

Nowcasting US CPI with Truflation: data and method

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Results use the data snapshot of 18 October 2026. The code is in `inflation_monitor/` and the tables in `data/processed/`.

Data

Series	Source	Frequency	Role
Truflation US CPI Inflation Index, year-on-year %	TRUF.NETWORK stream via trufscan.io (get_record)	Daily, from 2010	Signal
CPI-U all items, NSA and SA; core, shelter, energy and less-shelter indexes	BLS Public Data API; FRED as fallback	Monthly	Target and comparison
US regular gasoline retail price	EIA	Weekly	Signal
Brent crude spot price	EIA	Daily	Context
Business-cycle dates	NBER	Monthly	Chart shading
CPI release dates, 2010-2027	BLS release archive and schedule [4]	Monthly	Point-in-time availability

Truflation's `get_record` values are the 12-month inflation rate in percent, not an index level (they range from -0.7% to 11.6%). They are compared directly with the CPI 12-month change, and the monthly Truflation value is the average of the daily rates in the month. The CPI 12-month change is computed from index levels on a complete monthly calendar, $100 \times (I(t) / I(t-12) - 1)$; for September 2026 this gives 3.738%, against 3.7% published. October 2025 has no CPI index because BLS did not collect prices during the 2025 lapse in appropriations [5]; the month stays missing, and no change is computed across it. Raw responses are archived unchanged with SHA-256 hashes (`data/raw/manifest.jsonl`), and every table can be rebuilt offline from them.

How closely the two series move

Period	Months	Correlation of levels	Correlation of monthly changes	Mean gap, Truflation minus CPI (pp)
2011-2019	108	0.93	0.78	+0.08
2020-2022	36	0.98	0.92	+1.26
2023-2026	44	0.86	0.81	-0.85
2022-2026 (live era)	56	0.97	0.81	-0.27
2011-2026 (full)	188	0.94	0.84	+0.09

CPI here is the NSA 12-month rate. Levels are highly correlated, but both series are persistent and the mean gap moves by more than a percentage point between regimes. Monthly changes are a better guide: their contemporaneous correlation is 0.84, against 0.50 when Truflation leads by one month and 0.46 when it lags by one month, so the information is contemporaneous rather than leading.

Forecast target and timing

The target is the 12-month change in CPI-U all items, not seasonally adjusted: the rate BLS publishes, which is not revised when seasonal factors are updated. The main forecast is made at the start of the 18th of each month (UTC), and the same models are also run on days 5, 10, 15, 22 and 25 and on the first day of the following month. At each forecast date the information set contains:

- the CPI prints whose BLS release date is before the forecast date, so the September 2025 release delayed to 24 October 2025 and the cancelled October 2025 release are replayed as they happened;

- Truflation values dated at least two days earlier, because Truflation publishes data collected on day D at 23:59 UTC on D + 1 [2];
- EIA gasoline prices dated at least three days earlier, because the Monday price is published on Tuesday, or on Wednesday after a Monday holiday [3].

The last published month L is usually the month before the target, but it is two months before when the forecast date precedes the previous month's release.

Models

With y the CPI 12-month rate, T the average Truflation rate over the available days of a month and G the 12-month change in the weekly gasoline price averaged over the available weeks, the models are:

Random walk	$y(t) = y(L)$
Momentum: AR(1) on changes	$y(t) = y(L) + \phi * (y(L) - y(L-1))$
Truflation level at face value	$y(t) = T(t)$
Last print + Truflation change	$y(t) = y(L) + (T(t) - T(L))$
Truflation bridge	$y(t) = y(L) + a + b * (T(t) - T(L))$
Gasoline bridge	$y(t) = y(L) + a + c * (G(t) - G(L))$
Truflation + gasoline bridge	$y(t) = y(L) + a + b * (T(t) - T(L)) + c * (G(t) - G(L))$

The bridges are estimated by OLS on changes over an expanding window starting in 2011, refitted for every forecast on the months whose CPI print was published before the forecast date (at least 36 observations). Working in changes removes the level gap, which differs by regime and would otherwise need a time-varying intercept. When no gasoline price for the target month is available yet, the combined bridge uses the Truflation bridge. In the live nowcast the combined bridge has $a = 0.009$, $b = 0.35$ and $c = 0.032$.

Evaluation

Forecasts are scored from January 2015 to September 2026: 140 months, of which 56 fall after January 2022, when Truflation began publishing in real time. The 80% interval of each forecast is the 10th to 90th percentile range of the model's last 36 out-of-sample errors whose outcomes were already published (a normal approximation is used for the first 12 forecasts). The preferred model is the one with the lowest RMSE since January 2022 at the forecast day of the live nowcast. Diebold-Mariano tests compare squared errors with those of the random walk, with the Harvey-Leybourne-Newbold small-sample correction [7, 8].

Model	RMSE 2015-2026	MAE 2015-2026	RMSE 2022-2026	DM p-value, 2022-2026	80% interval coverage
Last print (random walk)	0.408	0.303	0.410		74%
Momentum: AR(1) on changes	0.361	0.276	0.394	0.629	79%
Truflation level at face value	1.115	0.743	1.355	<0.001	66%
Last print + Truflation change	0.288	0.213	0.324	0.124	73%
Truflation bridge	0.242	0.183	0.283	0.007	74%
Gasoline bridge	0.238	0.169	0.270	0.002	74%
Truflation + gasoline bridge	0.194	0.139	0.233	<0.001	73%

RMSE and MAE in percentage points; forecasts on the 18th. By sub-period (RMSE, pp):

Model	2015-2019	2020-2022	2023-2025	2026
Last print (random walk)	0.31	0.55	0.37	0.47
Truflation bridge	0.21	0.23	0.24	0.42
Gasoline bridge	0.15	0.35	0.23	0.17
Truflation + gasoline bridge	0.12	0.27	0.20	0.23

The combined bridge has the lowest RMSE over the full sample and in 2015-2019 and 2023-2025; the Truflation bridge was better in the 2020-2022 surge; the gasoline bridge was better in 2026. Of the 140 forecasts, 79%

were within 0.2pp of the outcome, and the direction of change was right in 93% of the months in which the rate moved by at least 0.05pp. The intervals covered 73% of outcomes against a nominal 80%.

Forecast day

RMSE (pp, 2015-2026) by the day of the month on which the forecast is made:

Forecast day	Last print	Truflation bridge	Truflation + gasoline
Day 5	0.67	0.36	0.36
Day 10	0.67	0.35	0.31
Day 15	0.43	0.26	0.20
Day 18	0.41	0.24	0.19
Day 22	0.40	0.22	0.18
Day 25	0.40	0.22	0.18
Month end	0.39	0.21	0.18

Early in the month the previous month's CPI is usually not yet published, so the anchor is two months old; that is where Truflation adds most.

Delayed official data

To simulate a data blackout, forecasts made on the first day of the following month use a last CPI print that is forced to be g months before the target. The withheld prints are also excluded from estimation and from interval calibration, while Truflation and gasoline continue. RMSE in pp:

Sample	Months since the last CPI print	Last print	Truflation bridge	Truflation + gasoline
2015-2026	1	0.39	0.21	0.18
2015-2026	2	0.67	0.33	0.30
2015-2026	3	0.89	0.41	0.39
2015-2026	6	1.38	0.52	0.56
2022-2026	1	0.41	0.25	0.21
2022-2026	2	0.67	0.39	0.37
2022-2026	3	0.87	0.49	0.50
2022-2026	6	1.49	0.64	0.75

The October 2026 release

BLS will not publish 12-month changes for October 2026 for the indexes without October 2025 data [5]. The model's 12-month rate is therefore converted into the seasonally adjusted index level and monthly change that will be published. The latest SA minus NSA difference in 12-month rates (-0.02pp) is added to obtain an SA rate. The October 2025 SA index is set to the geometric mean of September and November 2025 (324.654), which is the same as assigning equal monthly changes to October and November, as the Cleveland Fed does for its median CPI [6]. The October 2026 index is the base times one plus the SA rate (337.616), and the monthly change is measured against September 2026: +0.392%. Both interval endpoints are converted in the same way and widened by 1.28 times the standard deviation of the interpolation error for October in 2010-2024 (0.09%), giving +0.07% to +0.68%.

Tests

tests/test_nowcast_timing.py checks that a CPI print released on the forecast day is excluded, Truflation and gasoline values inside their publication lags are excluded, monthly changes do not span October 2025, a blackout withholds the missing prints from estimation, and the live interval uses only errors whose outcomes had been published.

Limitations

- All series are the vintages downloaded on 18 October 2026. NSA CPI is not revised, but Truflation's values before its December 2021 launch were computed later [1], so the results since 2022 are the cleaner test.
- The preferred model is chosen and scored on the same 2022-2026 sample.
- Interval coverage is below the nominal 80%.
- The October monthly change depends on the interpolated October 2025 index.

References

- [1] Truflation. Truflation: US Methodology. <https://truflation.com/Methodology.pdf>
- [2] Truflation. Help Center. <https://truflation.com/help>
- [3] U.S. Energy Information Administration. Holiday Release Schedule (gasoline and diesel fuel update). <https://www.eia.gov/petroleum/gasdiesel/schedule.php>
- [4] U.S. Bureau of Labor Statistics. Schedule of Releases for the Consumer Price Index. https://www.bls.gov/schedule/news_release/cpi.htm
- [5] U.S. Bureau of Labor Statistics. 2025 federal government shutdown impact on the Consumer Price Index. <https://www.bls.gov/cpi/additional-resources/2025-federal-government-shutdown-impact-cpi-faq.htm>
- [6] Federal Reserve Bank of Cleveland. Methodological Approach to Interpolating Missing October 2025 CPI Data. <https://www.clevelandfed.org/-/media/project/clevelandfedtenant/clevelandfedsite/indicators-and-data/median-cpi/methodological-approach-interpolating-missing-october-2025-cpi-data.pdf>
- [7] Diebold, F. X. and Mariano, R. S. (1995). Comparing predictive accuracy. Journal of Business and Economic Statistics, 13(3), 253-263.
- [8] Harvey, D., Leybourne, S. and Newbold, P. (1997). Testing the equality of prediction mean squared errors. International Journal of Forecasting, 13(2), 281-291.

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