

BLS Expanding the Publication Structure of PPIs for Railroad Transportation using administrative data

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Producer Price Index

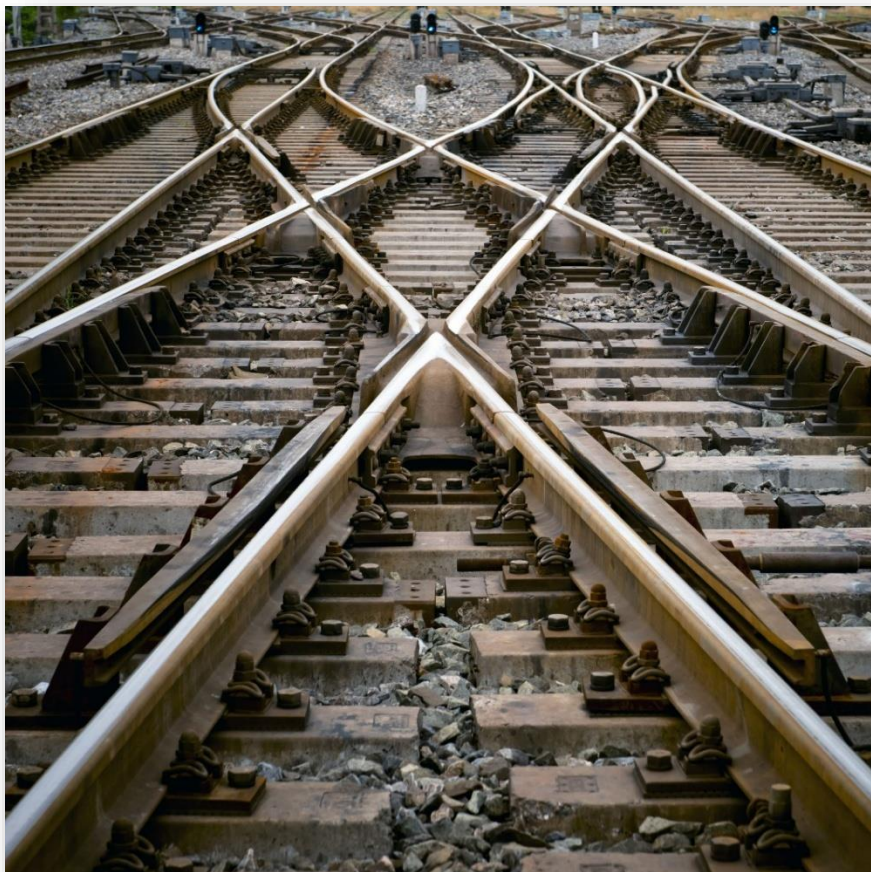
U.S. Bureau of Labor Statistics

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Presentation Overview



Survey data use

Alternative data

Distance Imputation

Tornqvist Lower-level price index calculation

Estimation techniques due to availability of data

Expanded publication structure

Survey Data (1969- January 2025)



Limited publication structure

Continued burden for reporters

Modified Laspeyres formula

Matched model pricing

Matched model

Goal: Measure price change for a unique item



Steps (at a high level):



1. Select a sample of Railroad companies
2. Select a unique freight transportation service
3. Track price change for the same service by a particular provider over time
4. Calculate price indexes

Historical Publication Structure

Table 11. Producer price indexes for net output of selected industries and their products, not seasonally adjusted — Continued
[January 2025]

Title ¹	Industry code	Product code	Index base	Unadjusted index ²				
				Sept. 2024	Oct. 2024 ^P	Nov. 2024 ^P	Dec. 2024 ^P	Jan. 2025 ^P
Line-haul railroads.....	482111		12/84	265.106	264.717	264.454	264.678	268.295
Primary services.....		482111-P	12/84	265.106	264.717	264.454	264.678	268.295
Freight rail transportation.....		482111-4	05/15	132.666	132.466	132.331	132.446	134.307
Carload freight rail transportation.....		482111-411	12/96	245.116	245.682	245.063	245.434	249.372
Intermodal freight rail transportation.....		482111-412	12/96	206.948	203.185	204.334	203.933	204.987

BLS Commissioner's Order: Non-Traditional Data Acquisition

■ The Ask:

- ▶ Find and use alternative data sources and methods for samples and monthly prices in a responsible manner.
- ▶ Comply with data security and confidentiality requirements while conserving resources

■ Success:

- ▶ BLS now uses administrative data from the Surface Transportation Board to publish monthly PPIs, at no cost to BLS. PPI implemented this change in February of 2025.
- ▶ Overhead costs formerly associated with traditional collection of survey data used can be reallocated.
- ▶ Reduced PPI respondent burden.



Alternative Data



Monthly and Quarterly Data

Data received on average 42 days after reference month

~160,000 monthly rail movements – 84 fields

Does not include distance measurements

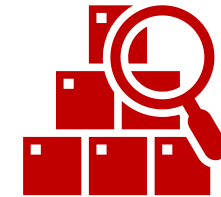


Annual Data

Data received one year and three months after reference year

~2,000,000 rail movements – 200 fields

Includes distance measurements



All Data

All 7 US Class 1 RRs

~15 US Class 2 RRs

Combination of files allows calculation of revenue per ton mile

Calculating Revenue per ton mile

$$\text{Revenue per ton mile} = \frac{\text{Freight Revenue}}{\text{Billed Weight in Tons} \times \text{Total Distance}}$$

Monthly and Quarterly files

- Timely but no measure of distance
- Total Freight Revenue including fuel surcharges
- Billed Weight in Tons

Annual files

- Not timely
- Total Distance in Miles



Distance Imputation



Annual files have distance but monthly and quarterly do not.



Impute distance for monthly and quarterly files using annual files



Match like variables according to hierarchical program.

Distance Imputation: Hierarchal Program Details

Matching Variables	Year	Origin and Destination SPLC Pair	Railroad Company	Commodity Transported
Group 1	Included	Included	Included	Included
Group 2	Included	Included	Included	Not included
Group 3	Included	Included	Not included	Included
Group 4	Included	Included	Not included	Not included

SPLC= Standard Point Location Code

- **Imputation Results:** We compared the imputed distances with the distances from the STB annual data
 - ▶ For 57 percent of the shipments, the error of the imputed distances is less than 1% of the STB assigned distances.
 - ▶ For 87 percent of the shipments, the error of the imputed distances is less than 10% of the STB assigned distances.

Distance Imputation Success Rates

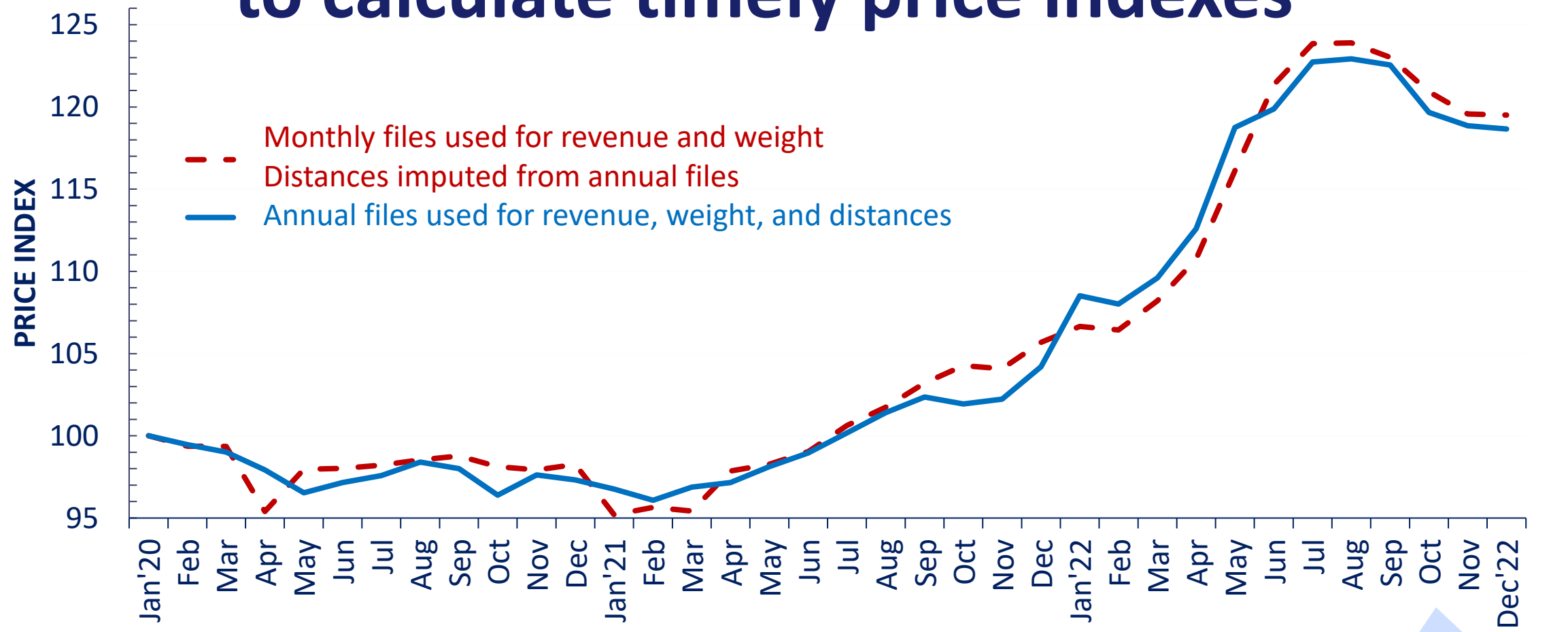
■ Monthly data

	Without Interchanges	With Interchanges
2019	94.8%	46.6%
2020	96%	88.7%
2021	96.3%	84.6%
2022	96%	84.1%
2023	94.4%	83.6%

■ Quarterly data

	Without Interchanges	With Interchanges
2019	96.1%	88.7%
2020	96%	89.1%
2021	96.3%	85.2%
2022	96%	84.8%
2023	94.4%	84.4%

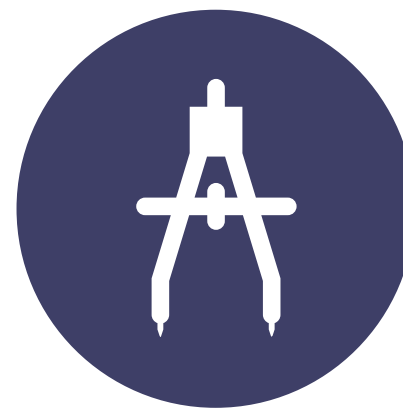
Validating use of Distance Imputation to calculate timely price indexes



Index Calculation Method



Tornqvist calculations at
lowest level



Modified Laspeyres
calculations at all other levels

For more information on substitution effects:

[Measuring the substitution effect in Producer Price Index goods data: 2002–2016](#)



Tornqvist Calculations: an example using Carload rail transportation of coal (48211141102)

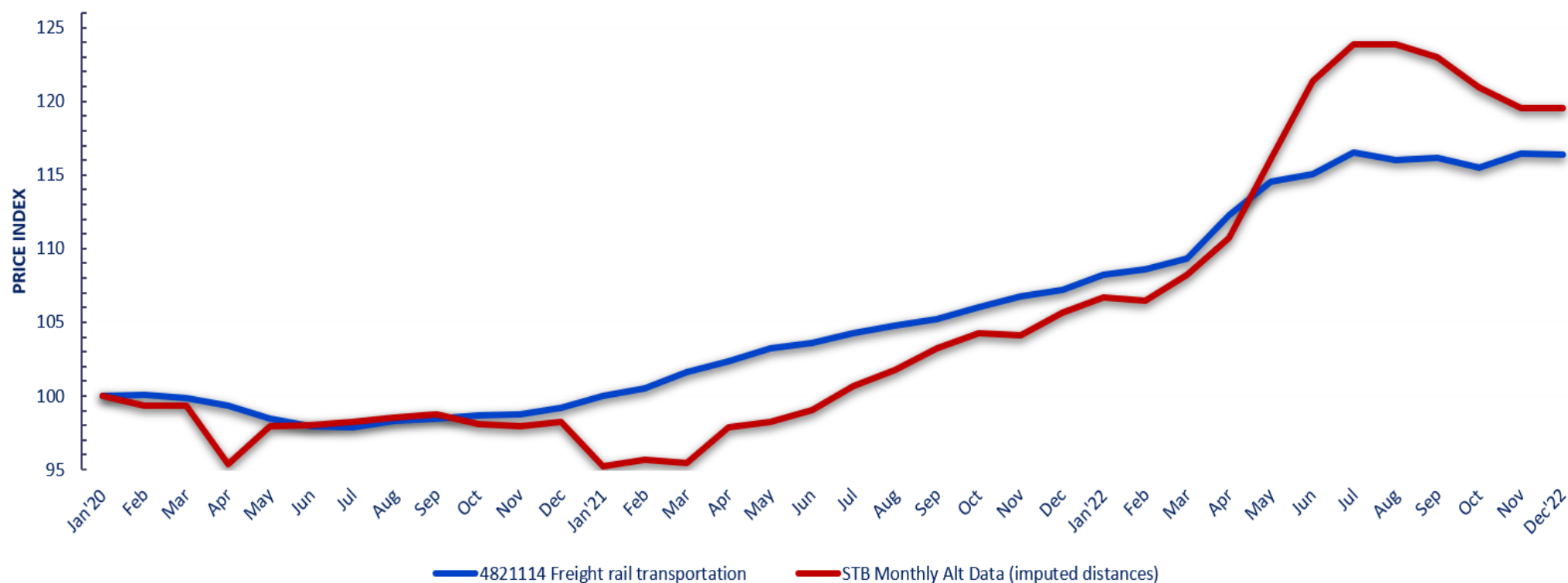
Date	Item_code	Net_price	Item_weight
4/1/2026	11LPNA	Confidential	Confidential
4/1/2026	11LRNA	Confidential	Confidential
4/1/2026	11MPNA	Confidential	Confidential
4/1/2026	11MRNA	Confidential	Confidential
4/1/2026	11SPNA	Confidential	Confidential
4/1/2026	11SRNA	Confidential	Confidential
4/1/2026	11VLPNA	Confidential	Confidential
4/1/2026	11VLRNA	Confidential	Confidential
3/1/2026	11LPNA	Confidential	Confidential
3/1/2026	11LRNA	Confidential	Confidential
3/1/2026	11MPNA	Confidential	Confidential
3/1/2026	11MRNA	Confidential	Confidential
3/1/2026	11SPNA	Confidential	Confidential
3/1/2026	11SRNA	Confidential	Confidential
3/1/2026	11VLPNA	Confidential	Confidential
3/1/2026	11VLRNA	Confidential	Confidential

■ Item_code key

- ▶ 11=STCC code for transportation of coal
- ▶ VL,L,M,S= distance of haul (Very Long, Long, Medium and Short)
- ▶ P,R= private rail car (P) or rail owned car (R)
- ▶ NA= not applicable for this STCC code, used for shipment sizes for some STCC codes

Comparing the published PPI with the alternative data price index

WPU 4821114 Freight rail transportation vs. STB Monthly Alt Data
Price Indexes



Estimating Index Values due to Slight Lag in Monthly Administrative Data



Estimate N and $N-1$ from historical and seasonal components



Receive next month's data → replace estimated value with actual data



Quarterly data overwrites monthly data as it is more complete.

PPI Revision Policy

Release for May 2026 data

Month	Index Code and Title	Unadjusted Index	Data Source	Subject to revision
5/2026	482111-412: Intermodal freight rail transportation	206.106	Estimated using historical STB data	Yes
4/2026	482111-412: Intermodal freight rail transportation	205.914	Estimated using historical STB data	Yes
3/2026	482111-412: Intermodal freight rail transportation	205.722	STB administrative data	Yes
2/2026	482111-412: Intermodal freight rail transportation	204.933	STB administrative data	Yes
1/2026	482111-412: Intermodal freight rail transportation	205.228	STB administrative data	No

Expanded Publication Structure

Table 11. Producer price indexes for net output of selected industries and their products, not seasonally adjusted — Continued
[February 2025]

Title ¹	Industry code	Product code	Index base	Unadjusted index ²				
				Oct. 2024	Nov. 2024 ^P	Dec. 2024 ^P	Jan. 2025 ^P	Feb. 2025 ^P
Line-haul railroads.....	482111		12/84	264.717	264.454	264.678	268.295	268.398
Primary services.....		482111-P	12/84	264.717	264.454	264.678	268.295	268.398
Freight rail transportation.....		482111-4	05/15	132.466	132.331	132.446	134.306	134.359
Carload freight rail transportation.....		482111-411	12/96	245.682	245.063	245.434	249.371	249.390
Carload rail transportation of farm products.....		482111-41101	01/25	—	—	—	100.000	100.009
Carload rail transportation of coal.....		482111-41102	01/25	—	—	—	100.000	100.052
Carload rail transportation of nonmetallic ores, minerals, excluding fuels.....		482111-41103	01/25	—	—	—	100.000	100.084
Carload rail transportation of food and kindred products.....		482111-41104	01/25	—	—	—	100.000	100.029
Carload rail transportation of lumber or wood products, excluding furniture....		482111-41105	01/25	—	—	—	100.000	100.001
Carload rail transportation of pulp, paper, or allied products.....		482111-41106	01/25	—	—	—	100.000	100.039
Carload rail transportation of petroleum or coal products.....		482111-41107	01/25	—	—	—	100.000	100.008
Carload rail transportation of clay, concrete, glass, or stone products.....		482111-41108	01/25	—	—	—	100.000	100.011
Carload rail transportation of primary metal products.....		482111-41109	01/25	—	—	—	100.000	100.012
Carload rail transportation of transportation equipment.....		482111-41110	01/25	—	—	—	100.000	99.805
Carload rail transportation of all other carload rail transportation.....		482111-41111	01/25	—	—	—	100.000	100.037
Intermodal freight rail transportation.....		482111-412	12/96	203.185	204.334	203.933	204.987	205.288



Contact Information

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