rail to seamlessly connect inland production hubs to coastal ports and border crossings makes it an essential component of modern supply chains.

In 2023, approximately 38% of all U.S. rail carloads and intermodal units — 11.3 million shipments — were directly tied to international trade.<sup>22</sup> Railroads carried an estimated 543.5 million tons of trade-related freight, representing 33% of total U.S. rail tonnage.<sup>23</sup> These figures underscore the essential role of rail in facilitating exports and imports, ensuring seamless connectivity between domestic industries and global supply chains.

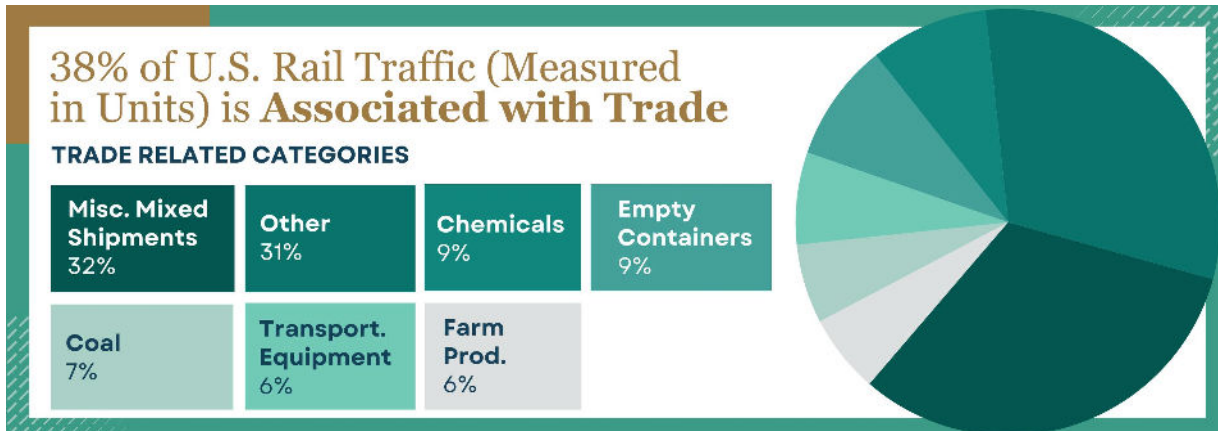
Bulk commodities are a crucial component of U.S. exports. For example, according to the U.S. Energy Information Administration, U.S. coal exports in 2023 were 100 million tons.<sup>24</sup> This analysis indicates that at least 85 million of those tons were shipped by rail. The U.S. Department of Agriculture estimates that close to 40% of U.S. grain exports move by rail. Without rail's ability to transport massive quantities efficiently and at a competitive cost, the supply chains for coal, grain, and other bulk products would be significantly disrupted. Rail provides a critical link between production centers and ports, enabling exporters to compete in global markets. Given the long distances involved and the sheer volume of these shipments, alternative transportation modes would generally be neither practical nor economically viable at scale.

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<sup>22</sup> *Of the 11.3 million rail units associated with trade, 54%, or 6.1 million units, were intermodal containers and trailers, with containers accounting for the vast majority. The domination of containerized freight for rail trade-related movements is not surprising since containers are the primary mode for transporting consumer goods and other high-value shipments in global trade. Their efficiency, standardization, and ability to move seamlessly between ships, trucks, and trains make them the preferred choice for international freight.*

<sup>23</sup> *Using FHWA data, which include rail only (intermodal is excluded), 30% of U.S. rail tonnage was associated with international trade (486 million out of 1.6 billion tons).*

<sup>24</sup> [https://www.eia.gov/totalenergy/data/monthly/pdf/sec6\\_3.pdf](https://www.eia.gov/totalenergy/data/monthly/pdf/sec6_3.pdf)



**Figure 6:** Amount of U.S. rail traffic, measured in units, associated with trade.

The economic impact of trade-related rail shipments is substantial. In 2023, Class I railroads generated \$29.8 billion in revenue — accounting for 37% of total Class I rail revenues — from trade-related shipments.<sup>25</sup>

Without rail’s efficiency in transporting bulk commodities and intermodal freight, the cost and complexity of global trade would significantly increase. If freight indirectly associated with trade were included (for example, grain or animal feed delivered to chicken farms that later export some of their chicken production), the trade-related figures for railroads would be even higher.

### ***Rail’s Contribution to U.S.-Canada and U.S.-Mexico Trade***

North American trade relies heavily on freight rail, with Canada and Mexico accounting for 31% of all U.S. trade-related rail traffic in 2023.<sup>26</sup> The U.S.-Canada rail corridor is a major conduit for automotive components, petroleum products, forest products, and chemicals, reflecting the deep industrial integration between the two economies. Similarly, rail plays an essential role in

<sup>25</sup> Chemicals were the top revenue-generating commodity (approximately 19%, or \$5.8 billion of trade-related rail revenues), followed by miscellaneous mixed shipments (16%, \$4.8 billion, mostly intermodal); transportation equipment (11%, \$3.2 billion); and farm products (11%, \$3.1 billion). Petroleum and coal products contributed 8% (\$2.4 billion) to trade-related rail revenue.

<sup>26</sup> Measured by units, 20% of all rail trade traffic flowed through the U.S.-Canada border. 11% of all rail trade traffic moved across the U.S.-Mexico border, primarily agricultural goods and automotive shipments. Trade with both nations is highly balanced, with most trade with Canada being imported to the U.S. and most trade with Mexico being exported from the U.S.

U.S.-Mexico trade, with significant volumes of automotive products, agricultural goods, and industrial materials moving efficiently across the border.

In 2024, U.S. railroads handled an estimated \$203.1 billion in cross-border trade:

- **\$104.8 billion** in U.S.-Canada trade (66% imports, 34% exports)
- **\$98.3 billion** in U.S.-Mexico trade (65% exports, 35% imports)

These cross-border movements occur through some 23 U.S.-Canada rail crossings and seven U.S.-Mexico rail crossings, ensuring efficient, high-volume freight flows across the continent.<sup>27</sup>

### Other Countries

Rail traffic involving non-North American countries accounted for the largest share of trade-related rail traffic (70%). Highly traded commodities included miscellaneous mixed shipments (41%, mostly imported), empty containers (9%, mostly exported), coal (8%, mostly exported), and chemicals (8%, mostly imported).<sup>28</sup>



Figure 7: Trains by Month

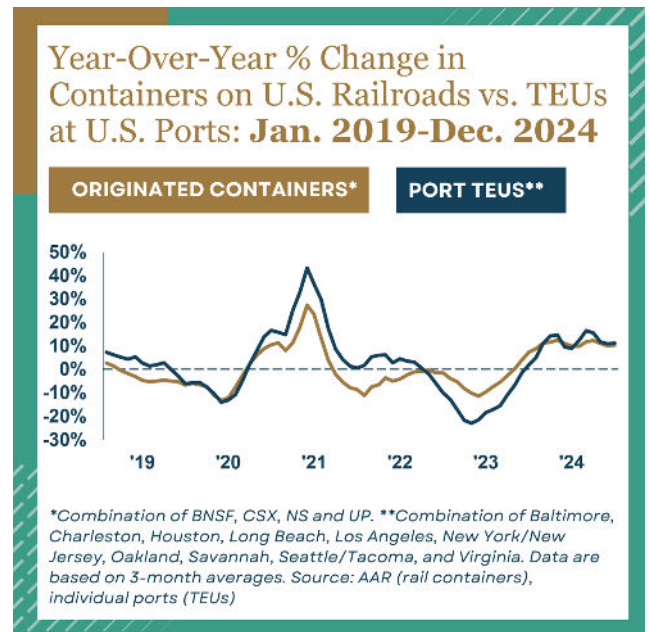


Figure 8: YOY % Change in Containers on U.S. Railroads vs. TEUs at U.S. Ports: Jan. 2019-Dec. 2024

<sup>27</sup> On average, more than 2,500 trains cross into the U.S. from Canada and Mexico each month (imports), demonstrating the high-volume nature of cross-border rail trade. Total cross-border rail traffic (imports and exports) is far higher, reflecting the integrated supply chains between the U.S., Canada, and Mexico. Data from the Bureau of Transportation Statistics.

<sup>28</sup> When looking at tonnage, the commodities with the most tonnage traded in non-North American countries included: coal (22%), chemicals (15%), miscellaneous mixed shipments (14%), farm products (10%), and nonmetallic minerals (6%).

### Rail Connectivity to U.S. Ports and Global Trade

Beyond land borders, freight rail plays a critical role in U.S. maritime trade by facilitating the movement of goods between ports and inland markets. Major U.S. rail-served ports, including Los Angeles, Long Beach, New York/New Jersey, Houston, and Savannah, handle a significant share of U.S. containerized imports and exports. Railroads enable efficient port-to-hinterland connectivity, supporting both bulk and intermodal freight movement.

Intermodal rail, which involves containerized freight seamlessly transferred between rail, ship, and truck, is the dominant mode for trade-related rail shipments. In 2023:

- 54% of trade-related rail traffic moved through U.S. ports and intermodal hubs.
- Empty containers returning to ports accounted for 9% of trade-related rail shipments.

In addition to intermodal freight, rail is indispensable for bulk exports, particularly for agriculture, energy, and chemicals. Major commodity flows include:<sup>29</sup>

- **Chemicals (9% of trade-related traffic):** Includes ethanol, plastics, and industrial chemicals essential for global manufacturing.
- **Coal (7%):** A significant U.S. export, with railroads moving approximately 85% of exported coal to ports.

<sup>29</sup> Some 32% of rail trade-related traffic was categorized as “miscellaneous mixed shipments,” a catch-all term that includes a wide variety of consumer and other goods. When looking at tonnage, the commodities with the most traded tonnage included chemicals (17% of trade-related tonnage), coal (16%), and farm products (10%).

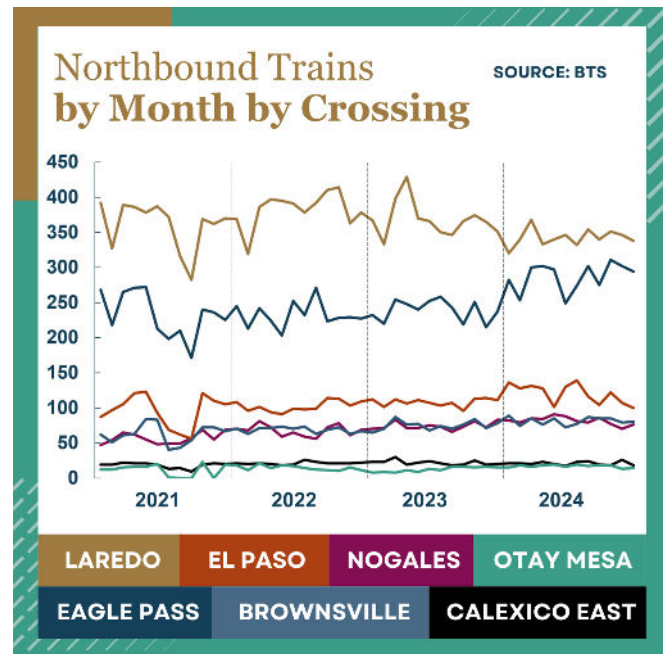


Figure 9: Northbound Trains by Month by Crossing

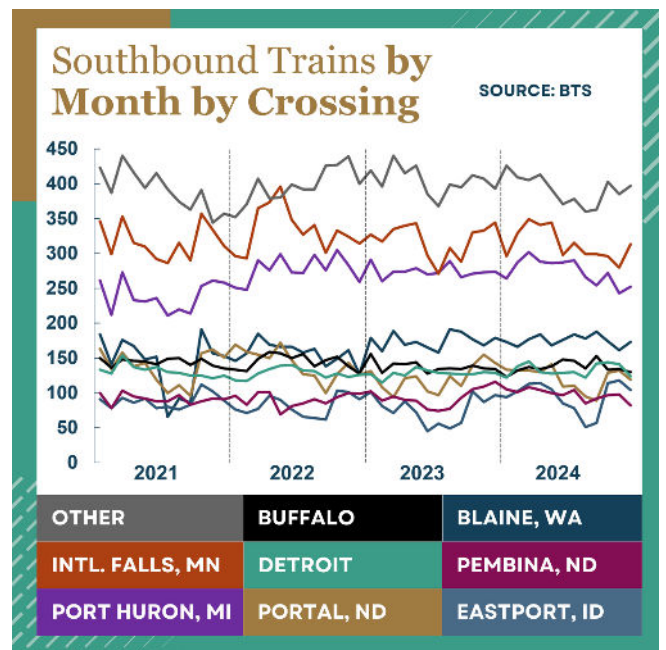


Figure 10: Southbound Trains by Month by Crossing

- **Transportation equipment (6%):** The automotive industry is fully integrated across the U.S., Canada, and Mexico. Rail is essential to the auto industry’s efficient operation.

These shipments are fundamental to U.S. trade competitiveness and show how railroads enable cost-effective exports and ensure global supply chain efficiency.

### *Economic Significance of Trade-Related Rail Activity*

Trade-related rail traffic is a major driver of economic activity, supporting industries that rely on long-distance, high-volume freight transport. In 2023, the economic impact of trade-related rail movements was reflected in:

- \$29.8 billion in revenue for Class I railroads (37% of total freight rail revenue).
- 543.5 million tons of international trade-related rail freight.
- 11.3 million rail shipments directly tied to global commerce.

These figures demonstrate the depth of rail’s integration into U.S. and global supply chains. Without rail’s ability to move goods efficiently, industries such as agriculture, manufacturing, and energy would face higher costs, supply chain disruptions, and reduced international competitiveness.

### *Sustaining and Expanding Rail’s Role in Trade*

As global trade continues to evolve, maintaining and expanding rail capacity, intermodal infrastructure, and cross-border efficiency will be essential. Freight rail investments in intermodal hubs, port rail connections, and logistics technologies will enhance trade competitiveness and ensure seamless freight movement across international markets.

## Conclusion: The Enduring Economic Role of Rail

Rail transportation is not merely a sector within our economy; it is a robust engine that drives economic stability, national competitiveness, and sustainable growth. In 2023, with direct economic output of \$233.4 billion and support for 749,000 jobs, rail proved integral to the strength and resilience of the U.S. economy. As we face the demands of a dynamic global market and the imperative for sustainable development, the strategic importance of rail cannot be overstated.

Railroads not only support high-wage jobs and bolster public and private sector finances through substantial tax contributions, but they also play a critical role in mitigating environmental impact and enhancing the efficiency of our national infrastructure. The reinvestment of \$26.8 billion in infrastructure upgrades underscores the industry's commitment to future-proofing this critical asset.

Looking ahead, as global trade shifts, supply chains evolve, and sustainability becomes more critical, continued investment in rail infrastructure will be crucial. As the U.S. strives to remain at the forefront of global trade and innovation, reinforcing the rail sector is essential for ensuring enduring economic prosperity and environmental stewardship.

# Appendix

2023 AAR State Facts: Employment & Income					
State Name	Freight			RR Retirement	
	Employees*	Wages	Income	Beneficiaries	Benefits
Alabama	2,675	\$100,050	\$145,850	10,400	\$251,883,000
Alaska	594	\$-	\$-	200	\$4,435,000
Arizona	2,455	\$102,640	\$149,620	11,200	\$276,569,000
Arkansas	2,401	\$92,040	\$134,170	11,200	\$264,877,000
California	6,885	\$101,730	\$148,290	26,600	\$621,298,000
Colorado	1,770	\$98,280	\$143,270	9,700	\$242,459,000
Connecticut	119	\$78,580	\$114,550	2,900	\$86,780,000
Delaware	142	\$95,300	\$138,920	3,100	\$78,872,000
District of Columbia	8	\$-	\$-	400	\$8,916,000
Florida	3,542	\$112,400	\$163,850	33,200	\$817,805,000
Georgia	5,891	\$111,690	\$162,810	19,300	\$472,966,000
Hawaii	2	\$-	\$-	200	\$4,379,000
Idaho	1,197	\$89,440	\$130,380	5,200	\$127,562,000
Illinois	9,875	\$102,370	\$149,230	34,400	\$834,039,000
Indiana	4,779	\$105,880	\$154,340	16,700	\$404,367,000
Iowa	2,696	\$98,520	\$143,620	10,000	\$241,941,000
Kansas	4,273	\$104,630	\$152,520	15,000	\$373,628,000
Kentucky	2,445	\$100,130	\$145,960	14,900	\$348,831,000
Louisiana	2,506	\$108,840	\$158,660	8,100	\$196,209,000
Maine	419	\$85,500	\$124,640	2,400	\$52,412,000
Maryland	728	\$99,380	\$144,870	9,400	\$226,253,000
Massachusetts	538	\$87,300	\$127,260	4,300	\$107,517,000
Michigan	2,382	\$95,940	\$139,850	13,400	\$317,237,000
Minnesota	3,659	\$104,660	\$152,570	14,200	\$339,551,000
Mississippi	1,812	\$105,720	\$154,110	5,900	\$139,235,000
Missouri	5,652	\$103,330	\$150,630	21,200	\$508,005,000
Montana	2,697	\$97,440	\$142,040	7,000	\$174,051,000
Nebraska	8,183	\$105,720	\$154,110	18,400	\$489,659,000
Nevada	518	\$102,470	\$149,370	3,500	\$83,087,000
New Hampshire	145	\$86,610	\$126,250	1,000	\$25,156,000
New Jersey	861	\$97,090	\$141,530	9,700	\$271,328,000
New Mexico	1,409	\$100,400	\$146,360	4,400	\$108,295,000
New York	2,266	\$98,700	\$143,880	22,000	\$586,390,000
North Carolina	1,657	\$101,240	\$147,580	11,100	\$256,850,000
North Dakota	1,469	\$107,370	\$156,520	3,700	\$93,088,000
Ohio	4,807	\$102,930	\$150,040	23,300	\$543,296,000
Oklahoma	1,788	\$94,700	\$138,050	5,400	\$129,800,000
Oregon	1,328	\$86,710	\$126,400	8,000	\$188,767,000
Pennsylvania	4,371	\$96,380	\$140,500	31,600	\$772,733,000
Rhode Island	21	\$96,920	\$141,280	700	\$18,904,000
South Carolina	1,294	\$102,930	\$150,040	8,300	\$201,928,000
South Dakota	656	\$93,000	\$135,570	2,200	\$53,530,000
Tennessee	2,917	\$101,160	\$147,460	13,500	\$325,356,000
Texas	14,903	\$108,220	\$157,760	39,600	\$1,008,744,000
Utah	1,127	\$93,570	\$136,400	5,400	\$136,463,000
Vermont	162	\$67,920	\$99,010	700	\$14,582,000
Virginia	2,476	\$106,530	\$155,290	16,900	\$416,328,000
Washington	3,468	\$99,930	\$145,670	11,300	\$275,597,000
West Virginia	1,591	\$94,730	\$138,090	8,100	\$197,878,000
Wisconsin	2,690	\$104,050	\$151,680	10,400	\$244,233,000
Wyoming	1,534	\$97,900	\$142,710	4,700	\$125,061,000
United States	133,786	\$102,670	\$149,660	574,400	\$14,089,130,000

Notes: \*Freight = Class I and Freight RRs (Class II & III). Do not include passenger rail, associations, labor unions and suppliers. Anything with "\$-" means data is not available.

## *Appendix A: Methodology for Quantifying Trade-Related Rail Volumes*

### *Identifying Trade-Related Rail Traffic*

To accurately estimate the share of U.S. rail traffic directly tied to international trade, this analysis relied on a proprietary rail traffic database covering freight movements across more than 460 railroads, representing virtually all rail activity in the United States. This dataset provides granular details, including:

- **Origin & Termination Locations:** Identifying whether shipments originate from or are destined for international markets.
- **Commodity Classification:** Mapping rail shipments to specific industry categories to assess the composition of trade flows.
- **Railcar & Container Movements:** Tracking intermodal and carload shipments to determine patterns associated with import and export activities.

Since trade-related shipments are not explicitly labeled in rail waybill data, the study applied a proxy-based classification approach to systematically identify international freight movements. The criteria used included:

- **Border Crossings:** Rail shipments entering or exiting the U.S. at land border crossings with Canada and Mexico.
- **Customs Data:** Shipments containing customs documentation, indicating international trade.
- **ISO Container Identification:** Intermodal shipments in standardized ISO containers, which are primarily used in global trade.<sup>30</sup>
- **Port-connected Movements:** Rail traffic that originates from or terminates at major U.S. ports, signifying import/export activity.

To ensure robustness and consistency, the trade-related rail estimates were validated against Freight Analysis Framework<sup>31</sup> (FAF) data from the Bureau of Transportation Statistics (BTS). The comparison showed a high degree of alignment between FAF estimates and propriety rail data, confirming the accuracy of the classification methodology.<sup>32</sup>

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<sup>30</sup> In the context of shipping containers, an ISO number refers to the ISO 6346 standard, which defines the unique identification system for intermodal containers. This standardized system ensures consistency and traceability across global shipping networks.

<sup>31</sup> See <https://faf.ornl.gov/faf5/>. FAF describes itself as “a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation.”

<sup>32</sup> One important difference between AAR’s data and FAF is FAF’s rail numbers exclude intermodal.

## **Appendix B: Detailed U.S.-Canada-Mexico Trade Flows (2023)**

In 2023, an estimated 38% of total U.S. rail traffic (approximately 11.3 million rail units) was associated with international trade. The distribution of trade-related rail traffic was as follows:

- **U.S.-Canada Border Crossings:** 20% (2.2 million units)
- **U.S.-Mexico Border Crossings:** 11% (1.2 million units)
- **Other International Trade Movements (primarily port-related traffic):** 70% (7.8 million units)<sup>33</sup>

### **U.S.-Canada Rail Trade (2023)**

Rail remains a key mode of transportation for U.S.-Canada trade, with imports accounting for 61% of trade-related rail units and exports comprising 39%. The commodity composition of rail shipments between the U.S. and Canada was as follows:

- **Miscellaneous Mixed Shipments (20%):** Primarily U.S. imports, largely intermodal containerized goods.
- **Chemicals (16%):** Mostly imports from Canada, including industrial chemicals, plastics, and fertilizers.<sup>34</sup>
- **Petroleum & Coal Products (10%):** Predominately crude oil and refined petroleum transported into the U.S. from Canada.
- **Empty Containers (9%):** Largely U.S. exports, reflecting the cyclical nature of rail traffic across the border.
- **Transportation Equipment (8%):** Primarily imports from Canada, mainly motor vehicles and automotive parts.

When analyzed by tonnage, the leading trade-related commodities moving by rail between the U.S. and Canada in 2023 were:

- **Chemicals:** 24% of trade-related rail tonnage
- **Petroleum & Coal Products:** 13%, reflecting the strong energy trade link between the two countries.
- **Coal:** 10%, a key bulk commodity moving northbound.
- **Lumber & Wood:** 9%, critical for U.S. construction markets.
- **Food Products:** 8%, including processed foods and agricultural commodities.

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<sup>33</sup> Numbers don't add up to exactly 100% due to rounding. The top trading partners with the U.S. in 2023, other than Mexico and Canada, were: China, Germany, Japan, South Korea, and Taiwan ([U.S. International Trade Administration Two-Way Trade](#), accessed February 21, 2025).

<sup>34</sup> Chemicals include products such as industrial chemicals (e.g., sodium and potassium compounds) and plastics & synthetic resins.

### *U.S.-Mexico Rail Trade (2023)*

In contrast to U.S.-Canada trade, U.S. exports dominate rail traffic with Mexico, accounting for 60% of trade-related rail units in 2023. Key commodity categories transported via rail included:

- **Transportation equipment (22%):** Primarily imports from Mexico, consisting mainly of automobiles and auto parts.
- **Farm Products (14%):** Mostly U.S. exports, including grain and agricultural products moving southbound.
- **Food Products (13%):** Predominantly imports, reflecting the strong food supply chain integration between Mexico and the U.S.
- **Empty Containers (9%):** Mainly exports from the U.S., mirroring trade imbalances similar to Canada.
- **Primary Metal Products (8%):** A mix of imports and exports, including steel and aluminum components.

By tonnage, the most significant commodities moving between the U.S. and Mexico via rail in 2023 were:

- **Farm Products:** 26%, dominated by U.S. grain exports to Mexico.
- **Food Products:** 17%, reflecting Mexico's role as a key exporter of perishable goods.
- **Primary Metal Products:** 12%, including raw and semi-finished industrial materials.
- **Chemicals:** 11%, covering industrial chemicals, plastics, and fertilizers.
- **Petroleum & Coal Products:** 9%, driven by cross-border energy trade.