

Truflation U.S. CPI Housing Inflation Index (TruCPIHous-US)

Methodology

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1. Executive Summary

The Truflation U.S. CPI Housing Inflation Index (TruCPIHous-US) is a real time, market based measure of housing inflation in the United States. Unlike traditional housing inflation metrics that rely on imputed rent estimates, the index is built using observed market prices and modeled housing costs, capturing inflation across both owned and rented housing. This approach delivers a timely, transparent, and market-reflective view of housing costs faced by U.S. households.

The Truflation Housing Inflation Index is derived from the underlying price level data of the Truflation U.S. CPI Inflation Index (TruCPI-US), enabling the construction of specialized sub indices that provide deeper insight into housing specific inflation dynamics.

2. Truflation U.S. CPI Housing Inflation Index Framework

The TruCPIHous-US follows the TruCPI-US Index methodology, which incorporates strict guardrails to ensure that index movements are driven solely by underlying price changes rather than structural or methodological distortions.

Step 1: Data Sources

The index is constructed using high-frequency housing market data sourced from multiple independent providers, including:

- Residential property price listings and transaction data
- Mortgage market data (interest rates, issuance volumes, and loan characteristics)
- Rental market pricing for both new leases and renewals
- Other lodging prices, including hotels and short-term rentals (e.g., Airbnb)

The data sources include Zillow, Trulia, The Pennsylvania State University, Redfin, Apartment List, Numbeo, Core Logic, US Census Bureau, National Association of Realtors, Freddie Mac, The Federal Reserve Bank of New York, Trivago, Hilton, Kayak, Hyatt, Airbnb etc. All these inputs are cross validated to ensure accuracy, consistency, and representativeness.

Step 2: Data Coverage

The TruCPIHous-US captures three core housing components:

- *Owned Housing*: Modeled using mortgage payment costs derived from prevailing mortgage rates, issuance volumes, and average home prices.
- *Rented Housing*: Observed rental prices reflecting market rents for new leases and renewals.
- *Other Lodgings*: Observed prices for hotels and short-term accommodations.

Step 3: Housing Calculation Method

Owned Dwelling

Owned housing presents a unique challenge, as it reflects both the consumption value of housing services and the financial cost of mortgage borrowing. Truflation applies a hybrid methodology combining census-level housing data with a mortgage cost model.

Key components include:

- *Directly Observed Costs*: Repairs, maintenance, insurance, and property taxes are indexed using observed market prices
- *Mortgage Interest and Charges*, modeled using:
 - Average monthly weighted home prices (new & existing homes)
 - Weighted down payment assumptions:
 - First time buyers (32% of buyers): Avg 8% down payment
 - Repeat buyers (68% of buyers): Avg 19% down payment
 - Mortgage term assumptions:
 - 90% of borrowers choose a 30-year fixed rate mortgage
 - Current 30 year and 15 year fixed mortgage rates
 - Newly issued mortgages are weighted alongside outstanding mortgages to generate monthly price changes.

This methodology captures both home price appreciation and interest rate effects, resulting in a more accurate and intuitive measure of owned housing inflation. This also avoids reliance on Owner's Equivalent Rent (OER) and instead reflects actual housing costs experienced by households.

Rented Dwelling

Rental dynamics differ materially between lease renewals and new leases:

- Renewal rents tend to be stickier, with gradual increases driven by fixed lease terms and landlord-tenant relationships
- New lease rents are more volatile and respond quickly to real-time market conditions, producing sharper peaks and troughs

Truflation tracks both renewal and new lease rents, allowing analysts to separate underlying stability from market-driven volatility.

During 2021–2022, for example, new lease rents surged by more than 15% in many cities, while renewal rents increased by only 4–6%. Official BLS housing inflation did not spike until several months later. By measuring both components in real time, Truflation captured immediate rental market pressure as well as the lagged impact on households—providing a forward-looking signal of future BLS CPI movements.

Step 4: Index Construction

- *Price Measurement:* Housing prices and mortgage costs are observed at weekly and monthly frequencies and converted into daily price indices.
- *Normalization:* Data are standardized to ensure continuity across sources and time.
- *Weighting:* Owned and rented housing components are weighted using household expenditure weights, updated periodically.
- *Aggregation:* Component indices are combined into a composite Housing Inflation Index.
- *Indexing:* The index is expressed relative to a defined base period and updated daily

3. The Output Metrics

The Truflation U.S. CPI Housing Inflation Index will be updated on a daily basis and produces the following indexes:

1. Truflation U.S. CPI Housing Inflation headline index value (today)
2. Truflation U.S. CPI Housing Inflation headline index value (one year ago)
3. Year over year percentage change in the headline inflation rate
4. Sub category index values (today)
5. Sub category index values (one year ago)
6. Year over year percentage change in the sub category inflation rate
7. Full historical time series

Available sub categories include:

- Truflation U.S. CPI Rented Dwellings Inflation Index (TruCPIRent-US)
- Truflation U.S. CPI Owned Dwellings Inflation Index (TruCPIHome-US)
- Truflation U.S. CPI Other Lodgings Inflation Index (TruCPIHotel-US)

Access is provided via the Truflation Dashboard, APIs, FTP, and other data feeds, depending on subscription tier. The TruCPIHous-US was launched in December 2021, with historical data available from January 1, 2010.

4. Truflation U.S. CPI Housing vs the BLS CPI Shelter

Comparing the Truflation Housing Index with the Shelter Index published by the Bureau of Labor Statistics (BLS) helps illustrate the timing and magnitude of the differences between market based and official measures of housing inflation.

The Truflation Housing Index is constructed from daily inflation data aggregated from multiple sources, including rental listings, home sales, mortgage rates, and property transaction databases such as Zillow, Redfin, CoreLogic etc. Because it draws on real time market information, the index captures current housing market activity, including both rental dynamics and home price movements.

In contrast, the BLS Shelter Index represents the shelter component of the Consumer Price Index and is reported on a monthly basis. It is derived from BLS housing surveys that cover a representative sample of housing units and measure the cost of housing services rather than asset prices. Its primary components include Rent of Primary Residence and Owner's Equivalent Rent (OER). Importantly, home purchase prices and mortgage payments are excluded from this methodology.

To facilitate a direct comparison between the two series, Truflation's daily housing data was converted into monthly averages to match the reporting frequency of the BLS Shelter Index. Both datasets were then aligned by calendar month to ensure that each observation represents the same time period.

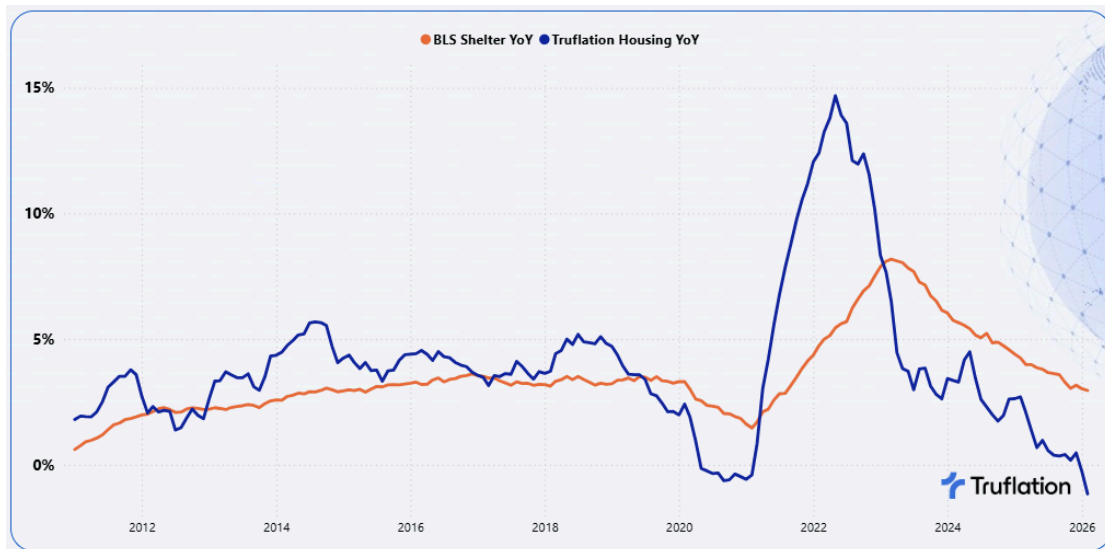
Using this dataset, a cross correlation analysis was conducted to identify any lead lag relationship between the two measures. The analysis shows that the BLS Shelter Index lags the Truflation Housing Index by approximately 10 months, with a cross correlation score of 0.826 over the period from January 2011 to December 2025. This indicates a very strong leading relationship, suggesting that movements in the Truflation Housing Index tend to precede similar movements in the BLS Shelter Index.

This relationship is derived using the Pearson correlation coefficient, which calculates the correlation between two time series at different lag intervals to determine the shift that produces the strongest alignment. In this case, the highest correlation occurs when the BLS Shelter Index is shifted approximately ten months behind the Truflation Housing Index, indicating

the typical lead time of market-based housing inflation relative to the official measure.

Exhibits 1 and 2 illustrate this relationship. Exhibit 1 compares the two series without any lag adjustment, while Exhibit 2 shows the Truflation Housing Index shifted forward by ten months, highlighting the close alignment between the two datasets once the lag effect is accounted for.

Exhibit 1: Truflation Housing vs BLS Shelter Index



Source: Truflation & Bureau of Labor Statistics

Exhibit 2: Truflation Housing with a 10 month lag vs BLS Shelter Index



Source: Truflation & Bureau of Labor Statistics

With this 0.826 cross correlation at a 10 month lag it implies that Truflation Housing behaves like a leading indicator to the BLS and provides reliable early signals about future official housing inflation.

5. Truflation U.S. CPI Housing Inflation Index Benefits

The Truflation U.S. CPI Housing Inflation Index (TruCPIHous-US) offers several distinct advantages over traditional housing inflation measures and other private alternatives. In addition to the core strengths of the broader Truflation U.S. CPI Inflation Index, it delivers housing specific insights that are faster, more realistic, and more actionable.

- ***Real-Time Inflation Insights:*** Updated daily rather than monthly and without significant publication lag, Truflation allows users to monitor housing inflation as it evolves in real time. This enables earlier detection of turning points and faster responses to emerging inflationary or disinflationary trends.
- ***Leading Indicator Advantage:*** Historically, Truflation has led official government inflation measures by approximately 41 days. For housing inflation specifically, this lead time extends to more than 150 days, providing early signals well ahead of CPI and PCE releases.
- ***Unmatched Data Depth and Coverage:*** Truflation tracks over 15 million price points daily across goods, services, and housing, sourced from 30+ independent data providers. This breadth and granularity allow the index to capture market dynamics that traditional measures often miss.
- ***Transparency and Methodological Consistency:*** All Truflation indices are built from observable market prices, creating a clear and auditable link between underlying data and published inflation readings. The methodology is consistent, rules-based, and externally validated.
- ***More Realistic Measurement of Housing Costs:*** Traditional CPI and PCE housing inflation relies on Owner's Equivalent Rent (OER)—an imputed measure based on biennial BLS rental surveys, with sampled units divided into six panels and only partially refreshed each month. This approach introduces significant lag and smooths away real-time market movements.

Truflation avoids imputed rent estimates by incorporating actual home purchase costs, modeling mortgage payments using prevailing mortgage rates, mortgage issuance volumes, and average home prices. This approach provides a more direct, intuitive, and timely reflection of the housing costs consumers actually face.

6. Summary

The Truflation U.S. CPI Housing Inflation Index (TruCPIHous-US) provides a faster, more responsive and more intuitive measure of housing inflation than traditional indices. By reflecting real time market conditions rather than lagged or imputed estimates, it offers a rigorous framework for understanding how market based housing inflation translates into the shelter component of the BLS Consumer Price Index.

As such, the index serves as a powerful tool for macroeconomic analysis, investment decision making and housing market research, while enhancing the ability to forecast and monitor inflation dynamics in real time.

7. Version History

Version	Date Released	Notes
1.0	December 12, 2021	Genesis of the Truflation U.S. CPI Housing Inflation index
1.1	February 28, 2026	Update of the 2026 weighting for the Truflation U.S. CPI Housing Inflation Index