

APRIL 2023

# Signals Report

A monthly breakdown of key market metrics that could be impacting price and investor sentiment

Fidelity Digital Assets<sup>SM</sup> Research

## Monthly Observation of Current Market Conditions

Click the boxes to see how we measured conditions.

### Bitcoin

Short-Term Outlook  
( < 1 year )

**Positive**

Mid-Term Outlook  
( 1-5 years )

**Positive**

Long-Term Outlook  
( > 5 years )

**Neutral**

### Ethereum

Short-Term Outlook  
( < 1 year )

**Positive**

Mid-Term Outlook  
( 1-5 years )

**Neutral**

Long-Term Outlook  
( > 5 years )

**Neutral**



# What is this report and how to use it

Digital assets are unique in that they not only generate traditional market signals based on price or trading, but also employ an entirely new set of signals based on public on-chain data. These signals can be valuable for all types of investors, but the challenge lies in determining which signals to use, how to match the signal to the correct investment time horizon, and how to interpret the data correctly.

In this report, we have collected what we think are the most reliable signal indicators, grouped them by time horizon, and provided an overall assessment of the conditions for each time horizon.

We then provide a breakdown of the signals included in each time horizon, their charts, and a short explanation.

## Executive Summary: April 2023

As of the end of April, the data suggests that bitcoin and ether are well positioned in the short-term (less than one-year investment horizon or shorter) with strong price momentum and various moving averages providing support. According to these metrics, bitcoin still appears “cheap” (indicated as a “positive” on our summary chart), but has pulled away from historical lows on some measures. On the other hand, ether is more neutral in terms of cycle position. Our long-term indicators are intended to assess each digital asset’s overall investment thesis, namely determining if the network fundamentals are intact and adoption is increasing. Bitcoin’s fundamentals have slowed, but still maintain key support levels. While Ethereum fundamentals are neutral and on-chain metrics are trending lower, two particular fundamentals, net deflationary issuance and validator count, have remained positive through April, showing that users have remained active and willing to stake funds to secure the network.



# Measurement Breakdown – Bitcoin

Short-Term (< 1 year)		Overall Condition: <b>POSITIVE</b>
NAME	COMMENTARY	CONDITION
<a href="#">Is Price Trading Above the 200-Day?</a>	Yes, has not retested since March 10	
<a href="#">Golden Cross or Death Cross?</a>	Golden Cross formed on February 6	
<a href="#">Price &gt; Realized Price</a>	Yes, 45% higher than realized price	

Mid-Term (1-5 years)		Overall Condition: <b>POSITIVE</b>
NAME	COMMENTARY	CONDITION
<a href="#">NUPL Zone</a>	Remained in the Optimism zone	
<a href="#">MVRV Z-Score</a>	Left the 'market bottom' zone on January 13	
<a href="#">Reserve Risk</a>	Re-entered low-risk zone on January 21 and has since remained in the low-risk zone	
<a href="#">Stock-to-Flow</a>	Bitcoin's price is heavily discounted according to this model	
<a href="#">Puell Multiple</a>	Miners remain in a healthy position according to this model	
<a href="#">Hodler Net Position Change</a>	Long-term holders are net buying and have increased in late April	
<a href="#">Addresses in Profit</a>	69% of addresses are in profit	
<a href="#">Bitcoin Yardstick</a>	Bitcoin is considered cheap	

Long-Term (> 5 years)		Overall Condition: <b>NEUTRAL</b>
NAME	COMMENTARY	CONDITION
<a href="#">Price &gt; 200-Week</a>	Yes, flipped to support on March 16	
<a href="#">Monthly Address Metrics</a>	Stalled in April	
<a href="#">Active Address Momentum</a>	Unchanged in April	
<a href="#">Liquid vs. Illiquid Supply</a>	Maintaining illiquidity	
<a href="#">Balances Over \$1,000</a>	Unchanged	



# Measurement Breakdown – Ethereum

Short-Term (< 1 year)		Overall Condition: <b>POSITIVE</b>
NAME	COMMENTARY	CONDITION
<a href="#">Is Price Trading Above the 200-Day?</a>	Yes, traded above on January 12, retested on March 10, and has remained above	
<a href="#">Golden Cross or Death Cross?</a>	Golden Cross formed on February 8	
<a href="#">Price &gt; Realized Price</a>	Yes, flipped to support on January 10	

Mid-Term (1-5 years)		Overall Condition: <b>NEUTRAL</b>
NAME	COMMENTARY	CONDITION
<a href="#">NUPL Zone</a>	Fell from 'Optimism zone' to 'Fear zone'	
<a href="#">MVRV Z-Score</a>	Trading above the 'market bottom' zone since January 9	
<a href="#">Percent in Profit</a>	Fell 2%, but majority of addresses still in profit	
<a href="#">Pi Cycle Top Indicator</a>	Not yet 'heating up'	

Long-Term (> 5 years)		Overall Condition: <b>NEUTRAL</b>
NAME	COMMENTARY	CONDITION
<a href="#">Monthly Address Metrics</a>	Down in April	
<a href="#">New Address Momentum</a>	Short-term average has fallen below long-term average	
<a href="#">Addresses Over \$1,000</a>	Unchanged through April	
<a href="#">Staking by the Numbers</a>	Unchanged after Shapella upgrade	
<a href="#">Net Issuance and Burn Rate</a>	Net-negative issuance means users are active	



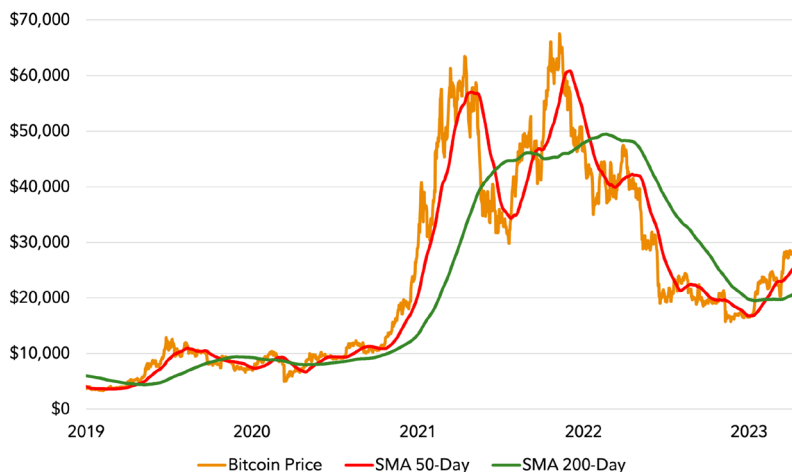
# Bitcoin Data to Watch

## Bitcoin Tests the Short-Term SMA

Bitcoin’s short-term simple moving average (SMA) has continued to widen the gap from the 200-day moving average. Bitcoin’s price remains above the 50-day SMA for now, closely testing this new support level as of the end of April.

**The 200-day moving average is viewed as support when price is above it and resistance when below.** As April ended, the price remained above this support level.

Bitcoin 50-Day vs. 200-Day vs. Price

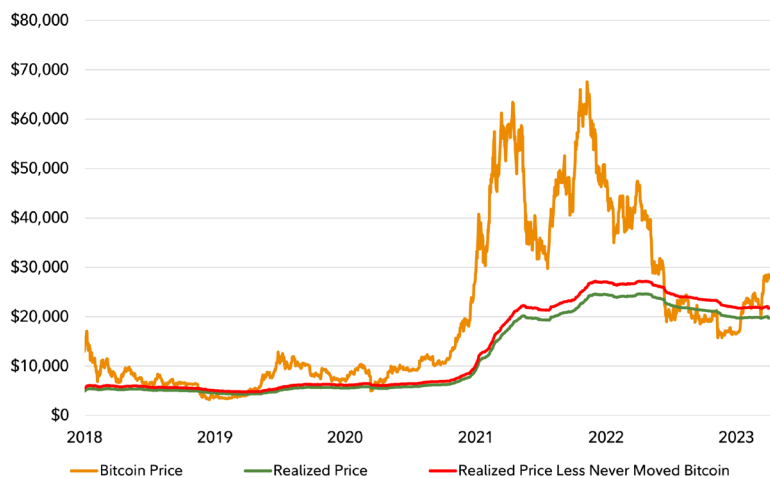


Data Source: Coin Metrics, 04/30/2023.

## Realized Price (Bitcoin)

**Realized price is a metric that aims to capture the average cost basis of all current token holders.** By capturing a token’s last trade price, tokens that are presumed lost can be discounted fairly. Because these funds have not moved in so long, they are not available for purchase and, thus, are considered illiquid. Using bitcoin’s realized price as a support or resistance level, we see that the realized price flipped back to a support level in March. Bitcoin has not tested this metric since March 15. Bitcoin is trading about 45% above the realized price, currently around \$20,006 at the time of writing.

Bitcoin Realized Price vs. Price



Data Source: Coin Metrics, 04/30/2023.

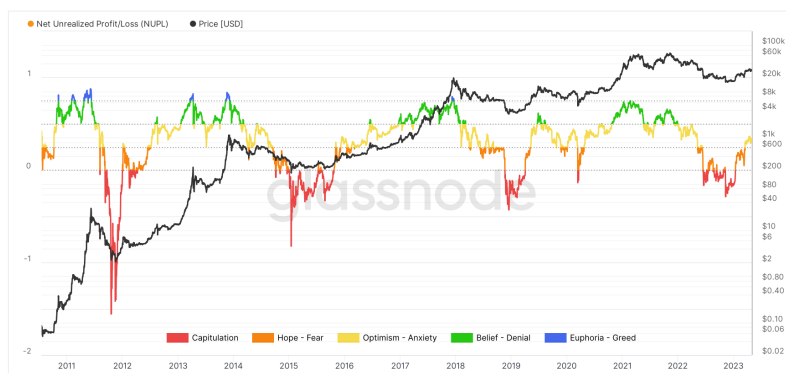
Why are there two “realized” prices? Another way to calculate realized price is by including or, more accurately, omitting bitcoin that isn’t technically part of the current supply. This means omitting any coins thought to be controlled by mysterious creator Satoshi Nakamoto, or in our metric, any bitcoin that has never moved after being mined. We use the “never moved” calculation because different people speculate different amounts of bitcoin mined by Satoshi. It’s also easier to use this calculation because it is data-based and will automatically include coins that were previously written off as lost. This metric currently suggests roughly 1.77 million bitcoin are lost or have never moved. Using the “never moved” realized price metric, bitcoin currently trades roughly 31% above the \$22,024 realized price.



## NUPL Score (Bitcoin)

Historically, this metric does a good job assessing overall market sentiment. Bitcoin’s NUPL score has been quite **volatile** during April; however, it has maintained its positioning in the “Optimism – Anxiety” zone. This tells us that the market remains uncertain as to where bitcoin’s price is heading. However, since the beginning of 2023, Bitcoin’s NUPL score has been continuing its upward trajectory, showing a longer-term bullish sentiment. Read more [here](#).

### Bitcoin: Net Unrealized Profit/Loss (NUPL)



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Data Source: Glassnode, 05/01/2023.

## MVRV Z-Score (Bitcoin)

The MVRV Z-Score is used to assess when bitcoin is overvalued or undervalued relative to its “fair value.” When market value is significantly higher than realized value, it has historically indicated a market top (red zone), whereas the opposite has indicated market bottoms (green zone). This metric currently appears neutral given that the score is no longer trading within the green zone. However, we can see that each time the score has touched the green area (undervalued), the price has later created a new all-time-high.

### Bitcoin: MVRV Z-Score



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Data Source: Glassnode, 05/01/2023.

## Reserve Risk (Bitcoin)

Reserve risk is used to assess the confidence of long-term holders relative to the native coin’s (bitcoin) price at a given point. When confidence is high and price is low, there is an attractive risk/reward to invest (Reserve Risk is low). When confidence is low and price is high, risk/reward is unattractive (Reserve Risk is high). Reserve risk has been slowly climbing since the beginning of 2023 and stayed in the ‘green zone’ in April. Read more [here](#).

### Bitcoin: Reserve Risk



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Data Source: Glassnode, 05/01/2023.



## Stock-to-Flow (Bitcoin)

The **Stock-to-Flow (S/F) Deflection** is the ratio between the current bitcoin price and the S/F model. If deflection is  $\geq 1$ , it means that bitcoin is overvalued according to the S/F model, otherwise undervalued. We think the stock-to-flow model may not be as relevant today as in the past, so use caution with this metric. However, this metric may still be interesting. Bitcoin's current price is still trading approximately 75% below what the S/F model would anticipate.

### Bitcoin: Stock-to-Flow Detection



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Data Source: Glassnode, 05/01/2023.

## Puell Multiple (Bitcoin)

Created by David Puell, the **Puell Multiple** shows when miner profitability is low compared to the past year. When the Puell multiple is high, it means that mining revenue is higher than last year's average. Historically, when this metric is in the high red zone, it has generally corresponded to cycle tops. This metric currently suggests that miner profitability sits approximately 1.5x higher than last year. This translates to miners being in a familiar profit margin zone. While the Puell Multiple has continued to climb, it remains in-between both the red and green zones, signifying that current miners are in a healthy position to maintain or increase their hash rate.

### Bitcoin: Puell Multiple



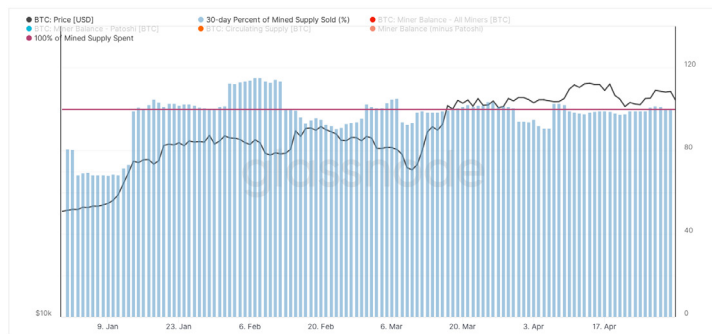
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Data Source: Glassnode, 05/01/2023.

The Puell Multiple is calculated by dividing the daily issuance value of bitcoin (in USD) by the 365-day moving average of daily issuance value. Put simply, it shows how today's block reward compares to the average of the last 365 days.

### Bitcoin: Miner Percent Mined Supply Spent



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Data Source: Glassnode, 05/01/2023.

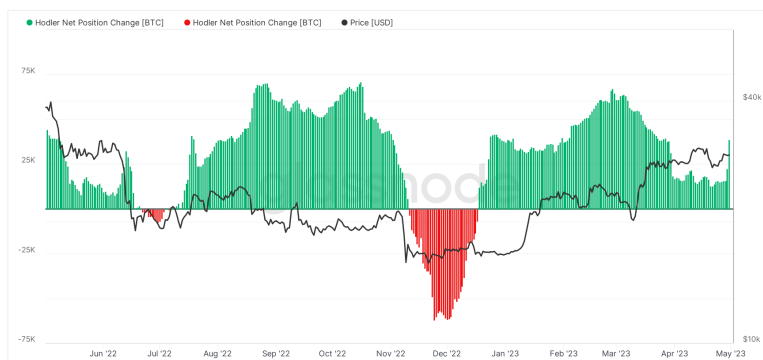
Here we can see the pattern of miners flipping between needing to sell reserves and accumulating. The red line shows miners selling 100% of the block reward. If the blue bars are above 100%, that means they sold the block reward and had to sell some of their reserves. After the jump from \$25,000 to \$28,000, miners were able to accumulate and add to their reserves. However, profitable mining incentivizes new and old participants to (re)join, which lowers the average profit margin as block rewards are distributed among a bigger pool of participants.



## Hodler Net Position Change (Bitcoin)

**Hodler Net Position Change** shows the monthly position change of long-term investors, known in Bitcoin culture as “Hodlers” or “HODLers.” It indicates when long-term investors sell (negative) and when they accumulate (positive) net-new positions. Recent data shows that long-term holders continue to buy and have reversed the slowing buy trend with a substantial uptick in buys on April 30. This could mean that long-term investors took profits around the \$30,000 level and are starting to accumulate again. The last time the net position was negative was when bitcoin’s price dropped below \$16,000 and stayed negative until December 18, 2022. It may be meaningful to note that the last day of April included a net change of 38,925 bitcoin, 121% higher than the month’s average of roughly 17,606 bitcoin per day. May 1 closed with a net change of 41,795 bitcoin, which could signal the start of long-term investors’ accumulation.

### Bitcoin: Hodler Net Position Change



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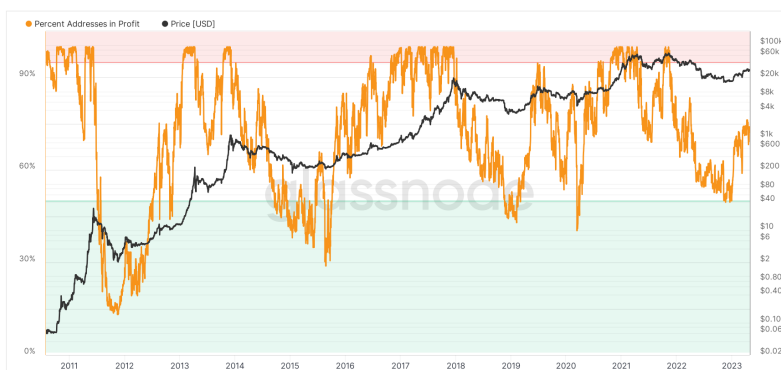
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Data Source: Glassnode, 05/01/2023.

## Addresses in Profit (Bitcoin)

**Here is the percentage of unique addresses whose funds have an average buy price that’s lower than the current price.** “Buy price” is defined as the price at the time coins were transferred to an address. This metric briefly touched the green area earlier this year, which shows that most buyers were underwater below \$17,000. With the recent bitcoin price briefly eclipsing \$30,000 in April, but then dropping to the current price of \$28,000, the average buy price was raised by those hoping for the start of a new bull run. This caused the percentage of addresses in profit to fall roughly 3%. The total percent of addresses in profit now sits around 69% as of May 1.

### Bitcoin: Percent of Addresses in Profit



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Data Source: Glassnode, 05/01/2023.



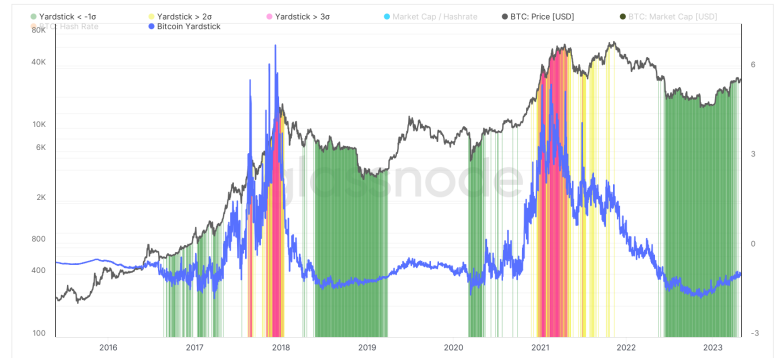


## Bitcoin Yardstick

The Bitcoin Yardstick, or Hashrate Yardstick, is similar in concept to a Price-to-Earnings (PE) Ratio. However, instead of stock price divided by company earnings, it calculates Bitcoin's total market cap divided by its hash rate (a measure of energy being expended to secure the network). The idea is that the lower the ratio, the "cheaper" bitcoin looks, just like a lower PE ratio can be interpreted as a "cheap" stock.

Currently, the Yardstick is telling us that bitcoin is registering under one deviation of the mean, highlighted in green, which has historically meant "cheap" bitcoin. The higher score, highlighted in red, aims to show an expensive bitcoin zone. We are currently trading in a neutral zone, only flashing "cheap" bitcoin five times during the month.

### Bitcoin: Bitcoin Yardstick



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Data Source: Glassnode, 05/01/2023.

## 200-Week Moving Average (Bitcoin)

The 200-week moving average is a long-term indicator and, until this bear market, bitcoin had rarely traded below it. In the past 12 years, bitcoin's price has only traded below this metric for ~9% of the time. In April 2023, the 200-week SMA continued to act as a support level. April 30 marked the 45th day in a row that bitcoin's price remained above the 200-week metric, further cementing its new role as support. The current 200-week metric has risen to approximately \$25,900.

### Bitcoin Price Trading Under the 200-Week SMA

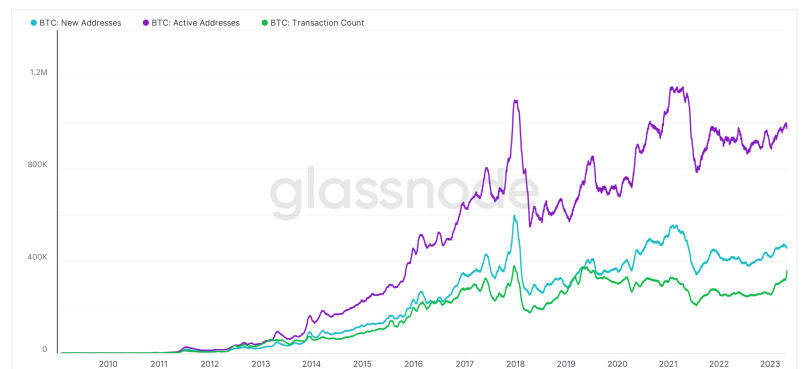


Data Source: Coin Metrics, 04/30/2023.

## Monthly Address Metrics (Bitcoin)

Charted below are the monthly metrics for transaction count, new addresses, and active addresses. Since the beginning of April, we have seen a rise in transaction count. Our research suggests this could be due to a new experiment involving [ordinals](#).<sup>1</sup> While ordinals seem to be a hot topic for investors, we think safe experimentation on the Bitcoin network is overall positive. Active addresses remain mostly unchanged, growing 0.4%, while new addresses have fallen 2%.

### Bitcoin: Monthly Address Metrics



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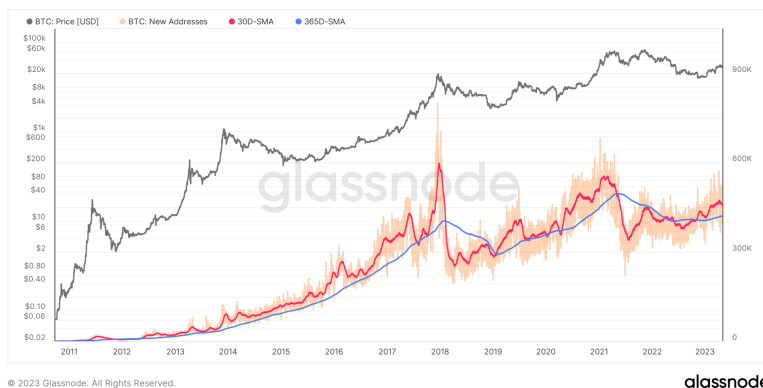
Data Source: Glassnode, 05/01/2023.



## Address Momentum (Bitcoin)

Another way of looking at addresses is by measuring relative momentum. In this chart, we compare the short-term momentum (30-Day SMA) to the longer-term average (365-Day SMA). When the monthly average is greater than the yearly, that indicates higher on-chain activity. When the opposite occurs, that indicates a decline. Here, we are seeing the monthly average moving slowly downward toward the yearly average, indicating lower network usage. However, with the rise of ordinal transactions, we have not seen a decrease in demand for block space. The shorter-term seems to have peaked in early April.

### Bitcoin: New Address Momentum



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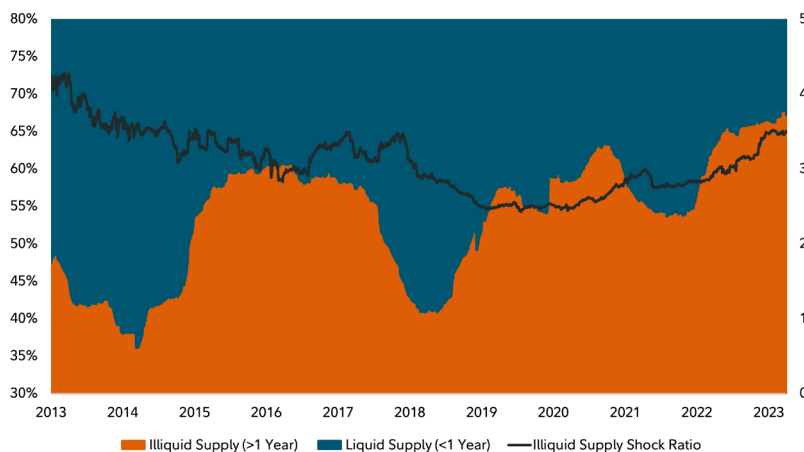
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Data Source: Glassnode, 05/01/2023.

## Liquid vs. Illiquid Supply (Bitcoin)

Bitcoin’s illiquid supply is maintaining its current level of approximately 67%. The last all-time-high was created on March 29 at roughly 68% illiquid supply. Another interesting metric in the chart, the “Illiquid Supply Shock Ratio,” attempts to model the probability of a supply shock. When the supply shock ratio trends higher, it indicates that the current sold supply is primarily flowing from the liquid supply. However, when the opposite occurs, the illiquid supply is falling as long-term holders most likely try to exit the market, usually in profit. Above, the illiquid supply shock ratio appears to be slowly rising. It remains unclear if illiquid supply holders will start to take profit at this level or if price will need to climb to incentivize selling. Either way, assuming demand holds, if the liquid supply doesn’t increase, then the price could react positively.

### Bitcoin Liquid vs. Illiquid Supply



Data Source: Coin Metrics, 04/30/2023.

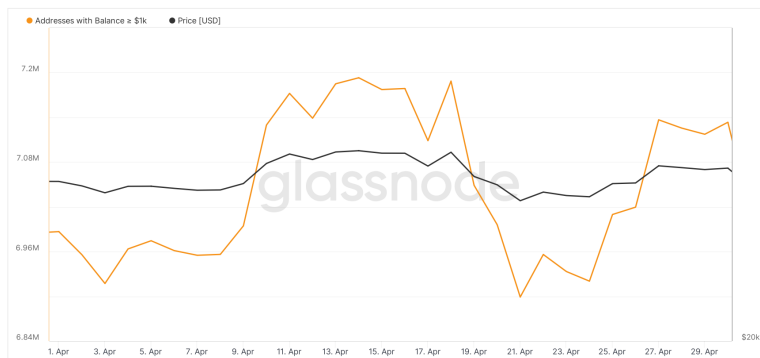


## Balance over \$1,000 (Bitcoin)

This metric shows how many addresses hold more than \$1,000 in bitcoin. Here we see small addresses slowly accumulating bitcoin. More interestingly, if we zoom in on April, we can see that these users might have been trading emotionally, buying when the price rose to \$30,000 and slowing the purchases when price fell back below \$28,000.

Since the beginning of 2023, the number of addresses with over \$1,000 in bitcoin has grown over 31%, suggesting that new users are joining the network and buying from the liquid supply.

### Bitcoin: Number of Addresses with Balance ≥ \$1k



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Data Source: Glassnode, 05/01/2023.

### Bitcoin: Number of Addresses with Balance ≥ \$1k



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Data Source: Glassnode, 05/01/2023.



# Ethereum Data to Watch

## Ether Remains Above Key Support Levels

We can identify key support levels by charting the 50-day and 200-day moving averages. A “golden cross” formed in February as the price increased, which is up roughly 11% since the golden cross confirmation. Ether’s price has retraced roughly 11% since its peak of around \$2,118 on April 16. As of May 1, ether appears to be looking to test its first support level, the 50-day SMA, at \$1,853. This will be an important support level, given that the next lower support level, the 200-day, sits around \$1,500.

Ethereum: Key Support Levels



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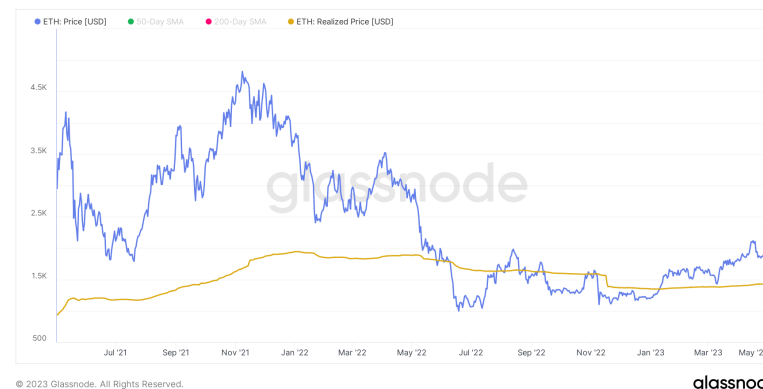
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Data Source: Glassnode, 05/01/2023.

## Realized Price vs. Price (Ethereum)

**Realized Price is a metric that aims to capture the average cost basis of all current token holders.** By capturing a token’s last trade price, tokens that are presumed to be lost can be discounted fairly. Because these funds have not moved in so long, they are not available for purchase and, thus, are considered illiquid. Using ether’s realized price as a support or resistance level, we see that the realized price has flipped back to a support level earlier this year. Since flipping to support on January 10, ether has only appeared to test the new support level in early March. Ether is trading safely above the realized price, roughly 22%, currently around \$1,432 at the time of writing.

Ethereum: Key Support Levels



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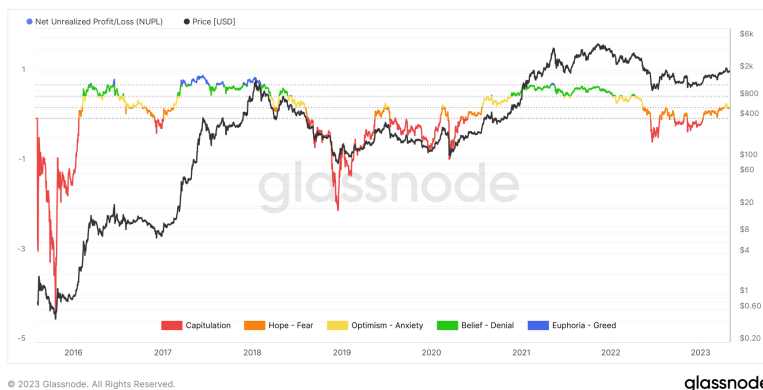
Data Source: Glassnode, 05/01/2023.



## NUPL Ratio (Ethereum)

Historically, this metric has done well predicting overall market sentiment. The chart below shows ether has once again slipped into the 'Hope - Fear' zone after managing to break above the zone in early April. Interestingly, the breakout to the 'Optimism - Anxiety' zone corresponds with the long awaited "Shapella" upgrade that enabled **staking** withdrawals. However, we think this is a neutral zone, given that the market is adjusting to many external variables that are not indicative of **Ethereum's** adoption or usage.

### Ethereum: Net Unrealized Profit/Loss (NUPL)



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Data Source: Glassnode, 05/01/2023.

## MVRV Z-Score (Ethereum)

Market Value to Realized Value (MVRV) is the ratio between market cap and realized cap. It gives an indication of when the trade price is above or below the "fair" value. The current score says ether's market value is estimated to be just over the "fair" zone. Ether's realized price currently sits around \$1,432. Historically, this zone has preceded a bull run or at least sideways price action. In the short-term, this appears not to be a full bull indicator; ether could continue trading between \$1,200 and \$2,200 for a few months.

### Ethereum: MVRV Z-Score



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Data Source: Glassnode, 05/01/2023.



## Percent in Profit (Ethereum)

The percent in profit is the percentage of unique addresses whose funds have an average buy price lower than the current price. "Buy price" is defined as the price at the time coins were transferred to an address. Only externally-owned addresses (EOAs) are counted. This metric hasn't touched the green zone since January 2020, which may be because ether is not necessarily considered a buy-and-hold asset. Ether owners may be using ether for trading, smart contracts in DeFi, or buying other digital assets. Currently, nearly 66% of ether is in profit. In April, the amount of Ethereum addresses in profit fell 2% as the price traded between \$1,821 and \$2,118.

### Ethereum: Percent of Addresses in Profit



Data Source: Glassnode, 05/01/2023.

## Pi Cycle Top Indicator (Ethereum)

The Pi Cycle indicators are composed of the 111-day moving average (111DMA) and a 2x multiple of the 350-day moving average (350DMA x2) of ether's price. This metric shows that when ether becomes significantly overheated (when the shorter MA reaches the larger MA levels), historically it has been a good indicator for cycle tops. When the shorter time frame reaches the longer time frame, the markets are considered to be "heating up." The shorter-term average has been slowly recovering since the start of 2023. As the long-term moving average continues to follow the sunken price downward, it may be setting the stage for more volatility. Whether or not the volatility is to the upside or not could depend on macro factors.

### Ethereum: Pi Cycle Top Indicator [USD]



Data Source: Glassnode, 05/01/2023.



## Monthly Address Metrics (Ethereum)

The amount of monthly Ethereum addresses are slowly declining. However, that is not to say that Ethereum is not pushing forward. With the most recent notable upgrade, "Shapella," which introduced staking withdrawals, there may be a shift in usage. Some participants on Layer 2s have also been attracting new users and causing ether to continue to be burned outside of the primary Layer 1. There continues to be a high burn rate versus issuance, which directly contributes to keeping ether's net issuance negative since [The Merge](#) late last year.

Since the beginning of April, new monthly Ethereum addresses are down 3%, active monthly addresses down 6.7%, and monthly transaction count down 9%.

### Ethereum: Monthly Address Metrics



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Data Source: Glassnode, 05/01/2023.

## New Address Momentum (Ethereum)

**New addresses are defined as unique addresses that appeared for the first time in a transaction. New addresses appear when users create new wallets and transact with them.** This is different from Bitcoin addresses because Ethereum does not create a new address for each transaction. Because of this difference, this metric for momentum may not show direct network usage, but instead could indicate a clearer picture of Ethereum adoption. Below, one can see the short-term moving average of new addresses falling below that of the longer-term moving average. This alone does not indicate that users are leaving the network or demand for block space is declining. Instead, it indicates that the rate of new users joining the network is slowing.

### Ethereum: New Address Momentum



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Data Source: Glassnode, 05/01/2023.



## Addresses with Over \$1,000 (Ethereum)

This is the number of unique, externally-owned addresses (EOAs) holding at least \$1,000 in ether. This metric changes depending on ether’s price, but it can be useful for showing if smaller ether buyers are accumulating. Once again, as with bitcoin investors, there was an uptick in addresses with a balance greater than \$1,000 when ether’s price reached \$2,000. This could be users ensuring they would not be on the sidelines for the next bull run or a coincidence caused by users holding roughly 0.5 ether.

Ethereum: Number of Addresses with Balance ≥ \$1k



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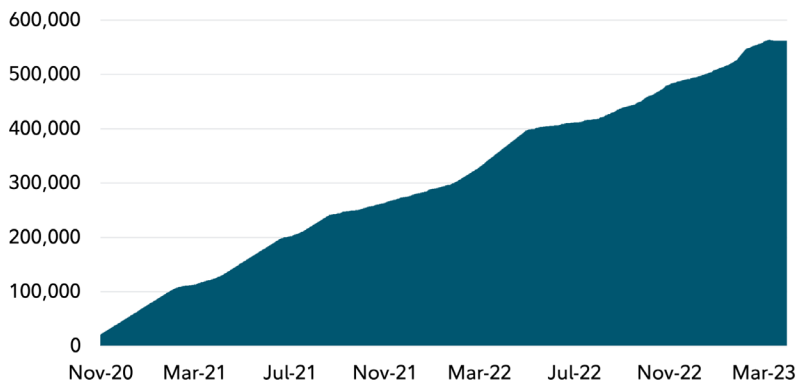
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Data Source: Glassnode, 05/01/2023.

## Staking Numbers/Validators (Ethereum)

The active validator count has stalled for the time being as major institutions, such as Kraken, unwind their staking platform. Validators most commonly require 32 ether to be staked on the network as proof of goodwill that the validator will not act against the consensus. The metric to watch since the [Shanghai upgrade](#) was implemented is the number of active validators. Interestingly, the max percentage change in active validators is currently around 0.3% because the entry and exit queue is roughly 1,800 validators per day. This means that if all staking participants decided to unstake at once, they would be required to participate in consensus until the network accepted their request. It is important to note that as validators leave the network, the individual staking reward will increase. This “incentive pendulum” aims to maintain an equilibrium between security and issuance.

Ethereum: Active Validators



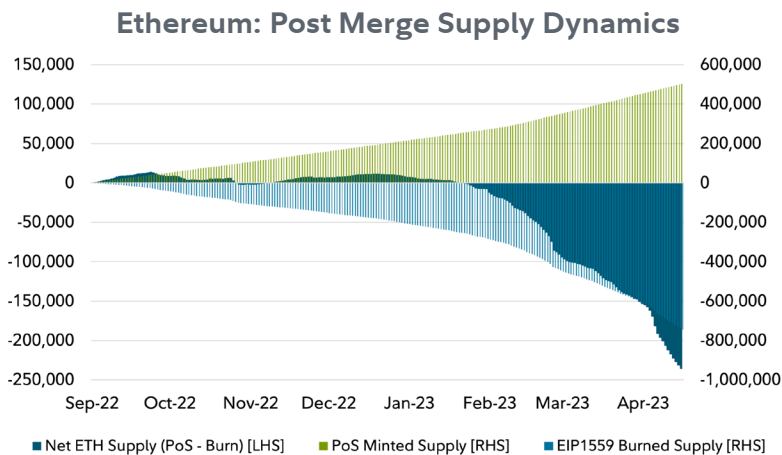
Data Source: Glassnode, 04/29/2023.





## Net Issuance and Burn (Ethereum)

Net issuance (new supply issued by the network minus burned supply from transactions) since The Merge in September 2022 has been negative for over three months now. According to metrics from Glassnode, net issuance since The Merge (September 15, 2022) is approaching -130,000 ether. This is important because, in theory, as ether’s supply is destroyed, it raises the value of the remaining ether. Instead of new coins consistently being issued to stakers without a burn, ultimately driving up the total supply, we see coins being burned by active users at a higher rate than the network issuing coins in staking rewards.



Data Source: Glassnode, 04/30/2023.

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<sup>1</sup> <https://domo-2.gitbook.io/brc-20-experiment/>