

**THE U.S. PRODUCER PRICE INDEX
FOR
LINE-HAUL RAILROADS
(NAICS 482111)**

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*The views expressed are those of the author and do not reflect the policies of the U.S. Bureau of Labor Statistics (BLS) views of other BLS staff members.

A. Industry Output

The U.S. Bureau of Labor Statistics (BLS) has been tracking the transaction prices of the domestic railroad industry since the initial publication of the Producer Price Index (PPI) for Railroads, Line-Haul Operating in 1969. Currently, BLS publishes an updated PPI for Line-Haul Railroads (NAICS 482111) according to the classification in the current *North American Industry Classification System*. By definition, it includes "...establishments known as line-haul railroads primarily engaged in operating railroads for the transport of passengers and/or cargo over a long distance within a rail network. These establishments provide for the intercity movement of trains between the terminals and stations on main and branch lines of a line-haul rail network, except for local switching services." Establishments operating short-line railroads, commuter rail systems, urban rapid transit, sightseeing trains and switching and terminal facilities as core businesses were classified in other related industries. The NAICS 482111 definition included only line-haul railroads that operated over a long distance. Therefore, this industry includes regional railroads, which operate a rail network within a specific contiguous geographical area (not less than 350 miles of road).

Today, most of the major domestic railroads are privately-owned and operated, with the exception of the intercity passenger railroad, which is wholly-owned and subsidized by the United States Government. For the most part, the industry has been economically deregulated since 1980; however the U.S. Surface Transportation Board (STB) still has regulatory authority to determine price reasonableness on the rail transportation of certain commodities and to ensure market competitiveness. Despite the partial regulatory oversight, freight railroads, which are both capital and labor intensive, are vertically integrated. Also, for statistical purposes, the STB classifies railroads by their annual gross operating revenue: Class I railroads generate approximately \$250 million or more per year; Class II \$20 to \$250 million; and Class III \$20 million or less.

The primary service output of the domestic freight railroads is the transportation of a broad range of raw materials, intermediate and finished goods on demand over a rail network from origin to destination. Accessorial and secondary services may include drayage, detention, spotting, weighting, transloading, storage, and some switching and terminal operations. The accessorial and secondary service charges can be bundled and charged to the customer in a single transaction price or billed separately.

Typical buyers (shippers) of rail freight services are farmers, miners, foresters, public utility companies, local, state and federal governments, non-profit institutions and various other commercial entities. The service delivery process encompasses: (1) the formal notification of intent to hire a prospective railroad company; (2) the negotiation and acceptance of the terms and conditions of the rail freight move; (3) and the technical coordination and arrangements for the actual shipment and monitoring of the freight to destination. The agreed upon price authority, which can be in the form of a tariff, confidential contract or an exempt quote, specifies all the primary, secondary and accessorial charges associated with the freight move. Some rail freight transactions for

large volume, repetitive shipments such as coal and transportation equipment, are usually arranged well in advance.

The primary service output of the passenger railroads is the mass transportation of individuals or groups of individuals intercity for business and leisure travel via a rail network. Other related services and amenities include sleeping accommodations, dining facilities, conference tables, deluxe seating and video entertainment. Usually, these additional services are bundled in the ticket price. However, some services, such as the simultaneous transportation of an automobile (the auto train) are billed separately to the customer. The customer makes travel arrangements either directly or indirectly through a travel agent, by telephone or electronically via the internet. A ticket agent determines the service class, origin, destination, type of travel, train availability, amenities and special accommodations required. Once the travel terms and arrangements have been accepted by the customer, a “ticket”, which is essentially an implied contract is provided to the customer as proof of the travel itinerary and the requisite fare.

B. Index Methodology

The PPI Index for line-haul railroads is an output index, which measures the changes in prices received by the producers (the sampled railroad companies) from month-to-month. The publication structure in the current NAICS 482111, Line-Haul Railroad index reflects the various market segments in the railroad industry.

It comprises three cell indexes representing **Rail transportation, freight (Carload)**, **Rail transportation freight (Intermodal)** and **Rail transportation, passenger**. Prior to July 2005, the **Rail transportation, freight (Carload)** subaggregate index was disaggregated by thirteen different types of commodity groups. Additionally, the lower cells that aggregated to **Rail transportation, passenger** included the **First class, Coach and Coach, discount** service classes. For the current sample, it was determined that time series continuity could be achieved by collapsing all the lower cells of the **Rail transportation, freight (Carload)** and publishing only at the aggregate level. The **Rail transportation, passenger** cell index now has two lower cells including **Coach service class** and **All other service classes**. Following is the current PPI for this industry.

PIR NAICS CODE	NAICS TITLE
482111	Line-haul railroads
482111P	Primary services
4821111	Rail transportation, freight (Carload)
4821112	Rail transportation, freight (Intermodal)
4821113	Rail transportation, passenger
482111306	Coach service class
482111307	All other service classes
482111SM	Other receipts

The railroad industry is segmented overall by rail freight and rail passenger transportation services. There are two major market segments on the rail freight side including carload and intermodal transportation, which are primarily distinguished by the number of types of commodities, the mode of transportation and the type of equipment (rolling stock) used in a single transport.

Carload freight moves involve the transportation of one type of commodity utilizing various types of railroad-owned/leased and privately-owned/leased equipment via a single mode of transportation (e.g. rail) from point of origin to point of destination. On the other hand, intermodal freight moves involve the transport of truck trailers and containers containing mixed shipments using two or more modes of transportation including rail plus trucks and/or ocean shipping. Carload and intermodal rail freight traffic and prices are tracked and calculated separately. Intermodal is currently the fastest growing market segment of the industry.

The net transaction prices, i.e., the base freight charge plus any accessorial charges, and surcharges, including fuel surcharges, minus discounts are used to measure the price changes over time for rail freight movements. Taxes and any fees that do not accrue to the producer's revenue are excluded. If a freight move is indirect, i.e., it involves more than one carrier or mode of transportation, we capture only the freight charges of the railroad that we are pricing for that particular freight move.

The price authority document used by the freight railroad companies provides a detailed account of all the base freight charges, surcharges, accessorial and fuel surcharges associated with a specific rail freight move. Typically, there are three types of price authorities, namely: the contract, the quote and the railroad tariff. The contract is a negotiated agreement between the carrier and the shipper, which includes all the terms and conditions of the rail freight movement. Contracts, which are strictly confidential, cover both the shipment of commodities regulated by the U.S. Surface Transportation Board and (exempt) non-regulated commodities. Quotes are pricing documents that cover only non-regulated commodities and they can be issued either as a confidential pricing and shipping agreement or a public pricing document. A tariff (price list) is a pricing document that exclusively covers regulated rail shipments. It includes all the terms and conditions associated with one or more rail freight moves.

The pricing factors, which are normally held constant, include the type of railroad/private-owned and leased equipment (rolling stock) used in the freight move, the type of commodity shipped, the price authority, the number of carloads, shipment weight (if price determining), the unit of measure, the type of price, points of origin and destination and the route (i.e., direct or indirect). Historically, the price trends for rail freight contract prices and the prices listed in the tariffs do not move in tandem.

Both tariff and contract transaction prices are captured for the PPI for Line-Haul Railroads. For example, if the freight railroad is paid a contract rate for a freight move tracked in the PPI sample, then the contract rate is collected as the transaction price. Similarly, if the freight actually moves under a tariff, then the price listed in the tariff is

collected as the transaction price. Prices listed in the tariff are made available to the public while contracts and some quotes are strictly confidential. Currently, most of the domestic rail freight traffic moves under confidential contracts rather than tariffs.

The ticket price for an adult, one-way fare is used to track the price changes for passenger rail transportation. The pricing factors are the type of rail fare, the type of train, type of travel (i.e., business, leisure, frequent), reservation status; rail fare level (time of travel), point of origin and destination, type of accommodations plus any surcharges minus discounts. Where or how the ticket is purchased is not price determining. Peak and off-peak season pricing greatly affects the price movement. The charges for passenger rail transportation are publicly available in various formats including company brochures, travel agent publications and the internet. However, the transaction prices captured for this industry are collected directly from the passenger rail providers.

C. Sampling and Weights

A randomized statistical sampling technique, i.e., probability proportional-to-size, was used to select the sample units (railroad companies) and the sample quotes (individual transactions) to be included in the updated PPI for Line-haul Railroads. The first challenge was identifying a useful frame. The frame that was selected included comprehensive and up-to-date employment and revenue data for the universe of railroad companies doing business in the United States. The frame refinement process involved electronically clustering the frame, culling frame units that were out-of-scope or out-of-business and ranking the major producers by either employment or revenue. Clustering was important because multiple frame records with the same name could be combined and sampled as a single unit. This ensured that the subsequent item allocation in the final sample was efficient, minimized reporter burden and ultimately favored a high response rate.

At first, there was an attempt to explicitly stratify the entire frame by revenue but this approach was discarded because some of the revenue variable data was stated in broad ranges for a few of the frame records. Implicit stratification by employment size wasn't feasible either because there was insufficient employment data for some of the railroads. Ultimately, the industry was explicitly stratified by type of railroad class resulting in two stratum; one for Class I railroads and the second for all other line-haul railroads. The Class I railroads were then randomly selected proportional to revenue and the other line-haul railroads were randomly selected based on employment size.

The next challenge was to allocate a representative mix of items for each sampled unit in a highly concentrated industry responsible for thousands of rail freight transactions, which transverse most major industries in the country, and hundreds of rail passenger transactions per month. The quotes were allocated among each sample unit based on revenue size. Because of the number of transactions involved, the item allocation was unusually high.

Normally, the industry weights for the PPI are based on the current made in industry turnover or revenue data published by the U.S. Census Bureau. Historically, the U.S. Census Bureau has never collected employment and revenue information on the domestic railroad industry. Consequently, the weights at the index level were calculated by aggregating the revenue data from various alternate established sources. The distribution of the weights between the freight and passenger cell indexes was based on their relative proportion of the aggregate's derived turnover from alternate sources as well. The turnover for the carload and intermodal cell indexes was calculated from the total freight revenue for each during a specified time period.

D. Issues in Maintaining Constant Quality

This industry is highly concentrated and is continuing to experience consolidation. Reporter burden issues arose as a result, which in turn, contributed to some deterioration in the index during the previous samples. A recurring issue is how do we accurately measure or factor out obscure changes in the service prices provided? Quality adjustments in this industry can be elusive since many of the changes in the service costs are blurred, not available or not quantifiable. For example, when the capacity of a freight carload changes or shipments are mixed but the price remains the same, the service is no longer directly comparable. If there is no price change and the service was directly compared, depending on which direction the carload capacity changes, it could create either an upward or downward bias in the index.

Additionally, when there is a change in a pricing factor and a substitute must be obtained, e.g., a freight move is discontinued and a replacement is selected, then the overlap method is used whenever possible. The explicit quality adjustment method is used, when there is a quantifiable change in the price basis such as a change in the unit of measure, from per "car" to per "net ton." If it is not possible to overlap and there is insufficient data for quality adjustment, then a price change is not shown for that item.

E. Results and Price Measurement Challenges

Sampling for the unique items to be collected was somewhat cumbersome and time consuming because of the high item allocation, the multiplicity of commodities and the innumerable number of transactions per respondent. An *Industry Specific Disaggregation Worksheet (ISDWS)* was used to spread items (using company-specific revenue weights) between carload, intermodal and passenger transactions. The next sampling step for both carload and intermodal services was to spread the items across the various commodity groups. This comprehensive and exhaustive sampling process resulted in a meaningful index that includes a representative mix of the raw materials and finished products normally shipped by the line-haul railroads.

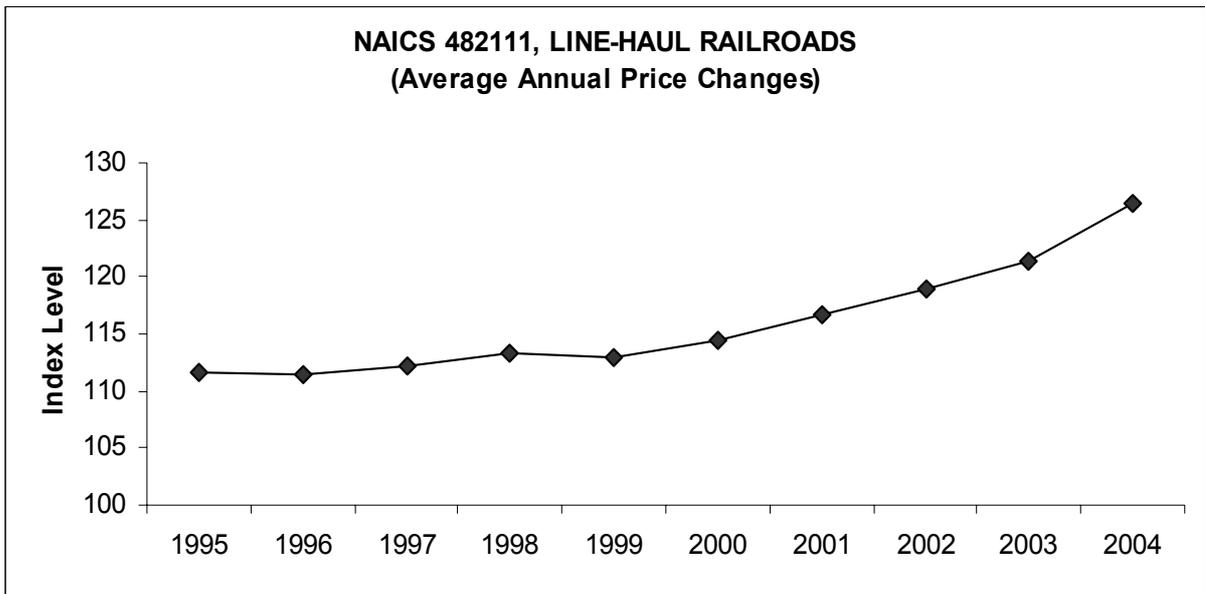
Standard repricing procedures are used for capturing and tracking the transaction prices on a monthly basis for those regional freight railroads, which specialize in only one or two commodity groups. However the major producers, who are responsible for rail freight traffic in nineteen different commodity groups, presented a challenge in tracking

their base freight and ancillary charges. Subsequently, the measurement of the large volume of month-to-month price changes was facilitated by the use of alternate pricing transmission methods (i.e., via Excel spreadsheets, fax and e-mail) as stipulated by the major railroad companies.

As mentioned previously, confidential contract rates are prevalent in this industry. Probably, the greatest price measurement challenge was convincing the respondents to provide and continuously price confidential contracts and quotes. We have been successful in capturing and tracking the confidential transaction prices in domestic rail freight transportation because of the U.S. BLS' historically strict adherence to and enforcement of the *Confidential Information Protection and Statistical Efficiency Act*. A copy of this Act, which was provided to the respondent prior to data collection, contributed to the respondents' willingness to provide confidential data.

Both railroad freight and passenger transportation prices have been relatively stable over the last ten years with the fastest growth in prices occurring since 2003 in the railroad freight segment. There are several factors that have contributed to the increasing pricing power of the domestic freight railroads including: (1) partial deregulation of the industry, which limited the regulation of railroad rates; (2) the mergers and acquisitions of the Class I railroads during the 1990s, which provided some freight railroads monopolistic power in non-competitive lanes; (3) continuous innovations and capital investments, which are increasing efficiencies and improving rail services across market segments; (4) increased demand for intermodal transportation; (5), the ability to pass on the increased cost of diesel fuel and other surcharges to their customers; and (6) a robust economy.

The following graph illustrates the average annual price changes in this industry as reflected in the BLS Producer Price Index for the ten year period between 1995 and 2004. It indicates that the aggregate index increased on average one percent per year between 1995 through 2002. However, the index increased on average 4.2 percent between 2003 and 2004 driven primarily by the increased demand for rail freight transportation. The intermodal cell index increased on average 1.0 percent between 1997 and 2004 while passenger rail transportation appreciated on average 1.3 percent during this same period.



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Not seasonally adjusted

Industry: Line-haul railroads

Base Date: December 1984

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