Truflation

Truflation BLS CPI Index (TruBLSCPI)

Methodology

February 26, 2026

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1. Executive Summary

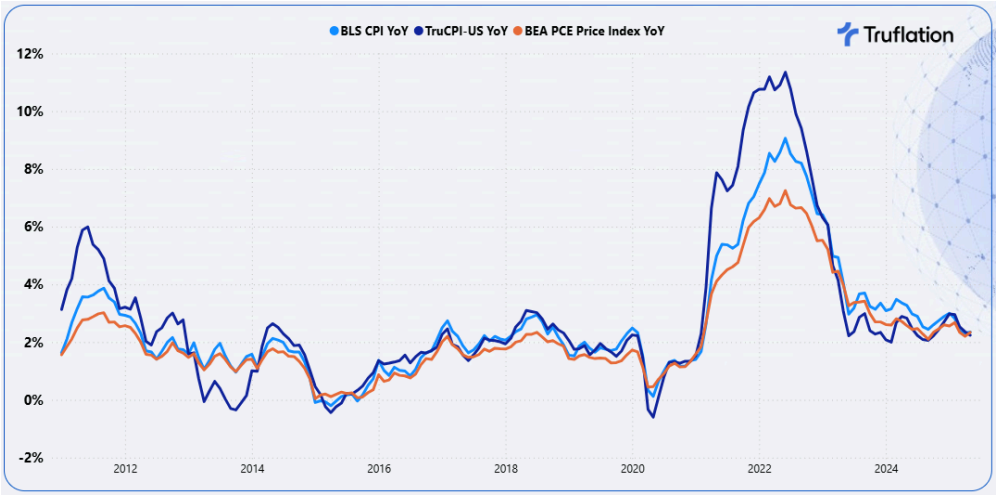
In the complex realm of economic analysis, understanding the ebb and flow of an economy's health is of paramount importance. Economic indicators serve as vital compass points, guiding policymakers, business leaders, and retail investors through an ever-changing financial landscape.

These indicators offer insights into the current state of the economy, help anticipate future trends, and inform decisions with far-reaching consequences. Among them, measures of inflation hold particular significance due to their direct influence on purchasing power, monetary policy, and overall economic stability.

Within the spectrum of inflation measurement, three prominent indicators stand out: the Bureau of Labor Statistics (BLS) Consumer Price Index (CPI), the Bureau of Economic Analysis (BEA) Personal Consumption Expenditures Price Index (PCE PI) and Truflation's alternative real-time U.S. inflation index. Each provides a distinct lens through which to examine the complex dynamics of price changes across the economy.

These indices are constructed using different methodologies and, as a result, exhibit varying behavior over time. Exhibit 1 illustrates the year-over-year monthly growth rates of all three indices from January 2011 through May 2025. While their magnitude and direction differ, the Truflation U.S. CPI Inflation Index, on average, leads the BLS CPI by approximately 41 days. This lead time reflects Truflation's methodology and the daily updates of its CPI-based inflation index.

Exhibit 1 – CPI-Urban, PCE Price Index & Truflation Index: Percentage change at annual rates



Source: Bureau of Economic Analysis, Bureau of Labor Statistics & Truflation

Given the market significance of the Bureau of Labor Statistics (BLS) Consumer Price Index (CPI), Truflation has introduced the Truflation BLS CPI Index. This index provides Truflation users with a leading indicator of the BLS CPI release, offering earlier insight into upcoming inflation prints.

2. The Bureau of Labor Statistics Consumer Price Index

One of the primary measures of prices paid by consumers for goods and services in the United States is the Consumer Price Index for All Urban Consumers (CPI-U), compiled and published monthly by the Bureau of Labor Statistics (BLS). The BLS CPI-U measures the average change over time in prices paid by urban consumers for a fixed market basket of goods and services and is widely recognized as a benchmark indicator of U.S. inflation.

Each month, the BLS collects approximately 80,000 price quotations across 75 urban areas from roughly 23,000 retail and service establishments, along with about 6,000 rental housing observations. The headline BLS CPI-U is the broadest and most widely cited CPI measure, covering approximately 93% of the U.S. population.

Price data is aggregated into the following product and service categories: food, energy, household goods, apparel, transportation, medical care, recreation, education and communication, alcoholic beverages, housing, water/sewer, and trash services, and other goods and services. The BLS updates the relative weights of these categories annually, using household expenditure data from two years prior to reflect evolving consumption patterns.

The BLS CPI-U includes consumer fees and sales taxes but excludes income taxes, investment prices (such as stocks, bonds, and life insurance policies), and property taxes. Owner-occupied housing is not measured using home prices; instead, they are estimated through rental equivalence based on surveys of market rents.

Methodologically, the BLS CPI is based on a modified Laspeyres index, which measures the cost of purchasing a fixed basket of goods and services at current prices relative to the cost of the same basket during a base period, multiplied by 100.

The BLS CPI-U also applies hedonic quality adjustments to account for changes in product quality over time. As retailers introduce new product versions with enhanced features and discontinue older models, the BLS attempts to isolate the portion of price changes attributable to quality improvements, thereby adjusting measured inflation accordingly.

To calculate inflation, the BLS compares the CPI level for a given period with that of a prior period. The resulting inflation rate, expressed as a percentage, can be calculated on a monthly or annual basis and is typically positive during periods of rising prices.

3. Truflation Assessment and Critique of the BLS CPI Index

The primary objective of the BLS Consumer Price Index (BLS CPI) is to measure changes over time in the prices of a representative basket of goods and services, thereby providing insight into consumers' purchasing power and overall economic conditions. To achieve this, the BLS estimates a basket intended to reflect typical household consumption patterns. While the BLS CPI offers significant value as a widely recognized inflation benchmark, it is subject to several well-documented limitations.

Key limitations of the BLS CPI include:

- *Fixed Basket Composition:* The BLS CPI basket remains largely fixed between periodic updates. As a result, rapid or meaningful shifts in consumer preferences within this period may not be fully reflected, reducing the index's responsiveness to evolving consumption behavior.
- *Substitution Bias:* One of the most frequently cited criticisms of the BLS CPI is its substitution bias. When prices for items within the basket rise, consumers may substitute toward lower-cost alternatives. Because the CPI does not immediately account for this behavior, it may overstate inflation in the short term.
- *Quality Adjustments:* Although the BLS applies hedonic adjustments to account for changes in product quality, estimating the monetary value of quality improvements is inherently complex and involves a degree of subjectivity.
- *Delayed Incorporation of New Products:* The BLS CPI can be slow to integrate new goods and services that become meaningful components of consumer spending. This delay may cause the index to lag actual consumption trends.
- *Exclusion of Third Party Reimbursements:* Because the CPI measures out-of-pocket consumer expenditures, it does not capture third-party

reimbursements—particularly in healthcare—resulting in healthcare costs being significantly underweighted relative to their share of GDP.

- *Use of Owners' Equivalent Rent (OER):* Housing costs for owner-occupied homes are estimated using Owners' Equivalent Rent, which reflects what homeowners would pay to rent their own homes. This measure is derived from surveys of renters rather than homeowners and assumes rental values are an appropriate proxy for the cost of homeownership for consumption purposes.

Exhibit 2 presents a comparative analysis of the BLS Consumer Price Index and the Truflation CPI Index, highlighting key methodological and behavioral differences.

Exhibit 2 – Comparison between BLS Consumer Price Index & Truflation US CPI Inflation Index

	BLS CPI	***Truflation***
Publication	*Bureau of Labor Statistics (BLS)*	*Truflation*
Data Source	*Point-of-Purchase Price Check Housing Survey Consumer Expenditure Survey*	*Market price data from 30+ data sources*
# of Data Points	*80,000 items*	*15+ million items*
Publish Frequency	*Monthly*	*Daily*
Markets/Indexes	*Headline, Core, Goods, Services and product categories*	*Headline, Core, Goods, Services and product categories*
Weighting	*Updated every year with 2 year ago household spending patterns*	*Updated annually with the prior years household spending patterns*
Substitution	*Hedonic adjustments*	*No*
Calculation	*(CPI in the current date - CPI in the previous date) / CPI in the previous date x 100%*	*(Truflation in the current date - Truflation in the previous date) / Truflation in the previous date x 100%*
Exclusions	*Investments, property taxes and purchases of homes*	*No exclusions*
Main Users	*Federal Reserve, Government, Businesses, Economists & Analysts*	*Web3 Users, Institutional Investors, Policymakers, Economists & Analysts*

Source: Truflation

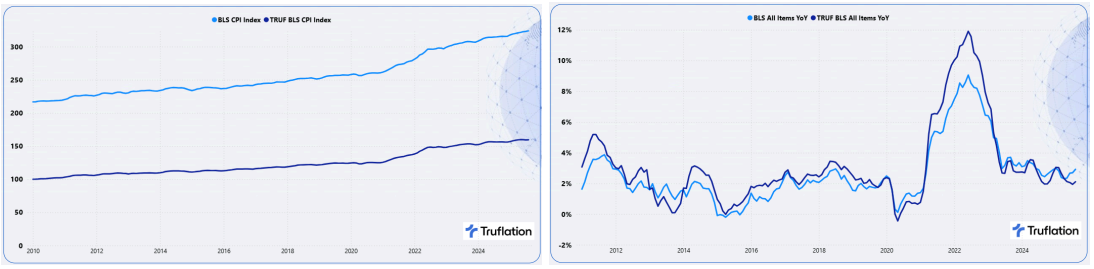
4. Truflation BLS CPI Index Framework

Truflation has emerged as an alternative data provider, offering a real-time perspective on inflation dynamics through the use of high-frequency price data. Drawing from more than 30 independent sources, Truflation tracks over 15 million prices of goods and services across the United States. These data are validated, harmonized, and processed using open-source algorithms to deliver a transparent and timely view of changes in consumer prices on a daily basis. This approach enables individuals, investors, businesses, and institutions to make more informed decisions based on unbiased and verifiable information.

Given the market significance of the Bureau of Labor Statistics (BLS) Consumer Price Index (CPI), Truflation has developed the Truflation BLS CPI Index, designed to serve as a leading indicator of the official BLS CPI release. This index maps price data from Truflation's 30+ data partners to the BLS CPI product categorization and applies the corresponding BLS category weights. By replicating the BLS CPI structure while leveraging real-time data, the index provides an average lead time of approximately 18 days relative to the official BLS CPI.

As illustrated in Exhibit 3, which compares monthly index levels and year-over-year percentage changes for the TruBLSCPI Index and the BLS CPI from January 2011 through December 2025, the two indices exhibit a high degree of consistency in both trend and magnitude.

Exhibit 3 – TruBLSCPI Index vs. BLS CPI: Index Levels & YoY % changes



Source: Bureau of Labor Statistics and Truflation

Alignment of Data.
To quantify the relationship between the two indices, a linear regression analysis was conducted, with the TruBLSCPI Index being the independent variable and the BLS CPI as the dependent variable. The resulting correlation coefficient was 0.959697, indicating an exceptionally strong positive relationship between the two series.

In addition, the regression produced an R-squared (R^2) value of 0.921018, signifying that approximately 92% of the variation in the BLS CPI is explained by movements in the TruBLSCPI Index. This high R^2 demonstrates the robustness of the model and the close alignment between the two measures of inflation.

Data Methodology & Calculations

The TruBLSCPI Index is built on the underlying methodology and calculation framework of the TruCPI-US Index, incorporating rigorous guardrails to ensure that index movements reflect genuine underlying price changes rather than structural or methodological distortions. For a detailed explanation of the data collection process, quality controls, category weightings, and the overall methodological framework, please refer to the TruCPI-US Index Methodology.

To achieve the level of alignment of the TruBLSCPI Index and the BLS CPI Index, Truflation first maps all underlying TruCPI-US data from its 30+ data partners to the official BLS CPI product categorization. This process involves aligning each data series with the BLS defined hierarchy, shown in Exhibit 4, and applying the corresponding BLS CPI expenditure weights to each category.

Following this alignment, Truflation converts its daily TruBLSCPI Index data into a monthly index by calculating an average monthly value from the daily data. This transformation allows for a direct comparison with the monthly BLS CPI series. The resulting dataset comprises 188 monthly observations from January 2010 through August 2025, which forms the basis of the regression analysis presented above.

Exhibit 4 – BLS CPI Product Hierarchy

BLS Consumer Price Index	BLS Weights
Food	13.70%
Energy	6.38%
Core	79.92%
Commodities less food and energy	18.15%
Household furnishing and supplies	3.42%
Apparel	2.37%
Transportation commodities less motor fuel	6.67%
Medical care commodities	1.48%
Recreation commodities	2.40%
Education & communication commodities	0.03%

		Alcoholic beverages	0.84%
		Other goods	0.94%
	Services less energy services		61.77%
		Housing services	35.63%
		Water sewage & trash collection	1.14%
		Household operations	0.88%
		Medical care services	6.93%
		Transportation services	6.66%
		Recreation services	2.74%
		Education and communication services	5.81%
		Other personal services	1.97%

Source: Bureau of Labor Statistics

5. The Output Metrics

The Truflation BLS CPI Index is updated on a daily basis and produces the following indexes:

- Truflation BLS CPI headline index value (current day)
- Truflation BLS CPI headline index value (one year prior)
- Year over year percentage change in the headline index
- Index values for each category and sub category (current day)
- Index values for each category and sub category (one year prior)
- Year over year percentage change for each category and sub category
- Full historical time series

The Truflation BLS CPI Index, along with all associated category and sub category indices, are available through multiple delivery channels including the Truflation Dashboard, APIs, FTPs and other data feeds. The level of data granularity and historical depth accessible to users depends on their subscription tier. At Truflation's highest subscription level, the Enterprise Solution, users have access to the full suite of indices.

The TruBLSCPI Index was launched on September 24, 2022, with historical data extending back to January 1, 2010.

In addition to the headline Truflation BLS CPI Index and its category and sub category indices, the underlying price level data enables the construction of a suite of specialized sub-indices that provide deeper insights into inflation dynamics. These include:

Sub-Indices	Definition / Methodology
Truflation BLS CPI Core Index (TruBLSCPIc)	Core inflation measures the change in prices excluding the volatile categories of food and energy prices which are subject to sudden price shocks providing a clearer picture for monetary policy by focussing on the broader, more stable inflation pressures. It reflects the underlying persistent price trends.
Truflation BLS CPI Goods Index (TruBLSCPIg)	Goods inflation measures the change in prices of physical products purchased by consumers, such as, clothing, electronics, vehicles, and household items within the core categories thus excludes the volatile goods from food and energy. It reflects how the cost of tangible goods evolves over time and is influenced by factors like supply chain disruptions, raw material costs, production expenses, and retail pricing trends.
Truflation BLS CPI Services Index (TruBLSCPIs)	Services inflation tracks the change in prices for non-tangible products or services, including education, transportation, health care, insurance, utilities, housing and leisure activities within the core categories, thus excluding the volatile services from food and energy. It captures shifts in the cost of services provided to consumers and is affected by labor costs, regulatory changes, demand for services, and operational expenses.

6. Truflation BLS CPI Index Benefits

The Truflation BLS CPI Index (TruBLSCPI) is designed to deliver a high-fidelity, forward-looking view of U.S. inflation by combining methodological alignment with the official BLS CPI and the advantages of real-time data. The result is a transparent, statistically robust, and actionable inflation benchmark for a broad range of market participants.

- ***Methodological Alignment and Transparency:*** The index mirrors the official BLS CPI product hierarchy, incorporating the same category structure and expenditure weightings, including detailed sub-category breakdowns. Built on Truflation's open-source methodology, prices are validated and harmonized using transparent algorithms, ensuring that index movements are driven by genuine price changes rather than structural or methodological distortions.
- ***Real-Time, High-Frequency Inflation Tracking:*** Powered by more than 30 independent data sources covering over 15 million prices, the index is updated daily, significantly faster than the monthly BLS CPI release cycle. Daily data are converted into monthly averages, enabling direct

comparison with the official CPI while providing meaningful lead-time insights ahead of BLS releases.

- ***Institutional-Grade Accuracy and Predictive Power:*** The Truflation BLS CPI Index demonstrates near-perfect statistical alignment with the official BLS CPI, exhibiting a 0.959697% correlation and a 92.1% R^2 score. This exceptionally high degree of correlation validates the index as a reliable, forward-looking proxy suitable for institutional investment models, macroeconomic analysis, and policy anticipation.
- **Faster Market Response and Decision-Making:** By delivering inflation insights in near real time, the index allows traders, hedge funds, risk managers, and DeFi platforms to respond more rapidly to evolving inflation trends, rather than waiting for end-of-month CPI releases. This timeliness supports faster strategy adjustments and improved risk management.
- ***Improved Housing and Cost Representation:*** Unlike the official CPI, which relies heavily on survey-based inputs such as owners' equivalent rent, the Truflation index incorporates actual transaction-level housing data. This approach improves accuracy and representativeness in one of the most influential components of consumer inflation.
- ***Versatile Use Across Market Participants:*** Given its statistical robustness and transparency, the index can be confidently used in predictive macroeconomic models, inflation-linked trading strategies, and analyses aimed at anticipating Federal Reserve policy actions. In addition to institutional users, the index is accessible via Truflation's online dashboard, enabling retail investors, journalists, and financial advisors to leverage high-quality inflation data in a clear and actionable format.

7. Summary

The Truflation BLS CPI Index is a real time inflation benchmark designed to closely track and anticipate movements in the official BLS Consumer Price Index. Built using daily price data from 30+ independent sources and aligned to the BLS CPI product hierarchy and weights, the index provides an average lead time of approximately 18 days.

With a 0.959697 correlation and a 92.1% R^2 score relative to the official CPI, the index delivers a transparent, high-accuracy view of inflation trends, enabling faster, more informed decision-making for investors, institutions, and policymakers.

8. Version History

Version	Date Released	Notes
1.0	September 24, 2022	Genesis of the Truflation BLS CPI Index
1.1	February 26, 2026	Update of the BLS CPI Weights