

Bitcoin Valuation Intelligence Report 2026

Valuation models, aggregate cost basis, network economics and purchasing-power intelligence for professional readers.



VALUATION DISCIPLINE

Multiple models, no single-point target

PURCHASING POWER

Real and nominal context

RISK FIRST

Historical evidence, explicit limits

PUBLICATION NOTE

How to Read This Report

A disciplined framework for interpreting Bitcoin valuation models without converting historical relationships into price predictions.

Purpose. This report explains how institutional readers can combine on-chain cost-basis metrics, network-activity measures, purchasing-power data and cross-asset benchmarks. It is not a forecast, security recommendation or personalized allocation framework.

WHAT IT COVERS
Market capitalization, realized capitalization, MVRV, SOPR context, NVT, network-effect models, CPI purchasing power, M2 and benchmark methodology.

WHAT IT DOES NOT CLAIM
No fair-value price target, guaranteed return, market-timing signal, audited investor cost basis, or legal conclusion for any jurisdiction.

DATA DISCIPLINE
Every time-sensitive figure carries an as-of date. Sources, transformations and frequency are disclosed next to charts or in the methodology.

INTERPRETATION DISCIPLINE
A metric is evidence about one dimension of the system. A model ensemble is more defensible than a single ratio used in isolation.

Term	Meaning
Market cap	Current price multiplied by current supply.
Realized cap	Each on-chain unit valued at the price when it last moved; an aggregate cost-basis proxy.
MVRV	Market capitalization divided by realized capitalization.
SOPR	Value of spent outputs at spend time divided by value at creation time.
NVT	Network value divided by adjusted on-chain transfer value.
Real value	Nominal value adjusted by an explicit price index.

SOURCE / INTERPRETATION NOTE
The public website may use illustrative dashboard layouts. This report controls the factual numbers used in the downloadable publication; any live implementation must refresh data independently.

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Report Map

The report moves from measurement discipline to on-chain valuation, purchasing power, comparative benchmarks and governance.

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The institutional rule: select the question first, then the metric. Market cap answers a mark-to-market question. Realized cap approximates aggregate on-chain cost basis. SOPR focuses on spent outputs. NVT compares network value with adjusted transfer activity. CPI and M2 provide macro context. They are related, but they are not substitutes.

EXECUTIVE INTELLIGENCE

Bitcoin Valuation Is a Measurement System, Not a Number

The central institutional task is to organize different valuation lenses, identify their denominators and understand what each one can - and cannot - infer.

BTC CLOSE \$63,917 29 Jul 2026 CoinGecko	MARKET CAP \$1.283T 29 Jul 2026 CoinGecko	MVRV 1.41x 23 May 2026 Coin Metrics	REALIZED CAP \$1.085T 23 May 2026 Derived
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Core conclusion. Bitcoin valuation is best treated as an ensemble of market value, aggregate on-chain cost basis, realized profit/loss behavior, network usage and macro purchasing-power context. No single model produces a defensible deterministic fair value.

- Market capitalization is observable, but not liquidation value. It marks current supply at the prevailing reference price; it does not represent the cash required to purchase every coin.
- Realized capitalization changes the weighting rule. Coins are valued at their last on-chain movement price, producing a slower-moving aggregate cost-basis proxy.
- MVRV is a relative-state metric. It compares current market value with that aggregate cost basis; historical ranges provide context, not a forecast.
- SOPR and NVT answer different questions. SOPR examines profit or loss embedded in spent outputs; NVT compares network value with adjusted transfer activity.
- Purchasing power requires an explicit deflator. A nominal Bitcoin return, a CPI-adjusted return and a return relative to M2 expansion are different calculations.
- Benchmark comparisons require matched definitions. Gold, equities, real estate and money supply differ in cash flow, liquidity, index construction, custody and data rights.

SOURCE / INTERPRETATION NOTE
BTC price and market capitalization are 29 July 2026 CoinGecko closing references. On-chain snapshot uses Coin Metrics Community Data through 23 May 2026. Dates are intentionally not blended into a false single real-time snapshot.

MARKET SNAPSHOT

Selected Reference Points

A deliberately limited snapshot showing scale, cost basis, monetary context and purchasing-power measures without presenting a price target.

Reference point	Dated figure	Interpretation
Bitcoin close	\$63,917 - 29 Jul 2026	Spot-market reference from CoinGecko historical data.
Bitcoin market capitalization	\$1.283T - 29 Jul 2026	Current price multiplied by circulating supply; not liquidation value.
Coin Metrics MVRV	1.4146x - 23 May 2026	Market capitalization relative to realized capitalization.
Derived realized capitalization	\$1.085T - 23 May 2026	Market cap divided by MVRV using the same daily snapshot.
Derived realized price	\$54,165 - 23 May 2026	Realized capitalization divided by current supply.
U.S. CPI-U	332.568 - Jun 2026	Seasonally adjusted price index, 1982-84 = 100.
U.S. M2	\$23.155T - Jun 2026	Seasonally adjusted money stock; definition changed in May 2020.
Global real house prices	-0.6% yoy - Q4 2025	BIS PPP-weighted aggregate, deflated by CPI.

Do not compare unlike metrics. Market capitalization, realized capitalization, CPI, M2 and residential-property indexes belong to different analytical layers. A ratio may be useful only after dates, units, transformations, coverage and denominator are made explicit.

Bitcoin Reference Price - Historical Context (Log Scale)



Source: Coin Metrics Community Data, daily. As of 23 May 2026.

DECISION FRAMEWORK

Choose the Valuation Question Before the Model

Institutional analysis improves when the research question and decision horizon are defined before selecting a metric.

Question	Primary lens	What it adds	Primary limitation
How large is the current mark-to-market network?	Market capitalization	Observable scale at current price	Highly price-sensitive; not cash invested
What is the aggregate on-chain cost-basis proxy?	Realized capitalization / realized price	Reweights supply by last movement price	Last movement is not always an acquisition
How far is market value from aggregate cost basis?	MVRV	Relative-state and cycle context	Thresholds are sample-dependent
Are spent outputs realizing profit or loss?	SOPR	Behavior at the point of spending	Transfers are not always sales
How does valuation compare with transfer activity?	NVT / RVT	Network-use denominator	Change adjustment and window choice matter
How is nominal value changing in real terms?	CPI / purchasing-power index	Explicit inflation adjustment	CPI is a population average, not every investor
How does Bitcoin compare with other stores of value?	Benchmark matrix	Cross-asset context	Asset definitions and data rights differ

Investment committee question. What economic mechanism is the model attempting to measure, which assumptions are embedded in the denominator, and what evidence would invalidate the interpretation? A model without an invalidation rule is a narrative, not a research framework.

Valuation Discipline

Institutional-grade valuation begins with definitions, matched dates, transparent transformations and an explicit statement of model limitations.



QUESTION FIRST

Define the economic question and horizon before choosing the metric.

MATCHED INPUTS

Use the same timestamp, unit, supply definition and price source.

ENSEMBLE LOGIC

Treat disagreement between models as information, not an error to hide.

REALIZED CAPITAL

Aggregate Cost Basis Through an On-Chain Lens

Realized capitalization values each unit at the reference price when it last moved on-chain rather than at the current market price.

Core formula

Realized capitalization = sum of each unspent output quantity x reference price at its last on-chain movement

Market Capitalization and Realized Capitalization



Source: Coin Metrics Community Data; realized cap derived as market cap / MVRV. As of 23 May 2026.

Why institutions use it

It provides a slower-moving denominator than market capitalization and can be interpreted as an aggregate on-chain cost-basis proxy. It also supports realized price and MVRV.

What it is not

It is not a ledger of audited investor purchase prices. Self-transfers, lost coins, exchange internal movements and off-chain transactions complicate interpretation.

SOURCE / INTERPRETATION NOTE

Coin Metrics describes realized cap as valuing units at the price when they last moved. The report derives realized cap from market cap divided by MVRV because the Community CSV used here publishes both inputs on a matched daily basis.

REALIZED CAPITAL

From Realized Capitalization to Realized Price

Dividing realized capitalization by current supply converts the aggregate measure into a per-Bitcoin reference, while preserving the same caveats.

MARKET CAP

\$1.535T

23 May 2026 | Coin Metrics

REALIZED CAP

\$1.085T

23 May 2026 | Derived

REALIZED PRICE

\$54,165

23 May 2026 | Derived

Interpretive layer	Useful question	Required caution
Market price	What is one BTC marked at now?	Reference rate and timestamp matter.
Market capitalization	What is current supply marked at now?	Not the cash needed to acquire all supply.
Realized capitalization	What is aggregate supply marked at last movement prices?	Movement is an imperfect proxy for acquisition.
Realized price	What is realized cap per current BTC?	Aggregate average; no investor is necessarily at this basis.
MVRV	How does market cap compare with realized cap?	Historical context is not deterministic valuation.

Institutional use case. A treasury, custodian or research team can use realized price as one component of a broader state assessment, then compare it with liquidity, derivatives positioning, ownership concentration, macro conditions and mandate-specific risk controls. It should not be converted mechanically into a buy or sell threshold.

MVRV

A Relative-State Measure, Not a Fair-Value Oracle

MVRV compares the current mark-to-market network value with the aggregate on-chain cost-basis proxy.

Formula

$$\text{MVRV} = \text{Market capitalization} / \text{Realized capitalization}$$

A value above 1 means market value exceeds realized value. A value below 1 means market value is below the aggregate realized-value denominator.

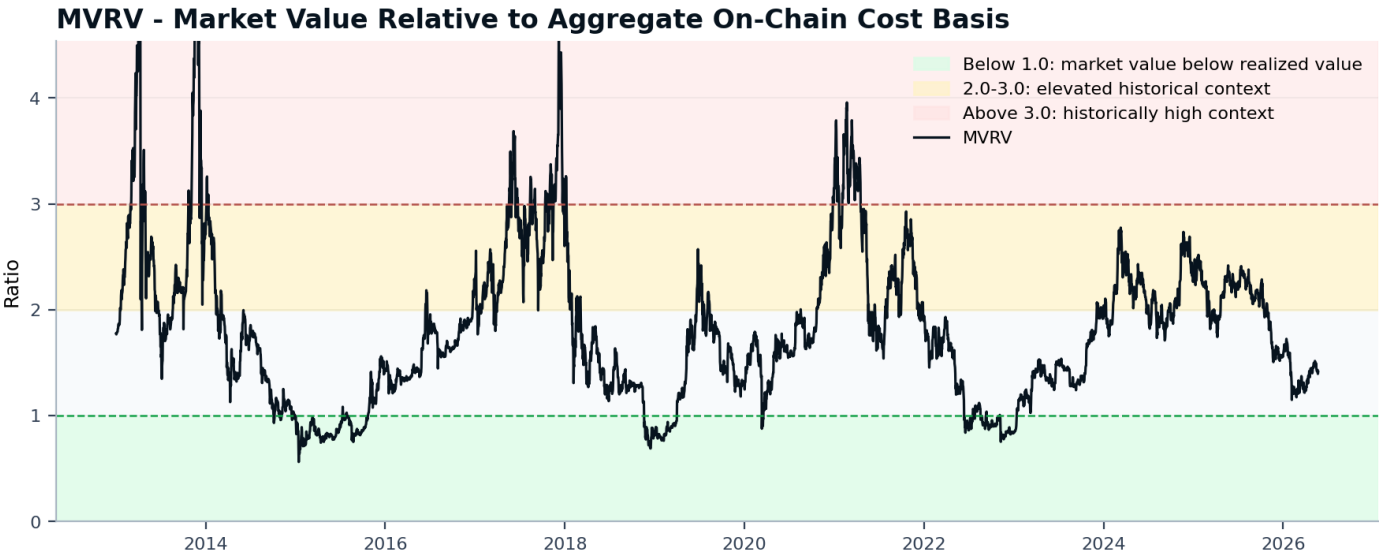
MVRV state	Historical interpretation	Why caution is required
Below 1.0	Market value below realized capitalization	Observed during stressed periods; duration and macro context vary.
1.0-2.0	Market value modestly above aggregate cost basis	The most common range in the 2013-May 2026 sample.
2.0-3.0	Elevated relative to realized value	Can persist; does not identify an exact turning point.
Above 3.0	Historically high relationship	Rare in the sample, but threshold stability is not guaranteed.

- Use matched inputs. Market cap and realized cap must use the same timestamp and compatible price methodology.
- Use the full history. A ratio without its empirical distribution is difficult to interpret.
- Document variants. Free-float MVRV, Z-scores and cohort MVRV answer different questions.
- Avoid binary labels. “Undervalued” and “overvalued” are conclusions requiring additional evidence, not automatic outputs.

MVRV

Historical MVRV Context

Daily history shows that the relationship is cyclical, skewed and regime-dependent. The bands below are descriptive only.



Source: Coin Metrics Community Data, daily. Bands are descriptive historical context, not forecasts.

10TH PERCENTILE

0.92x

1 Jan 2013-23 May 2026

MEDIAN

1.72x

1 Jan 2013-23 May 2026

90TH PERCENTILE

2.72x

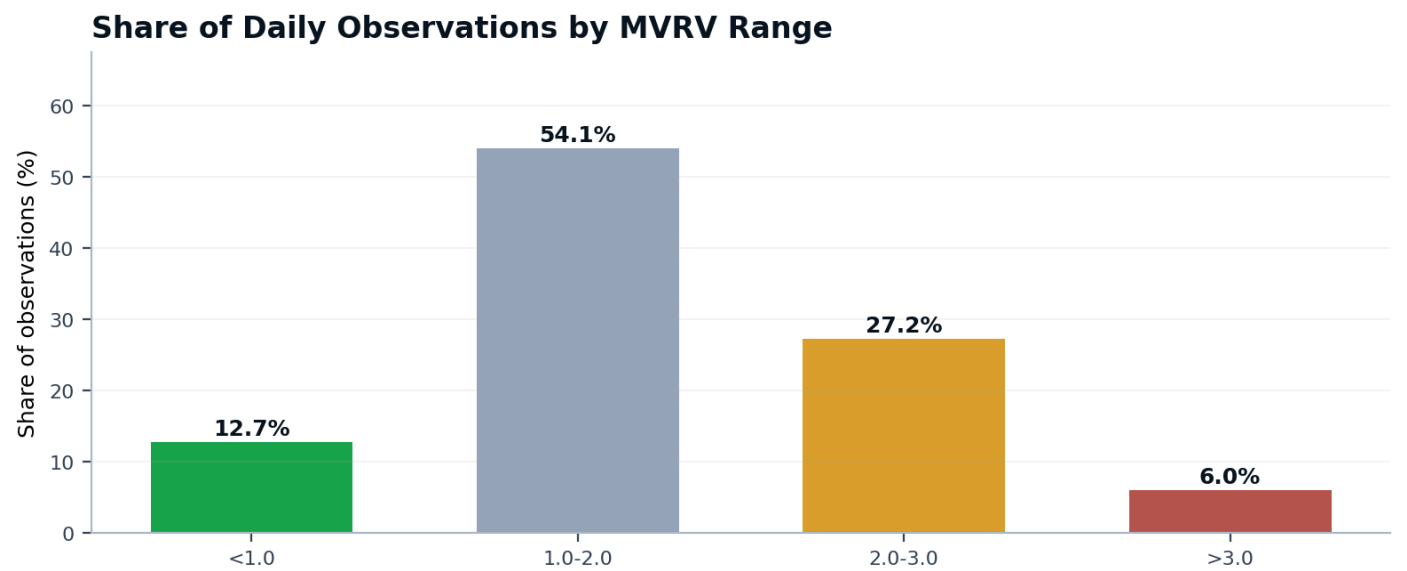
1 Jan 2013-23 May 2026

Reading principle. Percentiles describe where an observation sits inside this historical sample. They do not prove mean reversion, specify timing or account for structural changes in market access, custody, accounting, derivatives or ownership.

MVRV

How Often Has Each Range Occurred?

The distribution helps replace visual intuition with a transparent frequency statement.



Source: Coin Metrics Community Data. Daily observations from 1 Jan 2013 to 23 May 2026.

Range	Share of daily observations	Institutional reading
Below 1.0	12.7%	Historically uncommon stress context; not a guaranteed floor.
1.0-2.0	54.1%	Most frequent range in the selected sample.
2.0-3.0	27.2%	Elevated relationship that has persisted for meaningful periods.
Above 3.0	6.0%	Rare historical context; not a deterministic market top.

Sample choice matters. Changing the start date, data provider, supply treatment, reference rate or metric variant changes the distribution. Governance requires versioning the calculation rather than treating a chart screenshot as permanent truth.

BEHAVIORAL CONTEXT

SOPR: Profit and Loss Embedded in Spent Outputs

SOPR shifts the analytical unit from the entire supply to outputs that moved during the observation window.

Conceptual formula

$$\text{SOPR} = \frac{\text{USD value of spent outputs at spend time}}{\text{USD value of those outputs at creation time}}$$

SOPR reading	Basic interpretation	Critical caveat
Above 1.0	Spent outputs moved at an aggregate profit	Movement is not always a sale; exchange and internal transfers may be included.
Near 1.0	Aggregate spent-output value near cost basis	Noise, fee treatment and short-lived outputs can dominate.
Below 1.0	Spent outputs moved at an aggregate loss	Can reflect capitulation, rebalancing or operational transfers.

Why this report does not publish a live SOPR number. A defensible publication must specify the exact provider, metric variant, filters, time window, reference price and data cutoff. Because the Community dataset used for the report does not include the SOPR series, the report presents the methodology rather than inventing or mixing an unverified value.

- Variant discipline: raw SOPR, adjusted SOPR and cohort-specific SOPR are not interchangeable.
- Smoothing discipline: daily readings can be volatile; any moving average must be disclosed.
- Behavioral discipline: treat SOPR as evidence of realized on-chain economics, not direct evidence of exchange selling.

NETWORK ACTIVITY

NVT: Valuation Relative to On-Chain Transfer Activity

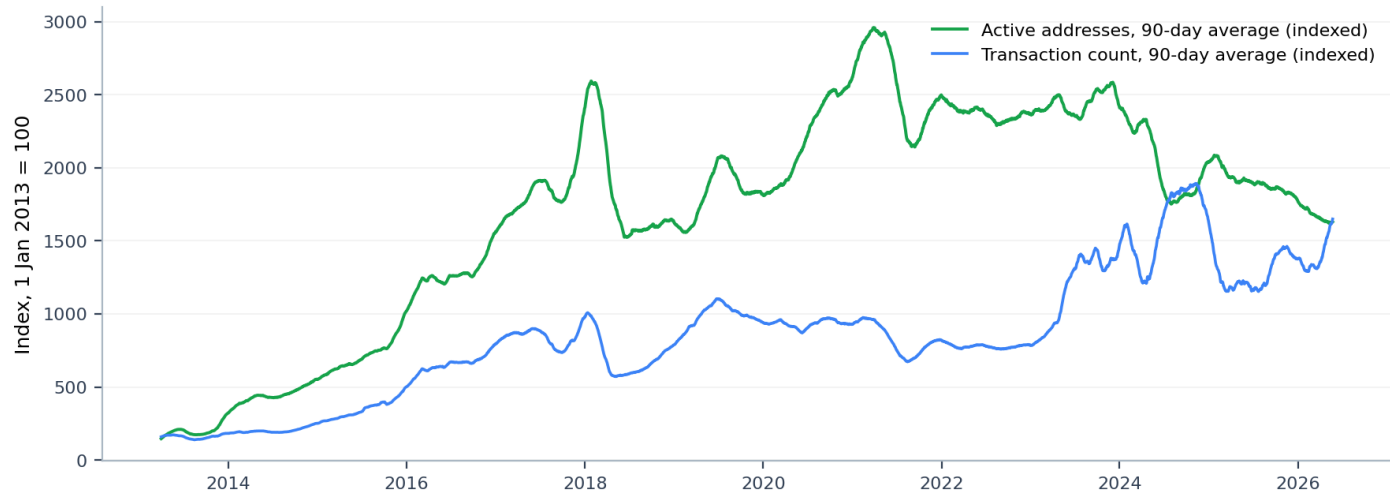
NVT compares network value with a transfer-activity denominator, creating an analogy to a price-to-activity multiple rather than an earnings multiple.

Conceptual formula

$$\text{NVT} = \text{Network value} / \text{Adjusted on-chain transfer value}$$

Longer-window variants reduce denominator volatility but introduce lag.

Network Activity Context - Indexed Measures



Source: Coin Metrics Community Data. Indexed to 100 on 1 Jan 2013; not a valuation target.

Construction decision	Why it matters
Transfer adjustment	Change outputs, self-churn and entity behavior can inflate raw transfer value.
USD or native units	Price conversion can add market noise; native-unit formulations answer a different question.
Daily vs moving average	Short windows are responsive; long windows are smoother but slower.
Layer coverage	On-chain metrics may omit activity occurring inside custodians, exchanges or second layers.

NETWORK EFFECTS

Metcalfe-Style Models: Useful Hypothesis, Dangerous Shortcut

Network-effect models relate a value proxy to a measure of network participation, often using a power-law form.

Generalized form

Network value = k x N^{alpha}

N may represent active addresses, users, entities, transaction participants or another adoption proxy. The coefficient k and exponent alpha must be estimated, tested and re-estimated.

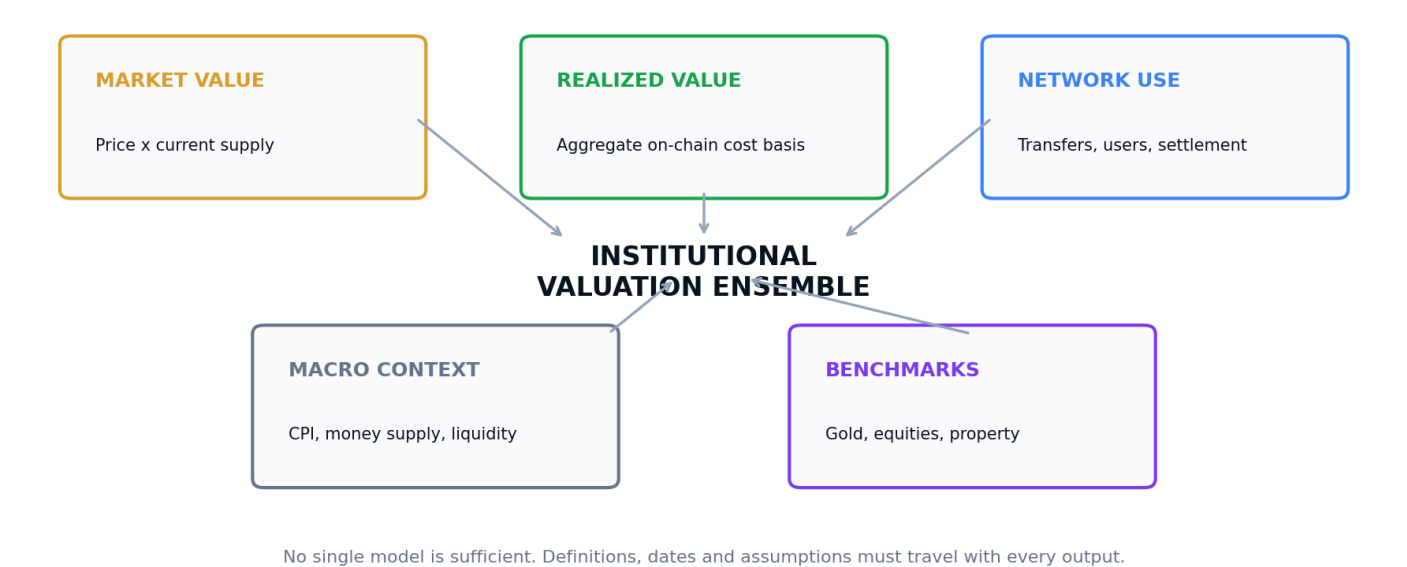
Model risk	Institutional control
Addresses are not users	Test multiple activity proxies and document entity-adjustment limitations.
Spurious time trends	Use stationarity tests, holdout windows and naive-baseline comparisons.
Exponent instability	Estimate rolling parameters and report confidence intervals.
Circular calibration	Avoid calibrating to the same market value the model claims to explain.
Layer migration	Account for activity moving to custodians, exchanges and second-layer systems.

Report position. Metcalfe-style models are educational adoption frameworks, not price targets. Academic literature contains both supportive and critical findings; therefore, any deployment must include out-of-sample testing, alternative functional forms and explicit model-failure criteria.

MODEL ENSEMBLE

Triangulate Instead of Worshipping One Metric

The purpose of an ensemble is not to average incompatible numbers. It is to organize independent evidence, identify agreement and expose disagreement.



Layer	Example measures	Decision use
Market value	Price, market cap, liquidity, volatility	Current mark and execution context
Cost basis	Realized cap, realized price, MVRV	Distance from aggregate on-chain basis
Behavior	SOPR, realized profit/loss, dormancy	How moved supply is behaving
Network use	Adjusted transfers, active entities, fees	Activity and settlement context
Macro	CPI, M2, rates, liquidity	Real purchasing power and monetary backdrop
Benchmarks	Gold, equities, property	Opportunity cost and portfolio context

Disagreement is information. A low MVRV alongside weak network activity and restrictive liquidity is not the same state as a low MVRV alongside improving usage and expanding liquidity. The ensemble should preserve those distinctions rather than compress them into one traffic-light score.

Purchasing Power

Nominal price changes describe units of currency. Purchasing-power analysis asks what those units can buy after an explicit inflation adjustment.



DEFINE THE DEFLATOR

Name the CPI series, base date, frequency and seasonal treatment.

SEPARATE NOMINAL / REAL

Do not present nominal appreciation as purchasing-power gain.

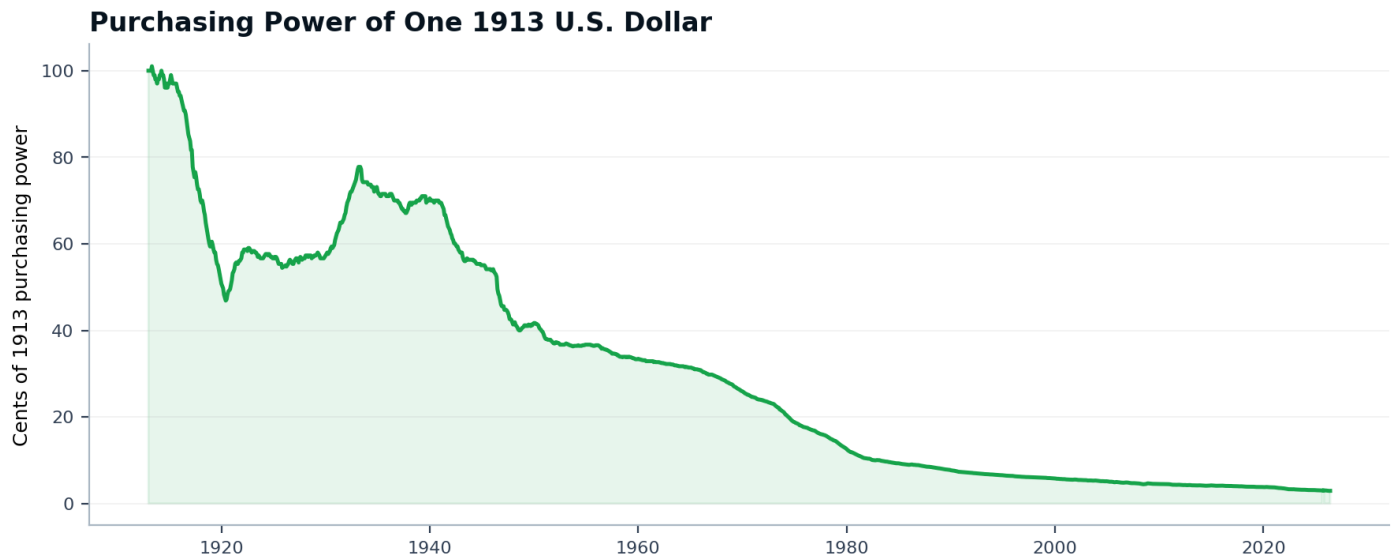
MATCH THE USER

A national CPI is an average and may not match an institution's liability set.

PURCHASING POWER

The Long Erosion of a 1913 U.S. Dollar

Using the BLS CPI-U series, one January 1913 dollar retained about 2.9 cents of its original purchasing power by June 2026.



Source: U.S. Bureau of Labor Statistics, CPI-U All Items, not seasonally adjusted. Through Jun 2026.

JAN 1913 CPI

9.8

BLS CPI-U, NSA

JUN 2026 CPI

333.952

BLS CPI-U, NSA

PURCHASING POWER

2.93 cents

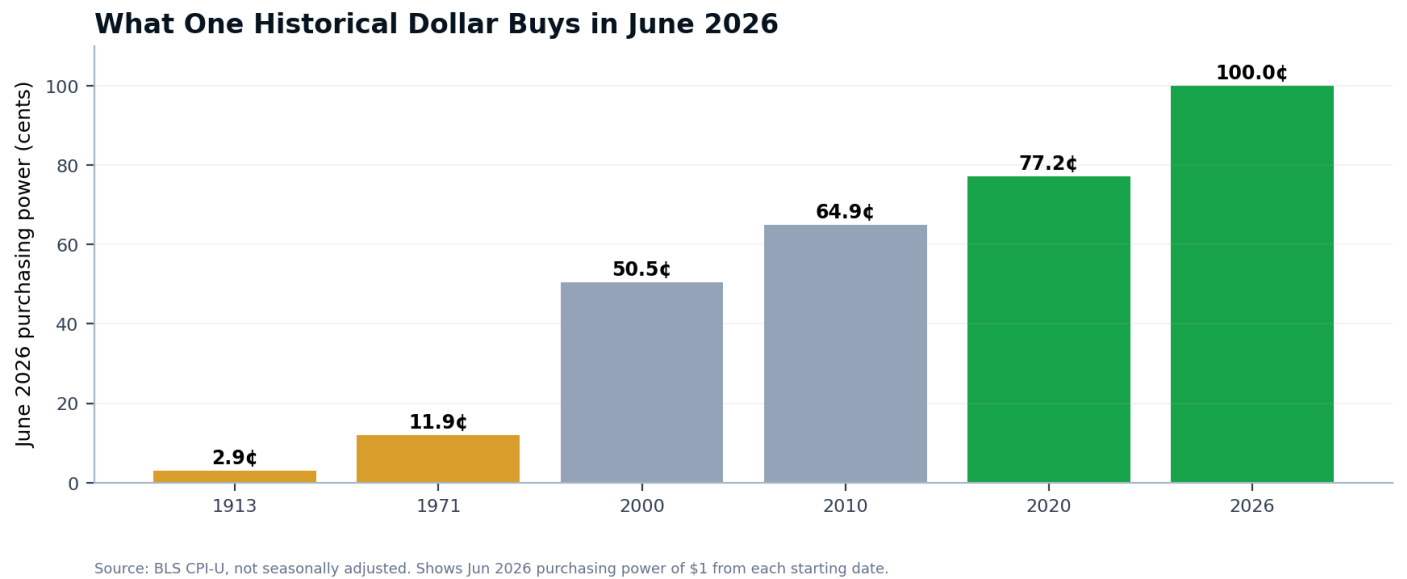
\$1 from Jan 1913 in Jun 2026

Calculation: $9.8 / 333.952 = 0.02935$. This is a general U.S. urban-consumer price-index calculation. It is not a claim about every household, institution, geography or consumption basket.

PURCHASING POWER

The Start Date Changes the Story

Purchasing-power loss is path-dependent. A dollar from 1971, 2000 or 2020 carries a different real-value comparison than a dollar from 1913.



Starting date	Approx. Jun 2026 purchasing power of \$1	Interpretation
Jan 1913	\$0.029	Long-run comparison across more than a century.
Jan 1971	\$0.119	Pre-fiat-transition reference often used in monetary discussions.
Jan 2000	\$0.505	Modern multi-cycle benchmark.
Jan 2010	\$0.649	Post-GFC benchmark.
Jan 2020	\$0.772	Pre-pandemic benchmark.
Jun 2026	\$1.000	Current reference month.

SOURCE / INTERPRETATION NOTE

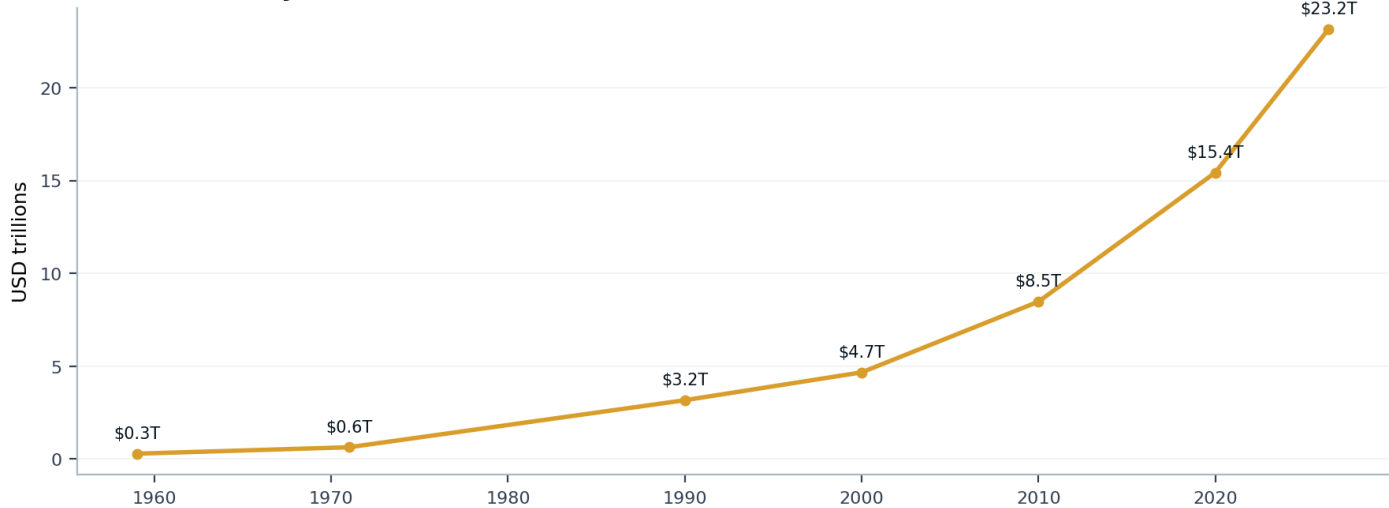
Values use BLS CPI-U All Items, not seasonally adjusted. Exact results depend on the selected month and index series. A corporate liability basket should use a deflator aligned to its actual costs.

MONETARY CONTEXT

M2 Expansion Is Context, Not a Bitcoin Valuation Formula

Broad money can frame nominal liquidity and unit-of-account expansion, but the relationship between M2, consumer prices and asset prices is neither fixed nor contemporaneous.

U.S. M2 Money Stock - Selected Milestones



Source: Federal Reserve Board / FRED M2SL. Selected monthly observations; Jun 2026 latest. Definition changed in May 2020.

JAN 1959 M2

\$0.287T

Federal Reserve / FRED

JAN 2020 M2

\$15.425T

Federal Reserve / FRED

JUN 2026 M2

\$23.155T

Federal Reserve / FRED

Definition warning. The composition of M2 changed in May 2020 following changes to the regulatory treatment of savings deposits. Long-run charts remain useful, but researchers should disclose the break and avoid implying a mechanically stable money-to-asset multiplier.

REAL VALUE

Nominal Return, CPI-Adjusted Return and M2-Relative Return

Each calculation answers a different question. Using one label such as “wealth preservation” without naming the benchmark creates ambiguity.

Measure	Formula	Question answered
Nominal return	Ending value / beginning value - 1	How many more currency units?
CPI-adjusted return	(1 + nominal return) / (1 + inflation) - 1	How much general purchasing power changed?
M2-relative return	Asset index / M2 index - 1	Did the asset outpace the selected broad-money measure?
Gold-relative return	Bitcoin index / licensed gold benchmark index - 1	How did Bitcoin perform against gold?
Equity-relative return	Bitcoin index / total-return equity index - 1	How did Bitcoin compare with reinvested equity exposure?

Worked educational framework.

Suppose an asset rises 50% while the chosen CPI rises 10%. The real return is $(1.50 / 1.10) - 1 = 36.4\%$, not 40%. This is a mathematical illustration only; it is not a forecast or portfolio recommendation.

- Match frequencies. Do not compare a daily close with an annual-average inflation figure without explaining the transformation.
- Use total return where relevant. A price-only equity index excludes dividends and is not a complete wealth comparison.
- Respect licensing. Some benchmark series restrict reproduction or redistribution.
- Separate currency from liabilities. Institutions should also compare assets with their own funding and operating-cost structure.

Comparative Benchmarks

Cross-asset analysis is only credible when the benchmark, return convention, liquidity assumption and data licence are explicit.



GOLD

Use a licensed benchmark and distinguish price from total storage economics.

EQUITIES

Prefer total return; a price index omits dividends.

REAL ESTATE

Account for geography, leverage, income, costs and illiquidity.

BENCHMARK: GOLD

Gold Is a Monetary Asset, but the Dataset Is Not Free to Treat Casually

The LBMA Gold Price is a global benchmark administered by ICE Benchmark Administration. Real-time and historical benchmark use or redistribution requires appropriate licensing.

Dimension	Bitcoin	Gold benchmark consideration
Supply	Protocol-defined issuance and 21 million cap	Above-ground stock grows through mining and recycling.
Settlement	Native digital settlement; custody architecture varies	Physical, allocated or unallocated claims; location matters.
Yield	No native cash flow	No native cash flow; storage and financing costs can apply.
Trading hours	Continuous global markets	OTC and exchange markets with benchmark auction times.
Benchmark rights	Provider terms apply to reference rates	IBA licence required for LBMA benchmark data use.

Report treatment. This publication does not reproduce a historical LBMA Gold Price series because benchmark data rights must be respected. A production website can display licensed gold data or use a clearly documented alternative source whose redistribution terms permit publication.

Institutional comparison question. Is the objective to compare spot price, inflation-adjusted price, investable total return after custody/storage, liquidity under stress, or portfolio drawdown behavior? Each produces a different benchmark.

BENCHMARK: EQUITIES

A Price Index Is Not a Total-Return Portfolio

The S&P; 500 reference carried by FRED is a daily price index and explicitly excludes dividends. Reproduction also requires prior permission from S&P; Dow Jones Indices.

S&P 500 CLOSE

7,316.15

29 Jul 2026 | FRED / S&P DJI

INDEX TYPE

Price only

Dividends excluded

PUBLICATION RULE

Licensed

Do not reproduce series without permission

Comparison choice	Best practice
Price index vs Bitcoin price	Label as price-only; do not imply total return.
Total-return index vs Bitcoin	Use a licensed total-return series with dividend reinvestment.
Volatility comparison	Match frequency, currency, timezone and holiday treatment.
Drawdown comparison	Use identical peak/trough rules and disclose inception-date bias.
Risk-adjusted comparison	State risk-free rate, frequency and annualization method.

Key interpretation. Equities are claims on businesses with cash flows, governance and capital allocation. Bitcoin is a monetary network asset. Comparing historical returns can be useful, but it does not make the economic engines equivalent.

BENCHMARK: REAL ESTATE

Global Property Is Not One Tradable Asset

BIS residential-property statistics provide a broad macro benchmark. They aggregate heterogeneous jurisdictions, property types, weights and reporting lags.

GLOBAL REAL PRICES

-0.6% yoy

Q4 2025 | BIS

ADVANCED ECONOMIES

+0.4% yoy

Q4 2025 | BIS

EMERGING ECONOMIES

-1.4% yoy

Q4 2025 | BIS

Adjustment	Why it matters
Inflation	BIS real series deflate nominal house prices by CPI.
Income	A property total-return framework should include net rent.
Leverage	Mortgage finance can dominate equity returns and drawdowns.
Costs	Taxes, maintenance, insurance and transaction costs are material.
Liquidity	Appraisal and transaction data are slower than liquid markets.
Geography	Global averages can conceal extreme jurisdictional dispersion.

Longer-term BIS context. Real global residential-property prices were almost 20% above post-GFC levels at Q4 2025, while outcomes varied sharply by jurisdiction. This is a macroeconomic context point, not an investable global property return series.

BENCHMARK FRAMEWORK

A Comparison Matrix for Institutional Research

The matrix organizes economic differences before any performance chart is produced.

Dimension	Bitcoin	Gold	Equities	Real estate	M2
Primary exposure	Monetary network asset	Monetary commodity	Business cash flows	Property + rent	Money stock
Native yield	None	None	Earnings/dividends	Net rental income	None
Liquidity	High, 24/7	High, market-dependent	High in listed markets	Low / episodic	Not investable as index
Supply rule	Protocol-defined	Mining / recycling	Issuer-dependent	Development constrained	Policy / banking system
Core risks	Volatility, custody, policy	Custody, financing, price	Business, valuation, governance	Leverage, location, costs	Definition, policy, velocity
Preferred return basis	USD and real	Licensed total cost	Total return	Net total return	Growth rate / real M2

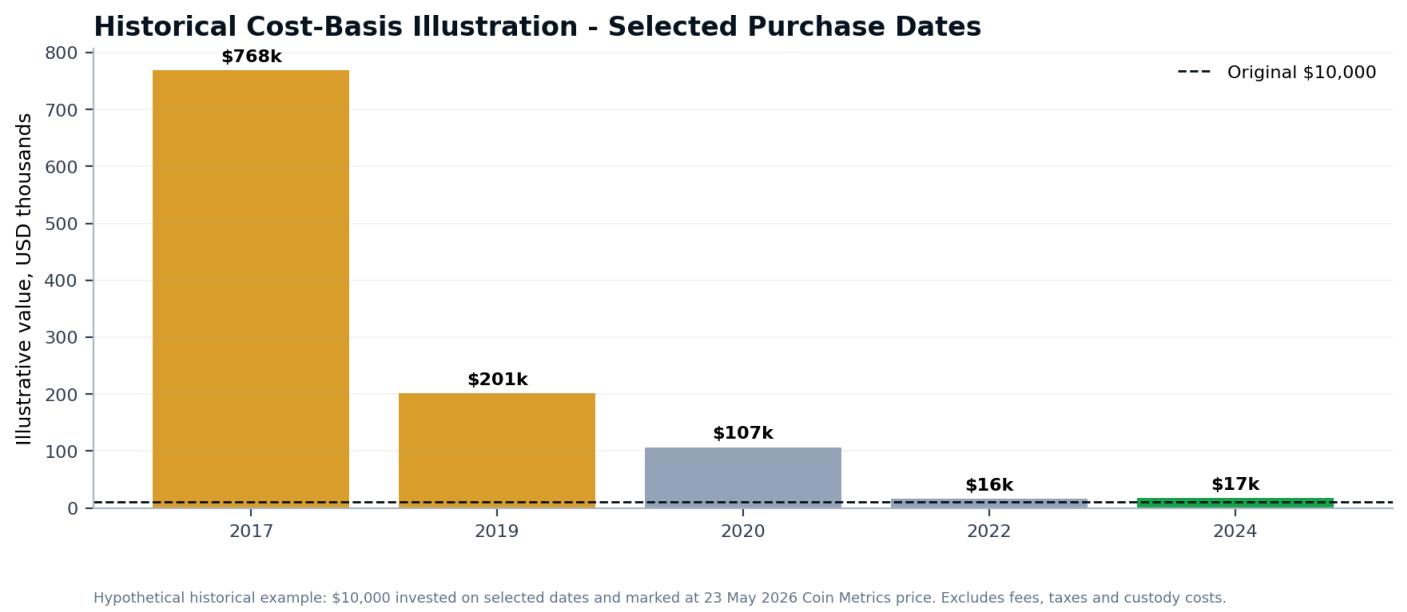
Minimum publication standard. Every comparative chart should disclose: source, licence status, start/end dates, currency, frequency, price or total return, inflation treatment, reinvestment assumptions, transaction costs, and rebalancing rule.

Context ratio - not a valuation target. Bitcoin market capitalization of approximately \$1.283T on 29 July 2026 was about 5.5% of U.S. M2 of \$23.155T in June 2026. The dates differ and the economic objects are not interchangeable; the ratio is shown solely as a scale reference.

HISTORICAL CALCULATORS

Historical Cost-Basis Analysis

A calculator can translate a purchase date and amount into historical outcomes. It must state the price source, cutoff date, treatment of fees and whether results are nominal or real.



Input	Required handling
Purchase date	Use a clearly defined daily reference rate and timezone.
Investment amount	Separate currency amount from BTC quantity.
Fees / spread	Default to explicit user input; never silently assume zero in professional use.
End date	Display fixed historical cutoff and data timestamp.
Inflation adjustment	Name CPI series and base month.
Tax / custody	Exclude unless a jurisdiction-specific, reviewed model exists.

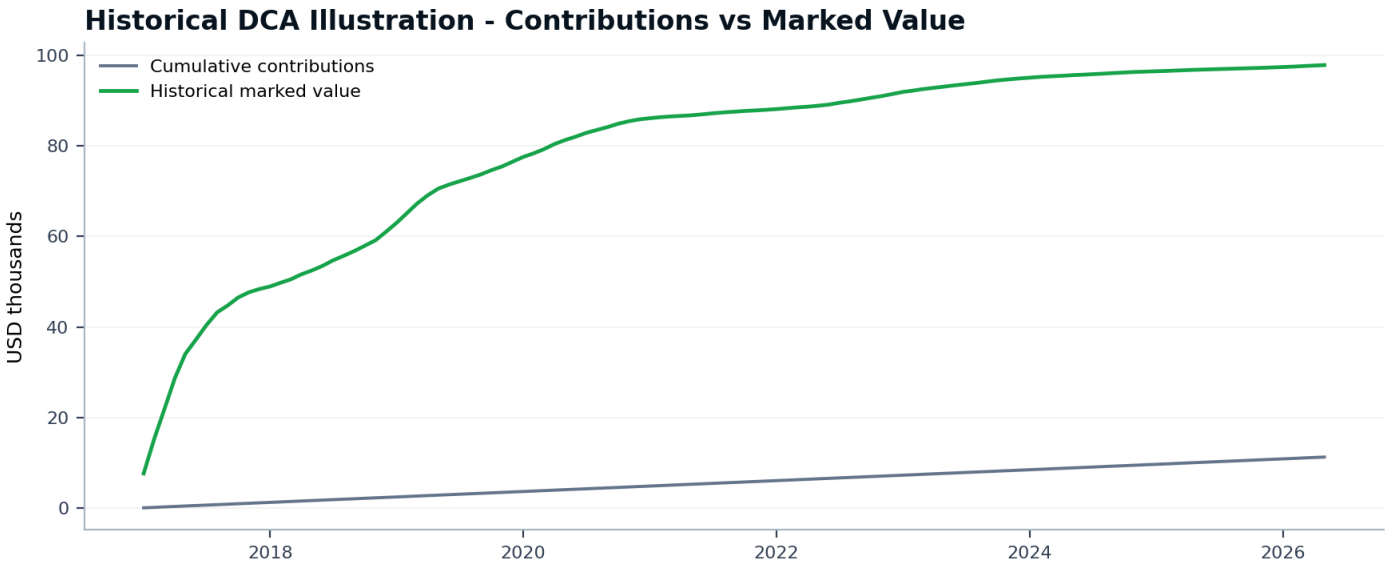
SOURCE / INTERPRETATION NOTE

Chart is a hypothetical historical illustration of \$10,000 invested on selected dates and marked at the Coin Metrics reference price on 23 May 2026. It excludes fees, taxes, custody costs and trading constraints.

HISTORICAL CALCULATORS

Dollar-Cost Averaging as a Historical Framework

DCA changes the timing distribution of purchases. It does not remove asset risk, guarantee profit or establish an optimal allocation.



Hypothetical historical DCA: \$100 at first available daily reference price each month, Jan 2017-May 2026; marked at 23 May 2026. Excludes costs and taxes.

CONTRIBUTIONS

\$11,300

\$100 monthly, Jan 2017-May 2026

BTC ACCUMULATED

1.2762 BTC

Historical reference prices

MARKED VALUE

\$97,783

23 May 2026 | Hypothetical

Scenario limitations. The illustration uses the first available daily reference price in each month, assumes immediate execution, and excludes spreads, fees, taxes, custody costs and missed contributions. Different contribution dates produce different results.

SCENARIO ANALYSIS

Sensitivity Before Conclusions

A professional calculator should show how results change when assumptions change rather than present one output with false precision.

Variable	Base historical example	Sensitivity test	Why it matters
Reference price	Daily Coin Metrics rate	Alternative reputable reference	Provider methodology can differ.
Execution cost	0% for illustration	0.25%, 0.50%, 1.00%	Repeated purchases compound friction.
Contribution date	First available day	1st, 15th, month-end	Path dependency changes accumulated BTC.
Inflation series	CPI-U NSA	CPI-U SA, PCE, liability basket	Real return depends on deflator.
Custody cost	Excluded	Annual percentage or fixed fee	Institutional implementation is not free.
Rebalancing	None	Annual / threshold rules	Can alter risk and realized tax events.

Historical stress framework

For every scenario, display maximum drawdown, longest recovery period, ending value, total contributions, BTC accumulated and real purchasing-power result. Do not show only the most favorable terminal outcome.

- No forward projection by default. Historical calculators should stop at the latest verified data point.
- If scenarios are added, label them hypothetical. A user-entered price is an assumption, not a forecast.
- No personalized recommendation. Tools should not output “buy,” “sell,” “safe allocation” or “retirement target.”
- Reproducibility. Store formula version, data timestamp and assumptions with every exported result.

MODEL GOVERNANCE

Institutional Controls for a Valuation Engine

The quality of a valuation platform is determined as much by governance and traceability as by the visual sophistication of its charts.

Control	Minimum standard	Evidence retained
Source approval	Primary or established institutional provider	Provider, series ID, licence and methodology link
Timestamping	As-of date on every metric and chart	Raw-data retrieval time and timezone
Transformation log	Formula, filters, windows and units	Versioned calculation specification
Cross-checking	Independent source or reconciliation where feasible	Variance report and resolution note
Revision handling	Know whether source data can be revised	Vintage date or last-checked date
Model validation	Backtest, holdout and benchmark comparison	Validation report and failure thresholds
Publication review	Research, compliance and visual QA	Named approvals and release checklist

Traffic-light outputs are prohibited unless the logic is published. Labels such as “undervalued,” “fair value” or “overheated” can imply investment conclusions. Use neutral language - below historical median, 90th percentile, elevated relative to realized cap - and show the underlying evidence.

Stale-data behavior. If a source fails, the interface should display the last verified value with its original timestamp and a visible stale-data warning. It should never silently substitute a placeholder or present an old value as live.

METHODOLOGY AND SOURCES

Definitions, Data Cutoffs and Publication Limitations

Research cutoff: 30 July 2026. Each time-sensitive figure retains its own source date.

Source / series	Use in report
Coin Metrics Community Data - BTC daily CSV	Price history, market cap, MVRV, supply, active addresses and transaction count through 23 May 2026. Realized cap and realized price are derived from matched inputs.
Coin Metrics Product Documentation	Metric definitions and interpretive caveats for realized cap, MVRV, NVT/RVT and SOPR families.
CoinGecko Bitcoin historical data	29 July 2026 closing price and market capitalization reference.
U.S. Bureau of Labor Statistics - CPI-U All Items	Monthly not-seasonally-adjusted CPI for long-run purchasing-power calculations through June 2026.
Federal Reserve Board / FRED - M2SL	Selected monthly M2 observations and June 2026 value; definition change disclosed.
Bank for International Settlements	Q4 2025 global residential-property statistics and real-price context.
LBMA / ICE Benchmark Administration	Gold benchmark definition and data-licensing constraints.
S&P Dow Jones Indices via FRED	29 July 2026 price-index reference; dividends excluded and reproduction restricted.

- On-chain attribution: blockchain movements do not map perfectly to beneficial owners or economic sales.
- Provider variance: supply, price, transfer adjustment and entity heuristics can differ.
- Historical instability: relationships can change with market structure, regulation, custody and technology.
- Benchmark mismatch: assets differ in income, leverage, liquidity, costs and investability.
- Legal scope: this report is not investment, legal, tax or accounting advice.

Primary reference locations
coinmetrics.io / docs.coinmetrics.io | coingecko.com/en/coins/bitcoin/historical_data | download.bls.gov/pub/time.series/cu | fred.stlouisfed.org/series/CPIAUCSL | fred.stlouisfed.org/series/M2SL | bis.org/statistics/pp_residential_2605.htm | lbma.org.uk/prices-and-data | fred.stlouisfed.org/series/SP500

Bitcoin Has Many Valuation Lenses - but No Single Valuation Oracle

The strongest institutional process does not ask one model to deliver certainty. It defines the question, matches the data, preserves disagreement and publishes the limitations.

MARKET VALUE

Use price and market cap for current scale - not aggregate invested capital.

COST BASIS

Use realized cap and realized price as on-chain proxies with attribution caveats.

RELATIVE STATE

Use MVRV with historical distributions, not deterministic threshold labels.

BEHAVIOR / USE

Use SOPR and NVT only with exact variants, filters and activity definitions.

PURCHASING POWER

Separate nominal returns from CPI-adjusted and money-relative results.

BENCHMARKS

Match return conventions, economic engines and data rights before comparison.

The institutional rule.

Measure first. Interpret second. Preserve uncertainty. Never convert historical relationships into guaranteed future outcomes.