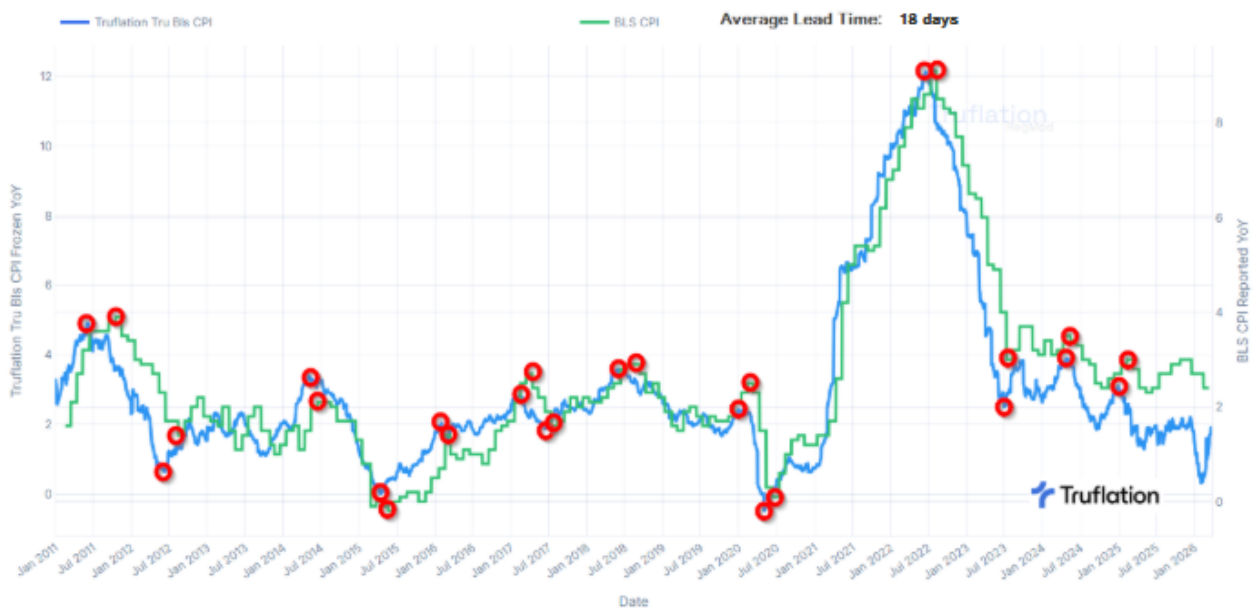


Truflation BLS CPI as a Leading Indicator of the Official BLS CPI Inflation Measure

Empirical Evidence of Signal Lead and Regime Dependent Dynamics



April 2, 2026

Version 1.0

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1. Introduction

Truflation provides a high frequency, data driven measure of inflation designed to reflect real time price dynamics across the economy. Traditional measures such as the Consumer Price Index (CPI), published by the U.S. Bureau of Labor Statistics (BLS), remain the official benchmark; however, they are structurally backward looking due to:

- Monthly data collection cycles
- Survey based methodologies with manual price checks
- Publication lags in the reporting schedule

These characteristics introduce a systematic information delay for policymakers, investors, and risk managers. Truflation addresses this limitation by aggregating over 15 million price points across 30+ data sources, producing a daily inflation index that reflects current market conditions.

The Truflation BLS CPI Index differs from the Truflation U.S. CPI Inflation Index in that it maps all underlying data sources to the BLS CPI classification framework and applies the corresponding category weightings. This ensures alignment in both definitions and weights, providing a more consistent and directly comparable measure relative to the official CPI benchmark.

Empirically, Truflation not only tracks CPI closely but also systematically leads it. This paper formalizes that relationship through statistical analysis across distinct macroeconomic regimes.

2. Key Differences in Methodology

The Bureau of Labor Statistics, Consumer Price Index aims to measure price changes across a representative basket of goods and services. However, there are fundamental differences between CPI and Truflation in data coverage, timeliness, and calculation methodology:

- **Update Frequency:** CPI is released monthly and is inherently retrospective. Truflation updates daily, capturing inflation dynamics in real time.
- **Data Sources:** CPI relies on approximately 80,000 sampled price observations and a rotational housing survey. Truflation aggregates more than 15 million real time observations from both public and private datasets, enabling faster detection of market changes.
- **Calculation Approach:** CPI incorporates modeled adjustments such as substitution effects and hedonic quality adjustments. Truflation uses large scale,

transaction level data, allowing market behavior to be reflected directly without reliance on imputation.

- **Housing Measurement:** CPI uses Owner's Equivalent Rent (OER), an imputed estimate based on surveys conducted semi annually. Truflation models actual housing costs, incorporating mortgage rates, home prices and transaction data for a more direct representation.
- **Data Finality:** Truflation publishes “frozen” values that are not revised, ensuring consistency and reliability for real time decision making.

3. Data and Analytical Methodology

This analysis compares the year on year percentage change of the Truflation BLS CPI Index with the CPI published by the BLS, covering January 2011 through February 2026.

To ensure comparability, differences in data frequency are reconciled through temporal aggregation. Specifically, Truflation's daily observations are aggregated to a monthly frequency to align with the lower frequency BLS CPI data.

To quantify the lead lag relationship, a Pearson correlation based time series analysis is employed, using cross correlation to identify the temporal offset between the two series. Aggregating Truflation data to a monthly frequency ensures a consistent number of observations for robust statistical comparison.

The BLS CPI data is aligned to its reference month; however, the official release typically occurs with a lag of 10–13 days into the following month. For example, the January 2026 CPI reading was released on February 13, 2026.

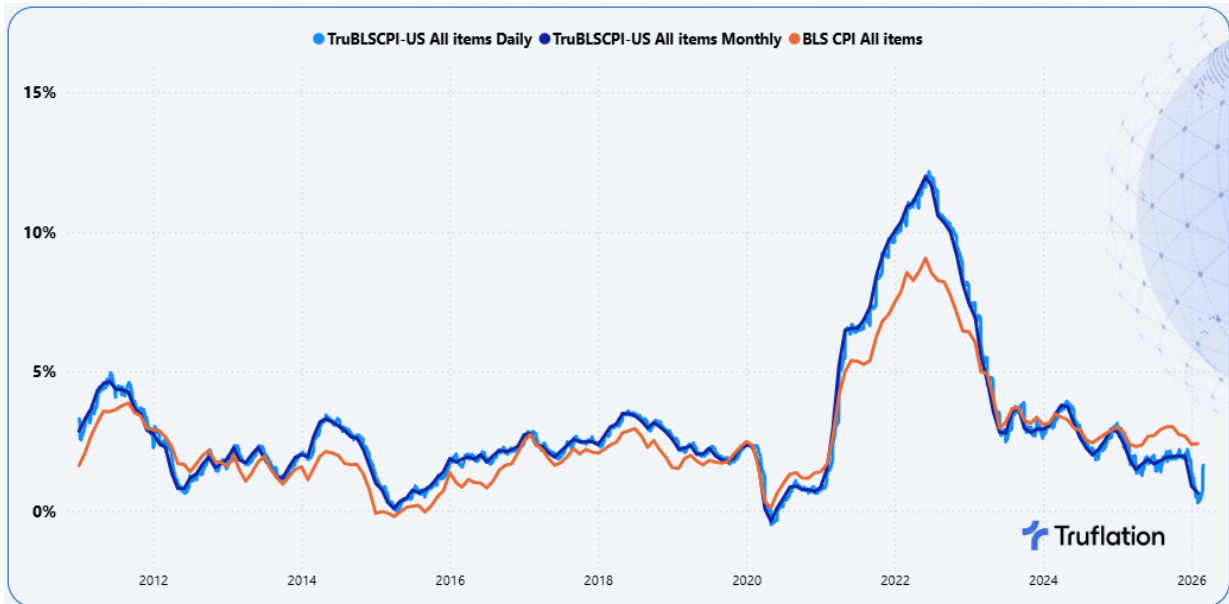
Truflation evaluates data based on the reference month while also incorporating the timing of information availability to market participants. To account for this, an approximate 12-day lag is applied, capturing the effective real time informational delay embedded in the BLS CPI release process.

For lag analysis, a shifted Truflation series is constructed by systematically delaying the index across a range of intervals. At each shift, the correlation coefficient is calculated against the corresponding CPI values, producing a correlation profile that identifies the lead at which the relationship is strongest.

4. Results

Exhibit 1 plots the monthly CPI published by the U.S. Bureau of Labor Statistics alongside both the daily Truflation BLS CPI Inflation Index and its aggregated monthly equivalent.

Exhibit 1: TruBLS-CPI YoY (Daily and Monthly Aggregated) vs BLS CPI YoY



Visual analysis appears to show that Truflation consistently leads the CPI series. Peaks, troughs and turning points in inflation are observed earlier in the Truflation data, supporting the view that Truflation functions as a leading indicator.

To quantify this relationship, a linear regression analysis was conducted, with TruBLS-CPI as the independent variable and BLS CPI as the dependent variable. The regression analysis over the full sample (January 2011 to February 2026) yields a correlation coefficient is 0.959, indicating an exceptionally strong positive relationship between the two series.

Cross correlation analysis confirms these results, with the highest correlation of 0.959, occurring when Truflation leads the BLS CPI by approximately 18 days, suggesting a structural lead of approximately three weeks relative to BLS CPI. This reflects the fundamental differences in methodology, including data collection frequency, publication lags, and smoothing techniques.

However, these results should be interpreted with caution, as inflation dynamics vary significantly across the sample period. From 2010 through 2020, inflation was generally low, stable and often below the Federal Reserve target. In contrast, the period from 2021 to 2023 was highly atypical, characterized by stimulus driven demand, supply chain disruptions, sharp increases in housing costs, and broad based price volatility, followed

by an unusually rapid disinflation phase. These shifts affected both the speed and transmission of price changes across the economy.

As a result, the full sample correlation coefficient reflects a mixture of heterogeneous inflation regimes rather than a single stable relationship. The table in Exhibit 2, presents an analysis of how closely the Truflation BLS CPI index tracks and leads, the official Bureau of Labor Statistics Consumer Price Index measure across different macroeconomic environments.

Exhibit 2 - Segmented Inflation Periods

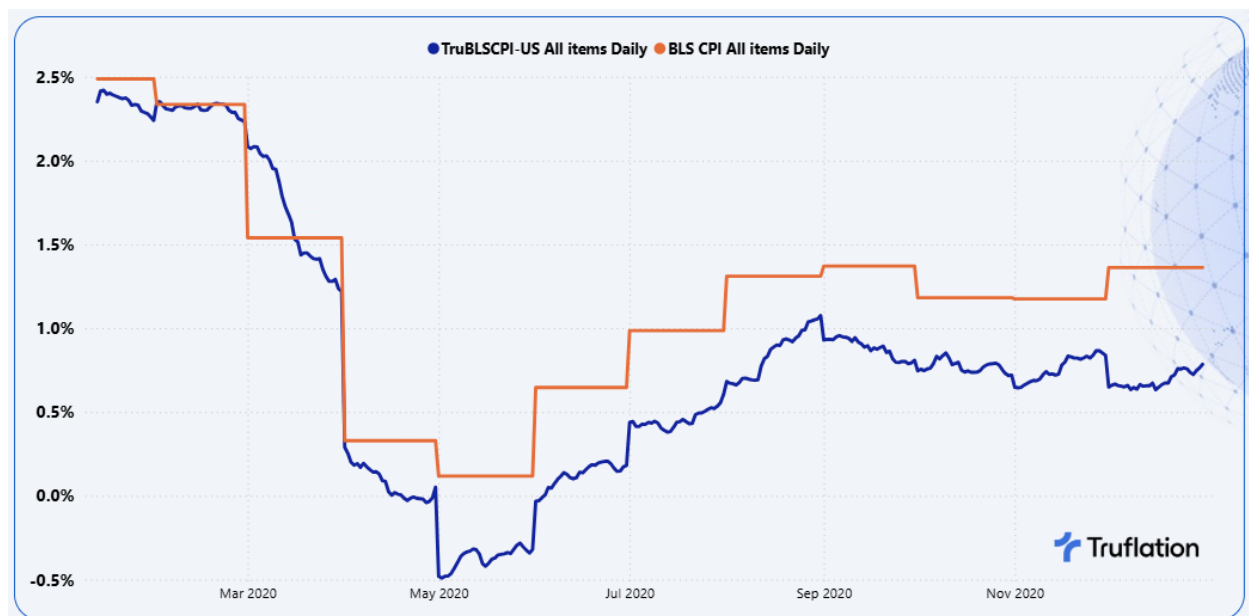
Inflationary Environments	Dates	Correlation Coefficient	Lead
Low Consistent & Stable Inflation	Jan 20 - Dec 20	0.972	~13 days
High Volatile Inflation	Jan 21 - Jun 23	0.988	~14 days
Disinflation / Return to Normalization	July 23 - Feb 26	0.854	~13 days

The results of the correlation coefficients and lead days shows a consistently strong relationship no matter the economic environment. There is a marginally stronger and longer lead observed during the high volatility period (~14 days) but nothing overly significant.

Low Consistent & Stable Inflation (January 1, 2020 - December 31, 2020)

During this period of relatively stable inflation, the Truflation BLS CPI exhibits a very strong correlation of 0.972 with the Consumer Price Index of the Bureau of Labor Statistics. The R^2 of 0.944 indicates that Truflation BLS CPI explains approximately 94% of the variation in the BLS CPI year on year movements within this regime.

Exhibit 3 - TruBLS CPI YoY vs the BLS CPI YoY

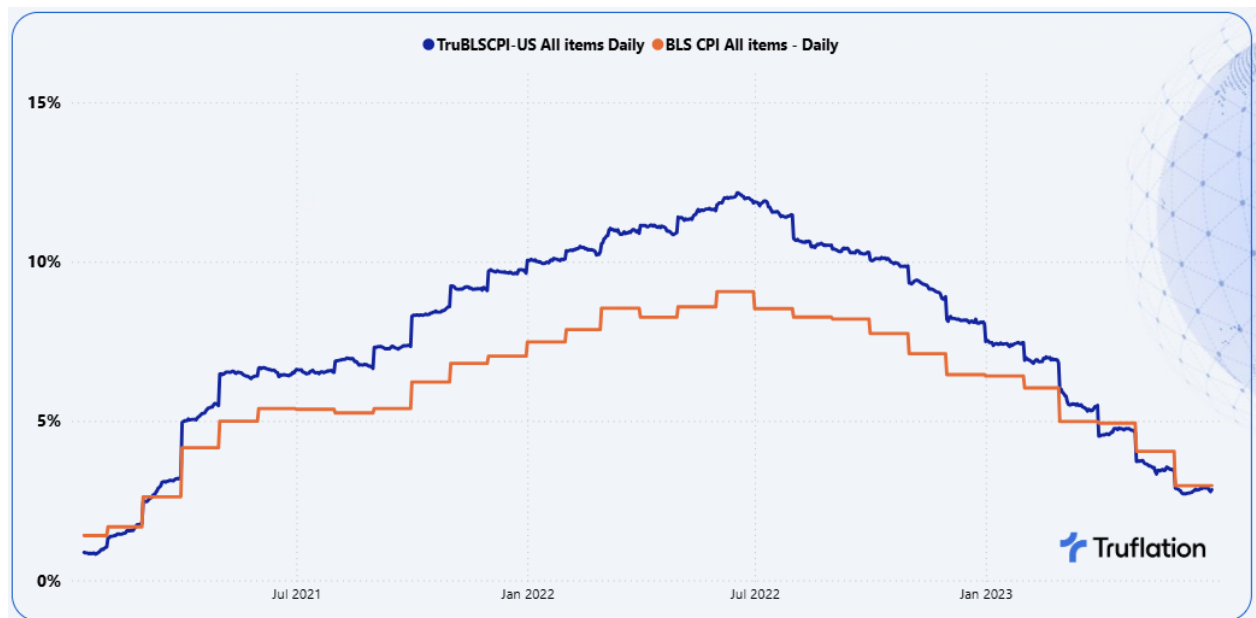


High Volatile Inflation (January 1, 2021 – June 30, 2023)

This period was characterized by significant fiscal stimulus, demand driven inflation, supply chain disruptions and heightened commodity volatility exacerbated by the Ukraine War, particularly impacting global food and energy markets.

These conditions led to rapid repricing across goods and services, while BLS CPI components, especially shelter adjusted more slowly due to methodological smoothing, imputations and sampling lags. When the Truflation BLS CPI Index is used, it leads the official CPI by approximately 14 days, with a correlation coefficient of 0.988 and R^2 of 0.976. This suggests that Truflation explains around 97% of the variation in the BLS CPI movements during periods of heightened inflation volatility. This indicates a near perfect alignment between the two indexes as well as its effectiveness in capturing rapid price changes in real time.

Exhibit 4 – TruBLS-CPI YoY vs the BLS CPI YoY



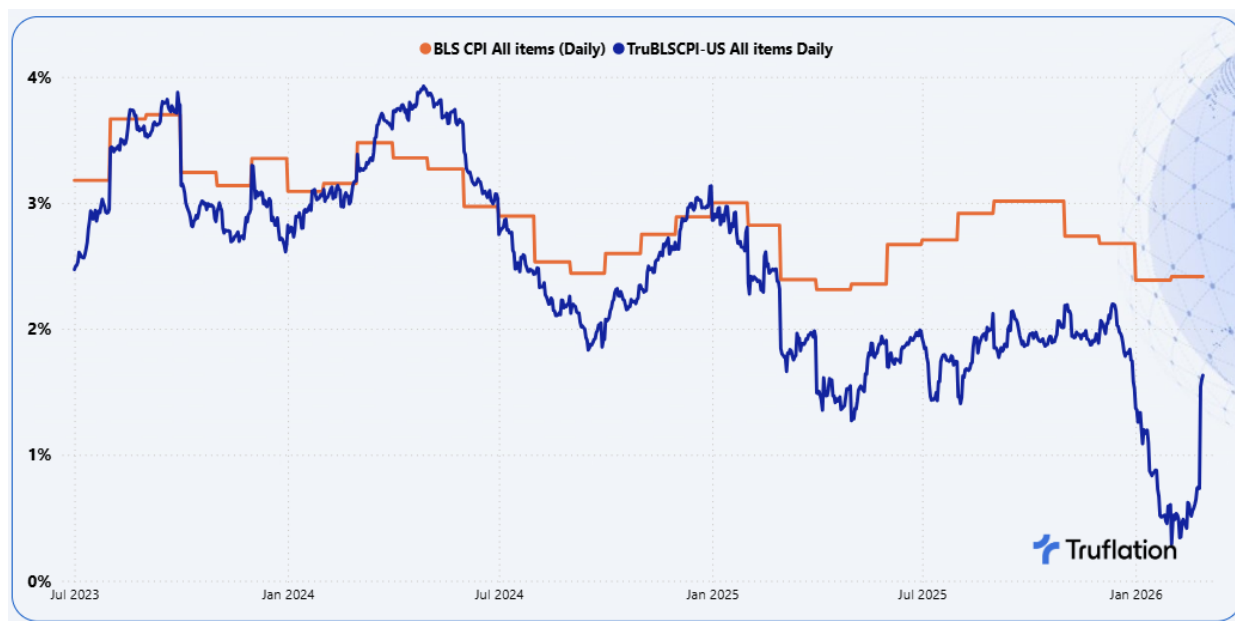
Disinflation / Return to Normalisation (July 1, 2023 – February 28, 2026)

As inflation moderated and the economy transitioned toward normalization and a return to more predictable pricing dynamics, the Truflation BLS CPI's lead returned back to approximately 13 days. The correlation coefficient declined slightly to 0.854, though it remains strong with an R^2 of 0.729. This indicates that the Truflation BLS CPI accounts for roughly 73% of BLS CPI variation as inflation dynamics stabilized. This modest decline in correlation, likely reflects increased influence from slower moving inflation components such as housing and services.

Two important considerations during this period are:

- *Government shutdowns* in October 2025 and January 2026, which not only disrupted data collection but had a considerable impact on the reporting timelines and returning them to normal cycles.
- *Tariff related price shocks* which were captured more immediately in Truflation but reflected more slowly in BLS CPI

Exhibit 5 - TruBLS-CPI YoY vs the BLS CPI YoY



The key takeaways of the analysis between Truflation's BLS CPI Index versus the official BLS CPI are:

- **Stronger Alignment:** The TruBLS-CPI Index shows a 10% higher correlation and a 22% higher R^2 score compared to the TruCPI-US Index.
- **Consistent Lead:** Truflation leads official inflation data by approximately 13–14 days across all economic environments.
- **High Reliability:** The correlation between Truflation and BLS CPI remains high in all regimes, indicating strong relationships.
- **Best in Volatility:** The relationship is strongest during periods of high and volatile inflation, when real time data provides the most value.
- **Slight Weakening in Stability:** As inflation stabilizes, the relationship weakens slightly due to the increased role of lagging components in official measures.

5. Why Truflation Acts as a Leading Indicator

The evidence clearly demonstrates that Truflation systematically leads the CPI published by the U.S. Bureau of Labor Statistics in a structural, predictable, and consistent manner.

This lead is not incidental; it is a direct result of fundamental differences in methodology and data collection between the two indices. Truflation's forward looking signal is underpinned by several persistent structural advantages:

- **Real time price collection** from both public and private sources, updated daily
- **Millions of observations** across a broad range of goods and services, sourced from 30+ datasets, enhancing representativeness and robustness
- **No smoothing or imputation**, allowing the index to reflect actual market conditions as they occur

These features create an index that is inherently more responsive to rapid changes in economic conditions, explaining its consistent and structural lead over CPI.

6. Predictive Capabilities

The evidence presented in this paper demonstrates a strong and consistent relationship between Truflation BLS CPI and the BLS CPI. Changes in Truflation reliably precede similar movements in CPI, with inflation peaks and troughs appearing earlier in the Truflation data. This forward looking relationship makes Truflation particularly valuable for:

- Identifying inflation inflection points
- Anticipating potential policy responses
- Forecasting official CPI releases

Since the launch of Truflation's prediction tool in November 2022, forecast accuracy has steadily improved. The average deviation relative to actual BLS CPI has been approximately 0.08, improving from 0.14 in 2023 to 0.07 in 2025; a reduction of roughly 50%. Additionally, forward quarterly forecasts have achieved an average deviation of approximately 0.1%, underscoring the robustness of Truflation's predictive capabilities.

The table presents Truflation's CPI prediction performance for 2024 and 2025.

	2024												2025											
Year/Month	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
BLS (%)	3.2	3.5	3.4	3.3	3.0	2.9	2.5	2.4	2.6	2.7	2.9	2.8	2.5	2.3	2.4	2.7	2.7	2.9	3.0	N/A	2.7	2.7		
Truflation (%)	2.9	3.4	3.5	3.3	3.0	2.8	2.5	2.4	2.5	2.7	2.9	2.8	2.4	2.3	2.4	2.5	2.8	2.8	3.0	2.9	2.9	2.6		
Deviation (diff)	0.3	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.2	0.1		
Avg. deviation (Year)	0.06%												0.07%											
Overall avg deviation	0.076%																							

7. Conclusion

Overall, Truflation serves as a robust leading indicator of inflation, consistently providing an early signal ahead of official BLS CPI data. Its ability to track inflation dynamics is particularly strong during periods of rapid change, making it a valuable tool for real time economic analysis and decision-making.

8. Version History

Version	Date Release	Notes
Version 1.0	April 2, 2026	1st Release of the Correlation Coefficient Analysis of the TruBLSCPI to BLS CPI