DIGITAL ASSETS OUTLOOK

THEBLOCK.CO

DECEMBER 2024

FOREWARD

Welcome to *The Block's 2025 Digital Assets Outlook Report*, a comprehensive analysis of the past year's developments in the cryptocurrency and blockchain space. This report leverages insights across the 25 analysts on our research team and is designed to provide insights to stakeholders across the digital asset ecosystem, from institutional investors and developers to policymakers and enthusiasts.

The report is organized into thematic sections, each focusing on key areas of the industry:

- **Macroeconomic Backdrop**: Contextualizing crypto asset class performance within broader economic trends.
- **Blockchain Networks (Layer 1s & 2s)**: Examining advancements in scalability, and comparing user adoption.
- **End-User Applications (DeFi, NFTs, etc.)**: Highlighting new innovations and competitive dynamics.
- **Regulation and Institutional Involvement**: Analyzing milestones and key adoption trends.

For a quick grasp of the year in review, we've compiled a few highlights:

Top Takeaways from 2024

1. **Market Surge and Legitimacy**: The global cryptocurrency market soared to an all-time high of $3.8 trillion, fueled by a positive macro environment, institutional inflows, regulatory support, and technological breakthroughs.
2. **Bitcoin ETFs Transform Adoption**: Spot Bitcoin ETFs attracted over $110 billion in AUM, with BlackRock's fund leading the charge, solidifying Bitcoin's position in mainstream finance.
3. **Solana Outpaces Ethereum in DEX Activity**: A Solana driven memecoin trading frenzy helped the chain surpass Ethereum in decentralized exchange (DEX) trading volumes for several months, signaling a shift in user preferences towards the high throughput blockchain.
4. **Ethereum's Proto-Danksharding Impact**: The adoption of EIP-4844 dramatically reduced Layer 2 transaction costs, driving exponential growth in networks like Arbitrum, Optimism, and Base.
5. **Bitcoin's Ecosystem Evolution**: The introduction of Ordinals and the exploration of smart contract enhancements like OP_CAT showcased Bitcoin's expanding use cases beyond its monetary base.
6. **Memecoin Frenzy Boosts Solana**: Solana's ecosystem thrived on memecoin trading, with platforms like Pump.fun driving 43% of its DEX activity in November, underscoring retail market interest.
7. **Blue-Chip DeFi Innovations Take Center Stage**: Leading DeFi platforms, such as Uniswap, Aave and Maker demonstrated resilience and innovation by launching new products and upgrades to core offerings
8. **Real-World Assets (RWAs) and Stablecoins Enter the Mainstream**: Stablecoins reached new levels of adoption, with the total market cap exceeding $210 billion, while real-world asset (RWA) tokenization accelerated, driven by traditional asset managers.
9. **NFTs Face Market Realignment**: While traditional NFTs declined in trade volumes and value, projects like Pudgy Penguins and Bitcoin Ordinals brought renewed interest with innovative use cases.
10. **Regulatory Milestones in the U.S.**: Anticipation of a new pro-crypto administration provided clarity to DeFi projects and boosted institutional confidence in crypto as an asset class.

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PART 1
INTRODUCTION

The global cryptocurrency market capitalization reached an all-time high of $3.8 trillion in 2024, nearly doubling from its levels at the start of the year. This dramatic growth was fueled by a confluence of factors, including improving macroeconomic data, increasing institutional adoption, technological advancements, and a change to a more accommodating and supportive administration in the U.S. Bitcoin continued to dominate headlines and attention, but the performance of alternative layer-1 and layer-2 solutions, particularly Solana and Base, also played a critical role in expanding the market.

MACROECONOMIC BACKDROP

The U.S. economy in 2024 showed sustained growth despite initial concerns of a slowdown in a challenging global environment. The year began with market uncertainty, influenced by sustained 5+% interest rates following the Federal Reserve's year of rate hikes from mid 2022-2023, elevated inflation levels, and ongoing geopolitical conflicts in Europe and the Middle East. However, as economic indicators improved throughout the year, these concerns gradually subsided, with the economy demonstrating resilience through moderate GDP growth, declining inflation rates, and expanding market opportunities across various sectors, including digital assets.

One of the most significant economic developments of 2024 was the decline in inflation. The headline Consumer Price Index (CPI) decreased to approximately 2.5% by year-end, improving from 8% in 2022 and 4% in 2023. Multiple factors contributed to this trend, including slower wage growth, reduced rent inflation, and productivity gains that eased price pressures. While the moderation in wage growth to below 4% annually helped control inflation, it raised concerns about consumer spending power. The labor market underwent a gradual transformation throughout the year. Starting with an unemployment rate of 3.8%, employment conditions adjusted gradually. Unemployment increased to 4.3% by December, while monthly job creation decreased below 150,000 by midyear, reflecting business caution amid economic uncertainty. Despite these changes, the labor force participation rate stayed near cyclical highs, indicating sustained worker engagement, while layoffs remained localized rather than systemic.

In response to these economic shifts, the Federal Reserve's monetary policy played a crucial role in guiding the economy's transition. After raising rates aggressively in previous years, the Fed initiated an easing cycle, cutting the federal funds rate twice, first a 50 basis point (bps) cut from 5.50%to 5.00% on September 18th, and then an additional 25bps cut on November 7th and December 17th to bring the federal funds rate down to 4.5%. This strategic pivot was driven by clear signs of disinflation and cooling labor market conditions. Federal Reserve Chair Jerome Powell emphasized the importance of recalibrating monetary policy to support sustainable economic growth while remaining vigilant against inflationary risks, demonstrating the Fed's gradual and measured approach to providing relief without overheating the economy.

The economic landscape was further reshaped by the presidential election, which brought Trump back to office, with his administration prioritizing deregulation, tariffs, tax reform, and protectionist trade policies aimed at stimulating growth. The administration's pro-crypto stance proved particularly significant for the digital asset sector, as commitments to reducing regulatory barriers and supporting blockchain innovation marked a turning point in institutional acceptance.

CRYPTO SPOT ETFS AND EQUITIES

The shift in regulatory attitude coincided with a watershed moment for cryptocurrency adoption: the U.S. approval of spot Bitcoin exchange-traded funds (ETFs). By the end of the year, ETFs collectively managed over 1.1 million BTC, with BlackRock's IBIT fund emerging as the dominant player, managing over 445,000 BTC, followed by Grayscale's GBTC with 216,000 BTC and Fidelity's FBTC with 188,000 BTC. These ETFs amassed over $32 billion in inflows, significantly outpacing the historical performance of Gold ETFs, which took five years to achieve similar inflow levels. While Bitcoin ETFs enjoyed unprecedented success, Ethereum ETFs followed a more modest trajectory. After an initial surge with billion-dollar trading volumes in July, these products experienced a significant cooldown, with daily trading volumes dropping below $200 million and reaching net outflows of $687 million in late September. However, the trend reversed in November, with Spot Ether ETFs accounting for $675 million in inflows – representing 19% of total spot Bitcoin ETF inflows for the month. By mid-November, the cumulative flow of spot Ethereum ETFs had finally turned positive, approaching $1 billion.

The remarkable growth in the cryptocurrency market during 2024 extended beyond digital assets themselves to crypto-focused companies. MicroStrategy emerged as a leading crypto equity, having established itself as an early adopter of corporate Bitcoin investment through a systematic accumulation strategy that significantly influenced its stock performance. Following its initial Bitcoin investment in 2020, the company recorded substantial returns, with its stock increasing 400% year-to-date in 2024, following a 353% return in 2023. This exceptional performance exceeded both Bitcoin's returns and most equities over the past two years. Central to MicroStrategy's approach was the use of convertible notes to fund Bitcoin acquisitions, a strategy that enabled the company to raise capital at competitive interest rates while maintaining its cash reserves. This innovative financing structure, which has led to the firm acquiring 423,000 Bitcoins, provided operational flexibility, allowing MicroStrategy to manage debt obligations according to market conditions. Additionally, the use of senior convertible notes, combining debt and equity characteristics, helped balance financial risks and maintain liquidity. However, the strategy's resilience was tested during the 2022 bear market when the company faced unrealized losses of $1.85 billion, and its market capitalization temporarily fell below its Bitcoin holdings' book value. The subsequent market recovery vindicated the company's approach, resulting in unrealized profits of $14 billion.

In parallel with MicroStrategy's success, Coinbase experienced remarkable growth, with its stock value rising from approximately $75 per share to $210 by November 2024. This impressive performance was driven by multiple factors: a likely more favorable regulatory environment suggested by the U.S. presidential election discourse, progress toward resolving ongoing SEC issues, increased market activity, and the company's strategic position as the primary custodian for crypto spot ETFs. Demonstrating strong business acumen, Coinbase strengthened its business model by diversifying revenue streams through expanded staking services, institutional-grade products, and its Layer 2 platform, Base. This comprehensive transformation successfully reduced the company's dependence on trading volumes, with transaction fees accounting for 60% of income (down from 90% two years prior) and the remaining 40% derived from subscription services, stablecoin interest, custodial fees, and other products.

CRYPTO MARKETS BREAK NEW GROUND

2024 proved to be a watershed year for the cryptocurrency market, with Bitcoin and Ethereum reinforcing their positions as market leaders. Bitcoin's price surged nearly ~140% to reach a new all-time high of ~$101,000, while Ethereum followed with a more modest but still significant appreciation of ~70% over the course of 2024. While these headline figures are impressive, they only hint at the market's increasing complexity.

A key development in the crypto markets during late 2023 and 2024 was the growing dispersion across different sectors, revealing a maturing investment landscape where performance varies significantly. Traditional cryptocurrencies like Bitcoin (BTC), Solana (SOL), and Ethereum (ETH), along with other smart contract platforms, have significantly outperformed sectors like Gaming, DePIN, and NFT. This trend is particularly evident in the GMCI indices, which provide a comprehensive view of sector-specific performance. While the GMCI30 (top 30 coins by market cap) posted a solid 45% year-to-date increase,

specialized sectors showed even more dramatic variations. Most notably, the GMCIMeme and GMCIAI indices emerged as frontrunners with exceptional gains of 356% and 245%, respectively, far outpacing the broader market's 11% YTD growth in total capitalization. Layer 1 protocols, as tracked by the GMCIL1 index, maintained steady growth with a 16% increase, while memecoins demonstrated remarkable momentum with 116% growth.

The market performance in 2024 revealed clear preferences among investors, with capital predominantly flowing into two distinct sectors: major cryptocurrencies (particularly Bitcoin and Solana) and speculative growth segments like memecoins and AI tokens. This trend was evidenced by the sustained strength of major cryptocurrencies, which maintained their dominant market positions, alongside the explosive growth and remarkable resilience of meme and AI tokens – even during broader market corrections. Investors demonstrated increasing sophistication in identifying and capitalizing on both established and emerging opportunities within the cryptocurrency ecosystem.

The evolution of major blockchain networks merits detailed examination. The following analysis explores key developments across Bitcoin, Ethereum, and Solana throughout 2024.

The Bitcoin mining sector (see section two for in-depth analysis) experienced significant transformations throughout 2024. In the post-halving environment, it faced considerable headwinds, marked by declining revenues due to reduced block rewards and decreased Ordinals and Runes activity. Nevertheless, activity returned to the Bitcoin blockchain in phases, and miners demonstrated resilience by expanding and upgrading infrastructure, presumably to improve efficiency amid dropping block rewards- evidenced by the growth in hashrate. Bitcoin's hashrate, a key network security measure, began the year at 512 exahash per second (EH/s) and climbed to an astonishing ~750 EH/s by November. This substantial increase in computational power not only fortified the network but also highlighted the growing competitiveness among miners. Adding to the sector's evolution, mining difficulty hit a record-breaking 101.65 trillion in November, making it the most challenging year for miners in Bitcoin's history. Furthermore, miners have become increasingly aggressive in accumulating Bitcoin, competing directly with MicroStrategy's

buying spree. This strategic shift is evidenced by seven publicly traded bitcoin mining and data center companies raising a combined $5.2 billion via convertible notes since June.

The Ethereum ecosystem experienced significant transformations in 2024, with scalability improvements leading the way. The implementation of EIP-4844's proto-danksharding, which introduced data blobs to enhance layer-2 scalability, marked a crucial advancement, substantially reducing transaction costs and establishing the foundation for future full sharding. This breakthrough catalyzed unprecedented Layer 2 adoption, with networks like Optimism, Arbitrum, and Base seeing remarkable growth in both transaction volumes and Total Value Locked (TVL). The optimization resulted in Layer 2 paying approximately 99% less for posting data to the main chain, driving the median gas price on Ethereum Mainnet down to 3 gwei—a level not seen since 2020.

These efficiency gains, while beneficial for scalability, have impacted Ethereum's tokenomics. The reduced transaction fees have led to one of the lowest burn rates since the Merge and EIP-1559 implementation, which introduced a dynamic base fee that is burned. Since April 2024 ETH supply increased from 120.065 million to 120.442 million at a 0.2% annualized inflation rate. Despite its recent reputation as a deflationary asset, ETH has maintained an inflationary trajectory for nearly eight weeks. However, this shift aligns with Ethereum's broader scaling strategy, as the reduced data posting costs enhance network accessibility and capacity for growth.

In the evolving landscape of Ethereum rollups, Base emerged as a standout performer in 2024. The platform achieved remarkable growth, processing 8.8 million daily transactions in November and accumulating a TVL of approximately $3.6 billion. Network fees reached a three-month peak of $765,000 in November, driven largely by the surge in AI agent protocols. The Virtuals platform, in particular, demonstrated the potential for innovation by providing a decentralized framework for AI agent creation and monetization across gaming, entertainment, and social media sectors. Base's success exemplifies how Layer 2 solutions can differentiate themselves through specialized technological integration while contributing to Ethereum's scaling objectives.

Solana emerged as a dominant force in the blockchain landscape during 2024, experiencing unprecedented growth across its ecosystem. Its combination of high throughput and minimal transaction fees attracted a diverse range of applications, from DeFi protocols and memecoins to DePIN and gaming platforms. The blockchain's accessibility proved particularly appealing to retail users, with platforms like Pump.fun driving massive adoption, while institutional recognition from companies like PayPal enhanced its credibility. This broad-based growth catalyzed significant price appreciation and established Solana as a serious challenger to Ethereum's dominance.

The network's technical performance in 2024 effectively addressed previous concerns about reliability. Maintaining near-perfect uptime even under heavy transaction loads, Solana demonstrated its ability to handle sustained growth. This reliability fueled extraordinary market activity, with monthly DEX trading volumes exceeding $100 billion and surpassing Ethereum's DEX volume for the first time, driven largely by the proliferation of memecoin activity. The combination of technical stability and market dynamics solidified Solana's position as a preferred platform for both active traders and long-term investors.

Solana's development ecosystem flourished throughout the year, benefiting from substantial infrastructure improvements. Enhanced governance capabilities through Realms and the introduction of rollup-like technologies expanded the toolkit available to developers, reinforcing Solana's reputation for developer-friendly innovation. A particularly significant advancement came from Jump Crypto's development of Firedancer, a new validator client designed to revolutionize network performance. Although scheduled for mainnet deployment in 2025, Firedancer's promise to support higher transaction concurrency, reduce node operation costs, and eliminate single points of failure became a compelling narrative in 2024. Solana's technological roadmap strengthened confidence in its long-term scalability and sustainability, contributing to its growing prominence in the blockchain space.

YEAR OF THE AIRDROPS

2024 saw numerous high profile and long awaited airdrops.This section will analyze the distribution and performance of these airdrops. Given the main purpose of an airdrop is to distribute a token of appreciation for loyal users and to potentially provide a liquidity injection for the ecosystem, it is also relevant to track the distribution and performance of these tokens following the airdrop.

NOTABLE AIRDROPS IN 2024

The largest category of airdropped tokens were L2 governance tokens, however, there were several other notable airdrops, especially within the Solana ecosystem. For example, Jupiter Exchange, the leading DEX aggregator on Solana, also airdropped its governance token, JUP, in January 2024.

The list of airdrops that we will cover in this section are:

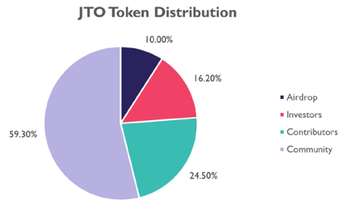
- JTO (Dec 7, 2023)
- MANTA (Jan 18, 2024)
- ALT (Jan 25, 2024)
- JUP (Jan 31, 2024)
- DYM (Feb 6, 2024)
- STRK (Feb 20, 2024)
- AEVO (Mar 13, 2024)
- SHFL (Mar 14, 2024)
- ENA (Apr 2, 2024)
- KMNO (Apr 4, 2024)
- PRCL (Apr 16, 2024)
- NIM (May 1, 2024)

- MODE (May 7, 2024)
- EIGEN (May 10, 2024)
- TAIKO (Jun 5, 2024)
- ZRO (Jun 20, 2024)
- ZK (Jun 24, 2024)
- BLAST (Jun 26, 2024)
- ARKM (Jul 10, 2024)
- AVAIL (Jul 23, 2024)
- SCR (Oct 22, 2024)
- HYPE (Nov 29, 2024)
- ME (Dec 10, 2024)
- PENGU (Dec 17, 2024)

AIRDROP DISTRIBUTION AND PERFORMANCE

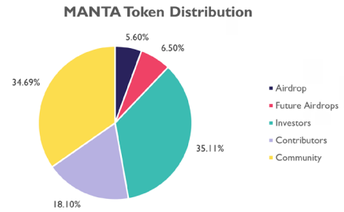
1. Jito ($JTO)

   Jito is a liquid-staking platform on Solana that offers staking returns and MEV rewards to holders of JitoSOL. 100 million JTO tokens, accounting for 10% of the total supply, were airdropped to 9,754 users on December 7, 2023.



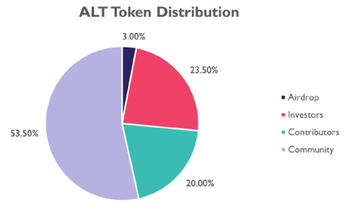
2. Manta Pacific ($MANTA)

   Manta Pacific is an EVM-compatible Optimium that aims to foster the deployment of ZK applications without needing advanced cryptographic knowledge. 5.6 million MANTA tokens, accounting for 5.6% of the total supply, were airdropped to users on January 18, 2024.



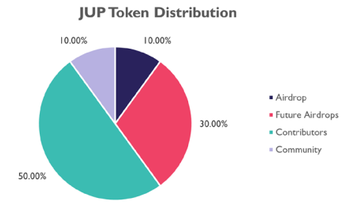
3. Altlayer ($ALT)

   Altlayer is a rollup-as-a-service (RaaS) platform that allows developers to deploy EVM-compatible rollups without needing extensive coding knowledge. 300 million ALT tokens, accounting for 3% of the total supply, were airdropped to 224,241 users on January 25, 2024.



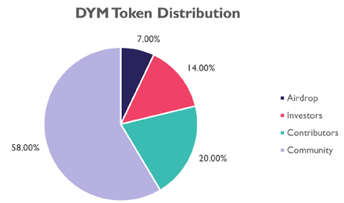
4. Jupiter ($JUP)

   Jupiter is a DEX aggregator on Solana that aims to make trading on Solana seamless through features like automated dollar-cost averaging. 1 billion JUP tokens, accounting for 10% of the total supply, were airdropped to 639,161 users on January 31, 2024.



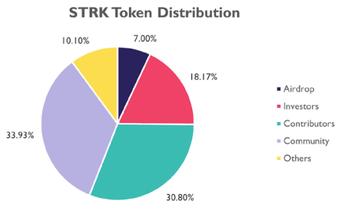
5. Dymension ($DYM)

   Dymension is another rollup-as-a-service platform that facilitates the deployment of EVM-compatible rollups on Cosmos. 70 million DYM tokens, accounting for 7% of the total supply, were airdropped to users on February 6, 2024.



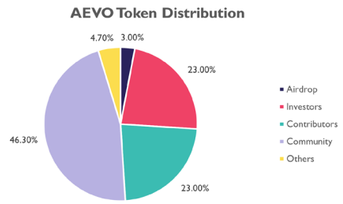
6. Starknet ($STRK)

Starknet is a ZK-rollup on Ethereum that leverages STARK validity proofs to scale its transaction throughput. 700 million STRK tokens, accounting for 7% of the total supply, were airdropped to approximately 1.3 million users on February 20, 2024.



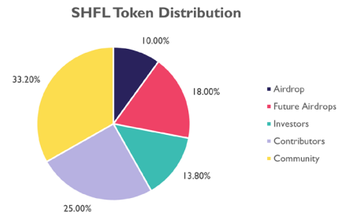
7. Aevo ($AEVO)

Aevo is an application-specific Optimium that facilitates options and perpetual trading. 30 million AEVO tokens, accounting for 3% of the total supply, were airdropped to 96,061 users on March 13, 2024.



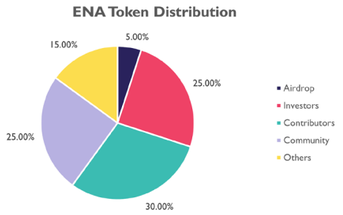
8. Shuffle ($SHFL)

Shuffle is an online gambling platform that offers casino games and sports betting options, using cryptocurrency for transactions. 10 million SHFL tokens, accounting for 10% of the total supply, were airdropped to 1,726 users on March 14, 2024, according to Dune. However, Shuffle has commented that the actual number of SHFL claimers was 17,139.



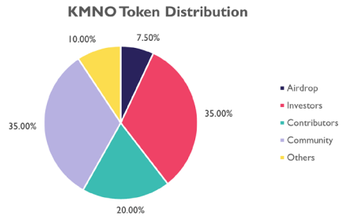
9. Ethena ($ENA)

Ethena is a decentralized finance (DeFi) protocol that focuses on creating a synthetic, censorship-resistant dollar (USDe) within the crypto ecosystem. 750 million ENA tokens, accounting for 5% of the total supply, were airdropped to 46,037 users on April 2, 2024.



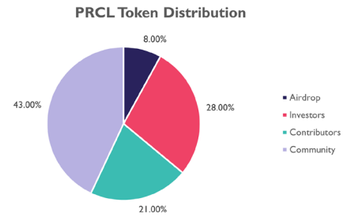
10. Kamino ($KMNO)

Kamino is a DeFi application on Solana that integrates concentrated liquidity management and lending in a single platform. 750 million KMNO tokens, accounting for 7.5% of the total supply, were airdropped to users on April 4, 2024.



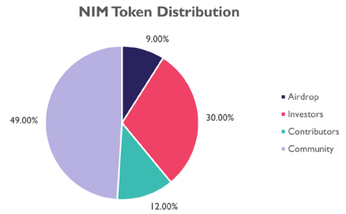
11. Parcel ($PRCL)

Parcl is a real-world asset (RWA) tokenization platform that focuses on perpetual futures for real-estate markets. 80 million PRCL tokens, accounting for 8% of the total supply, were airdropped to users on April 16, 2024.



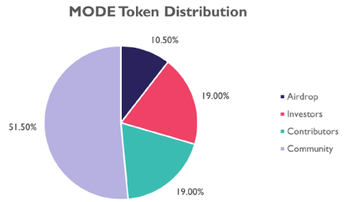
12. Nim Network ($NIM)

NIM is a blockchain that aims to integrate artificial intelligence with gaming, allowing developers to more easily deploy AI-augmented blockchain games. 90 million NIM tokens, accounting for 9% of the total supply, were airdropped to over 500,000 users on May 1, 2024.



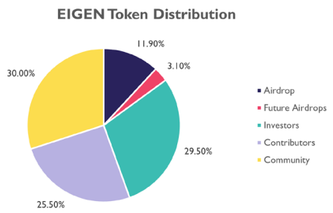
13. Mode Network ($MODE)

Mode is an optimistic rollup that leverages the OP Stack, with a focus on enabling AI-assisted financial applications. 550 million MODE tokens, accounting for 5.5% of the total supply, were airdropped to users on May 7, 2024. Another 500 million MODE tokens were airdropped to users in a second round on October 18, 2024.



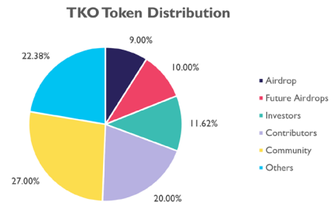
14. EigenLayer ($EIGEN)

EigenLayer is an Ethereum-based protocol that enables the restaking of Ether to secure other decentralized platforms, allowing stakers to earn additional yield from the platforms renting this added security. Over 102 million EIGEN tokens, accounting for 6% of the total supply, were airdropped to 218,015 users on June 5, 2024. An additional 10 million EIGEN tokens were distributed later in June, bringing the total airdropped tokens to nearly 113 million EIGEN tokens.



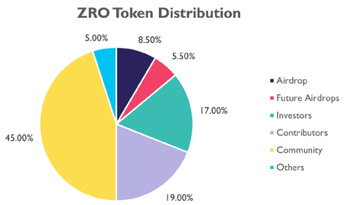
15. Taiko ($TAIKO)

Taiko is a EVM-compatible ZK rollup that aims to scale Ethereum while offering a consistent experience for both developers and users of the Ethereum ecosystem. 50 million TAIKO tokens, accounting for 5% of the total supply, were airdropped to users on June 5, 2024.



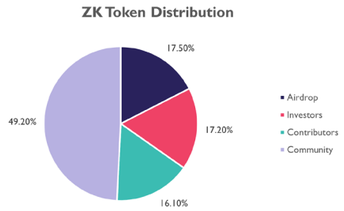
16. LayerZero ($ZRO)

LayerZero is an interoperability protocol that facilitates secure communication across multiple blockchain networks. 85 million ZRO tokens, accounting for 8.5% of the total supply, were airdropped to 737,101 users on June 20, 2024.



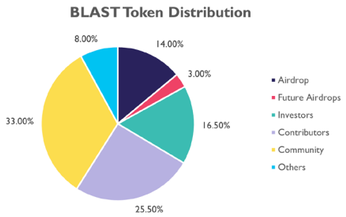
17. zkSync Era ($ZK)

zkSync Era is another EVM-compatible ZK rollup with similar goals as Taiko, albeit zkSync Era was launched significantly earlier than Taiko. 367 million ZK tokens, accounting for 17.5% of the total supply, were airdropped to users on June 24, 2024.



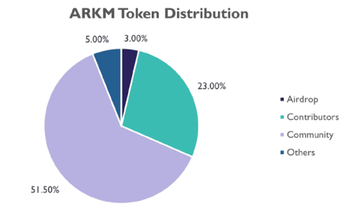
18. Blast ($BLAST)

Blast is an optimistic rollup that first introduced the concept of native yield for Ether held on the rollup by staking Ether deposited to the L2 bridge. 14 billion BLAST tokens, accounting for 14% of the total supply, were airdropped to 536,099 users on June 26, 2024.



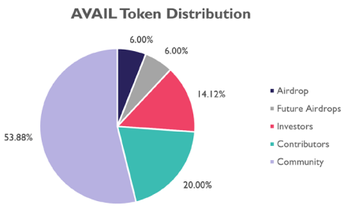
19. Arkham ($ARKM)

Arkham is a blockchain intelligence platform that leverages AI technology to analyze onchain data in order to deanonymize cryptocurrency transactions and provide insights into onchain activities. 30 million ARKM tokens, accounting for 3% of the total supply, were airdropped to 64,718 users on July 10, 2024.



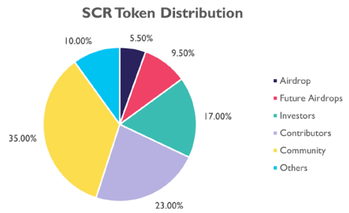
20. Avail ($AVAIL)

Avail is a modular blockchain infrastructure designed to enhance data availability for decentralized applications such as L2s. 600 million AVAIL tokens, accounting for 6% of the total supply, were airdropped to 354,605 users on July 10, 2024.



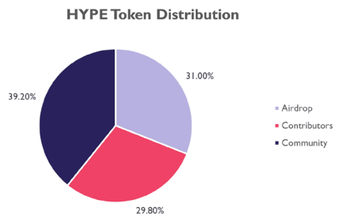
21. Scroll ($SCR)

Scroll is another EVM-compatible ZK rollup with similar goals as zkSync Era and Taiko. Out of these three ZK rollups, Scroll is the latest to airdrop its token. 55 million SCR tokens, accounting for 5.5% of the total supply, were airdropped to 500,760 users on October 22, 2024.



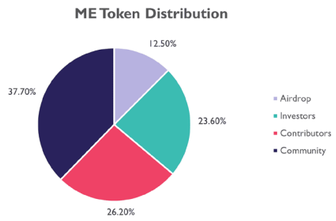
22. Hyperliquid ($HYPE)

Hyperliquid is an L1 with high throughput, optimized for perpetual trading. On November 29, 2024, Hyperliquid airdropped 310 million tokens, accounting for 31% of the total supply to over 90,000 users.



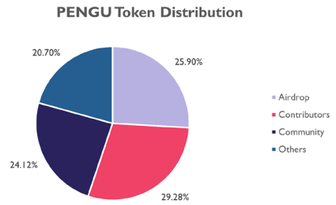
23. Magic Eden ($ME)

Magic Eden is a Solana-focused NFT marketplace that also facilitates the trading of Bitcoin ordinals and Ethereum NFTs. 125 million tokens, accounting for 12.5% of the total supply, was earmarked to be airdropped but only 106 million tokens have been claimed by 177,176 wallets.



24. Pudgy Penguins ($PENGU)

Pudgy Penguin is an Ethereum-based NFT community that was launched in July 2021. It has grown to become a notable NFT community since then. 23 billion tokens, accounting for 25.9% of the total supply, was airdropped to NFT holders. Over 17 billion tokens have been claimed by 877,353 wallets.



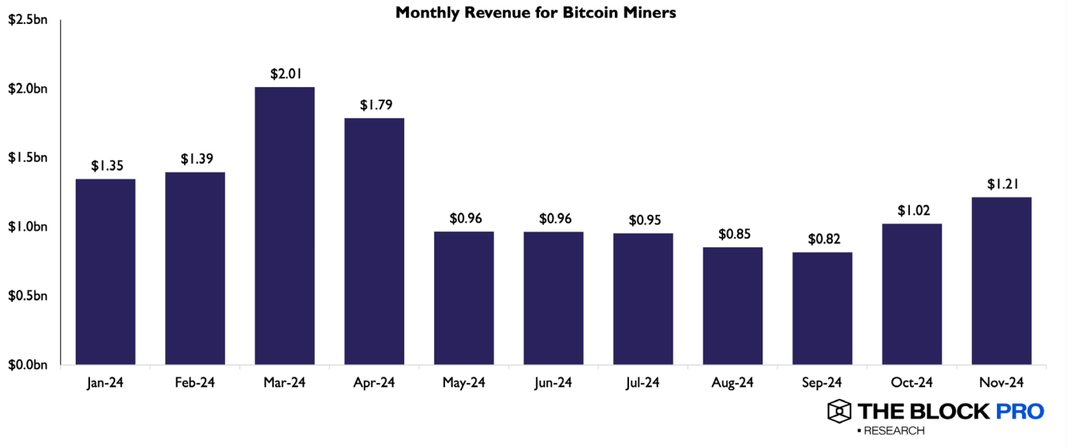
While it is not possible to accurately compare the performance of all airdrops, there are a total of ten L2 governance token airdrops this year, which gives us a basis to compare the relative performance of these coins following their airdrop date.

The main takeaway here is that the airdrops conducted in the earlier half of 2024, such as MANTA, ALT and DYM, appear to outperform the airdrops conducted in the later half, such as BLAST and SCR, for the first 30 days after the airdrop. As the market sentiment was more bullish in Q1 2024 than Q2/Q3 2024, the data suggests, at least for L2 governance tokens, that prevailing market sentiment has a significant influence on the short-term price action of the airdropped token.

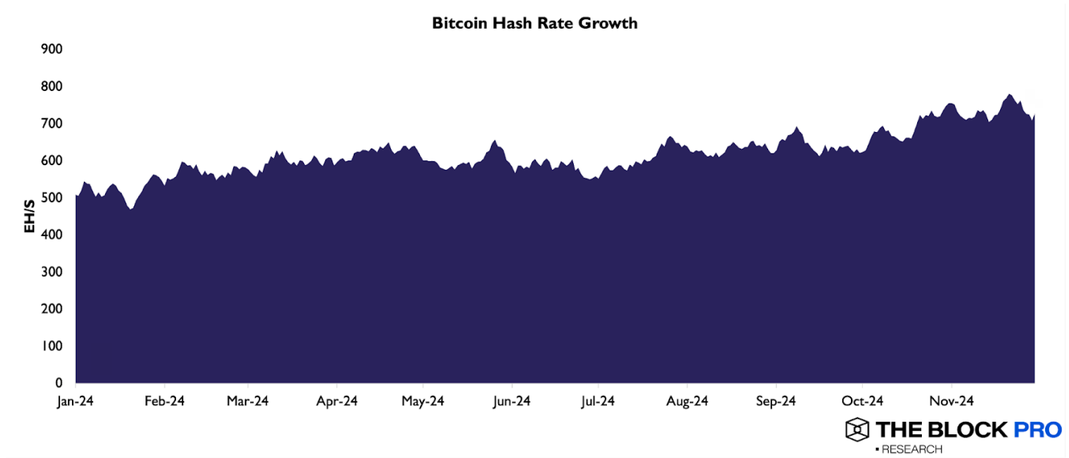
This highlights the relative importance of timing an airdrop for L2s. As such, upcoming L2 airdrops are likely to capitalize on the growing bullish sentiment brought on by Bitcoin's rally and launch in the near future. That said, this analysis considers only 10 different data points in 2024 and could be disproven with future airdrops.

PART 2
MINING

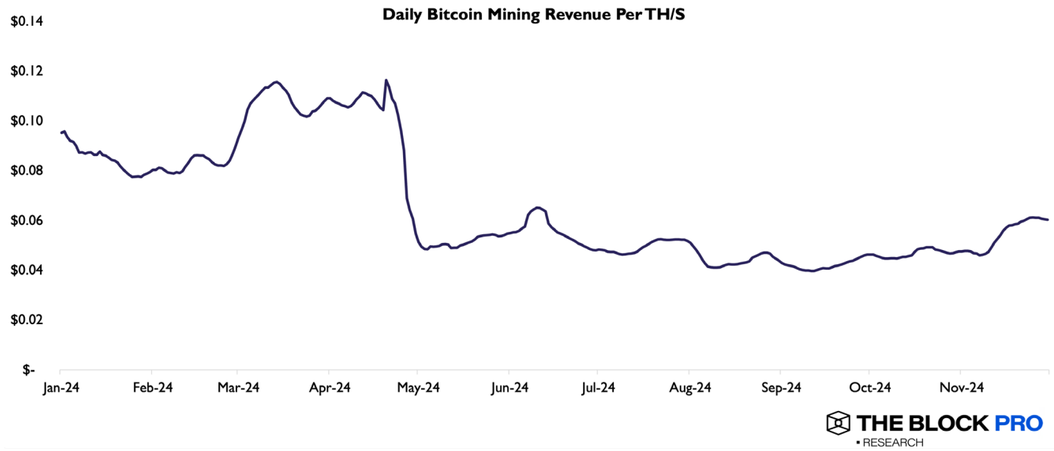
2024 marked Bitcoin's fourth quadrennial halving, a watershed moment for the world's largest cryptocurrency and the industry as a whole. On April 19, 2024, block 740,000, the number of bitcoins a successful miner is rewarded with for finding a block, was reduced from 6.25 BTC to 3.125. While the halving drew cheers from investors and holders as a celebratory milestone, bitcoin miners faced a much harsher reality: their revenue streams have been cut in half. And since bitcoin's price continued to range in the mid $60,000 range, miner revenues from subsidy rewards paid by the Bitcoin network went from an average of $1.49 billion a month in the four months leading into the halving to $882 million a month in the months following the halving. In a perhaps surprising twist, however, miner revenues, in dollar terms, have already surpassed 2023's highs, with bitcoin miners generating $13.3 billion in 2024 compared to $10.5 billion in 2023. This was due, in no small part, to the precipitous rise of bitcoin's price, going from $16,615 at the beginning of 2023 to highs of over $100,000 near the end of 2024. Miners also benefited from increased onchain activities brought on by Bitcoin Ordinals, BRC-20 tokens, and Runes tokens, which are discussed in more detail throughout this report. Fees generated from these onchain activities reached 16% of total monthly revenue for miners in April before plummeting down to 3% at the time of writing, forcing miners to continue to be reliant on block subsidies as their primary source of revenue.



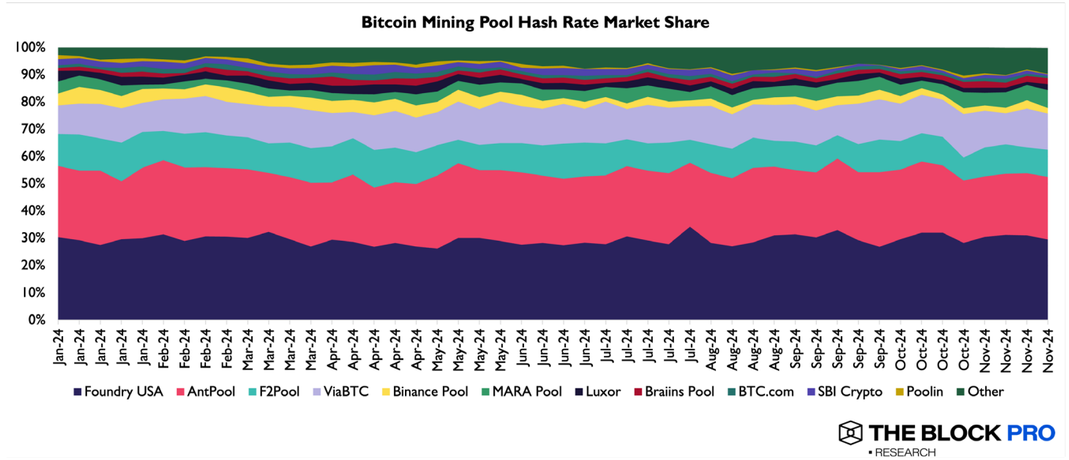
Bitcoin's growing hash rate has also weighed heavily on miners. Currently, the hash rate is 727/Exahash per second, a 43% increase from year to date. For context, estimates have suggested that Bitcoin's electricity consumption is roughly 0.65% of global consumption.



As hash rate continues to grow, with limited bitcoin issuance, mining bitcoin becomes increasingly more competitive. Daily mining revenue per TeraHash per second (TH/s) produced by the Bitcoin network suggests that miners are earning roughly $0.046 per day for each TH/s they contribute to the Bitcoin network. This is down 50.98% from roughly $0.095 at the beginning of the year. As profitably mining bitcoin continues to become more difficult, it has become a standard for miners to collectively contribute their hash powers to mining pools to maintain a more reliable stream of income.

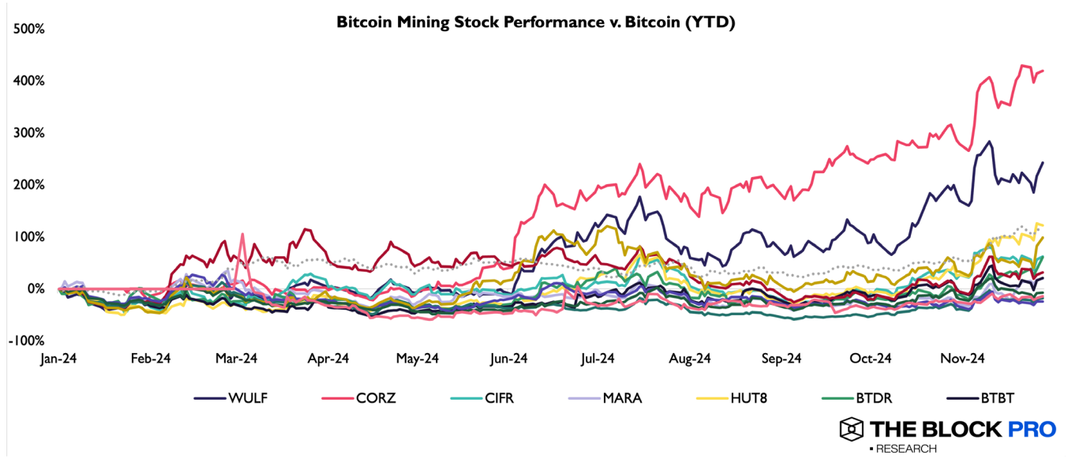


The leading bitcoin mining pool and one of the youngest is Foundry USA, a five-year-old subsidiary of crypto conglomerate Digital Currency Group. The U.S.-based mining pool has maintained an average of 29.50% share of hash power contributed to Bitcoin. Asia-based Antpool and ViaBTC round up the top three with 22.95% and 13.30%, respectively.

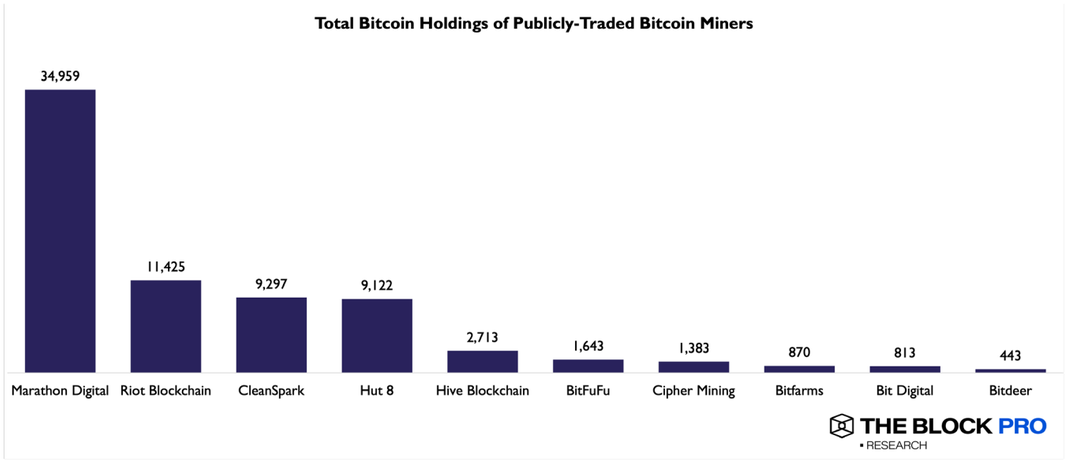


PUBLIC BITCOIN MINERS

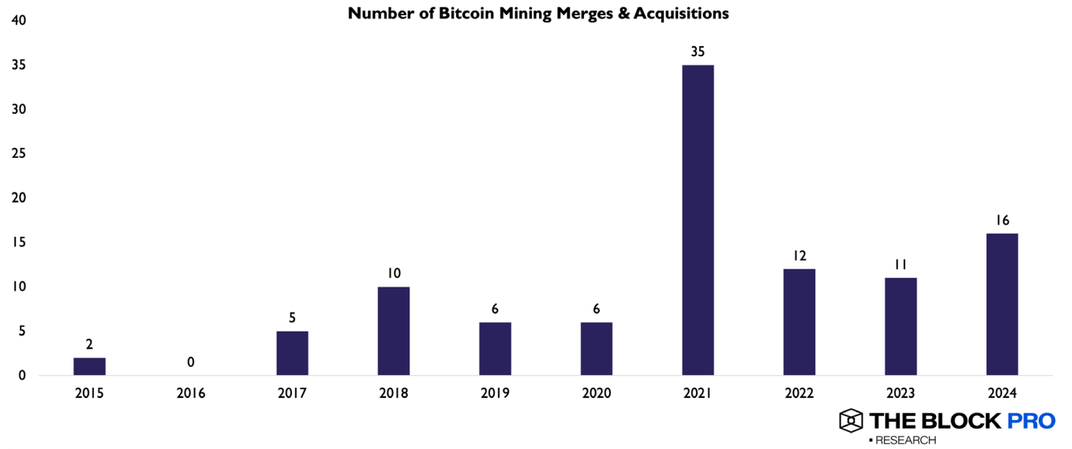
In terms of performance, Bitcoin mining companies this year have mostly underperformed Bitcoin itself. The average return of a dozen top publicly traded Bitcoin-centric mining companies year to date is 70%, with the median returning 30%, against bitcoin's 100%. The two publicly traded companies that outperformed Bitcoin at the time of writing are Core Scientific and TeraWulf, at 420% and 243%, respectively.



This year, publicly traded bitcoin miners have mined 42,154 bitcoins so far, which is roughly 22.69% of the bitcoins produced by the Bitcoin Network. While the majority of companies sell their bitcoin immediately after them, some continue to hold them in their reserves. The bitcoin treasuries of these companies equate to 72,668 bitcoins or $7.1 billion at current prices, with Marathon Digital making up the bulk of these holdings with 27,562 bitcoins in its treasury. In fact, Marathon Digital has more recently announced its plans to issue debt to accumulate even more bitcoin for its treasury.



2024 also saw a handful of mergers & acquisitions (M&A) in the bitcoin mining industry. While this year did not reach the scale of 2021, 2024 is the second-largest year for bitcoin mining M&A deals with 16 deals done to date. 2024 also had some of the largest deal counts by dollar amount with Northern Data completing its $435 million acquisition of Damoon, Bitfarms' $140 million acquisition of Stronghold Digital, and BitDeer's $140 million acquisition of Desiweminer. These deals allowed acquirers to leverage economies of scale as well as reorganize and smooth out their supply chain operations to improve business efficiencies.



Despite significant market activity and bitcoin price action, 2024 has been a relatively lackluster year for growth in the Bitcoin mining landscape. The halving reduced subsidy income to miners by half and the slowdown of onchain trading activities shows miners that they still can't rely on a sustainable fee market to fund their operations. Furthermore, there is still ongoing concern about the centralization of mining pools, with two pools making up the majority of hash rate contributed to the Bitcoin network. That said, because Bitcoin is akin to a growing organism, there are many upcoming developments such as the activation of OP_CAT to look forward to to make the network maintain its dominance and help the mining industry grow.

Being able to operate based on transaction fees over subsidies has been a loosely agreed-upon goal for many bitcoin miners. As subsidy rewards ultimately head toward zero, a larger portion of mining revenue must come from transaction fees to (sustainably) maintain economic security. Ordinals, Runes, and B2C-20 token trading prove that there is indeed demand to make onchain transactions on bitcoin beyond that of just sending the cryptocurrency around – making up over 1/5th of mining revenue in December 2023. While onchain asset trading has more recently died down, there are many upcoming developments that can bring a resurgence back to bitcoin onchain trading. One of these developments is OP_CAT, which is a proposal that will enhance Bitcoin's currently limited smart contract functions. If OP_CAT is activated, more complex spending conditions and

transaction types like smart contract vaults and tree signatures will reduce the friction of creating onchain assets on Bitcoin as well as open the gates for potential Layer 2 networks to launch on Bitcoin, the latter of which is being worked on by many firms including Starkware, Alpen Labs, and Bitlayer. A more expressive language may ultimately lead to products that could retrigger demand for Bitcoin block space and ultimately generate fee revenue beneficial to miners.

The concentration of over 50% of Bitcoin's hash rate between Foundry USA and Antpool has spurred numerous initiatives to decentralize pool functionality. Traditionally, when a miner connects to a mining pool they give up the block-building control to the pool. In other words, the mining pools ultimately get to use their contributing miners' hash rate to determine how blocks are built and which transactions are included whenever the pool finds a block. Given that the two largest mining pools are in heavily regulated countries, this opens up opportunities for transaction censoring. Currently, there are two major attempts to give the block-building power back to the individual miners, they are Stratrum by Braiins and Ocean's DATUM protocol. While adoption has still been low for these two protocols, there continue to be ongoing calls from the Bitcoin community pressuring mining pools to start adopting them. Successfully pressuring mining pools to decentralize block building would add another layer of security for Bitcoin.

MINING OUTLOOK FOR 2025

Each halving cycle forces Bitcoin miners to prepare and readjust their operations as their revenues get slashed by half. This cycle is no more different. However, unlike previous cycles, the Bitcoin community has grown increasingly receptive to new technologies and tradeable assets on the largest blockchain in the cryptocurrency industry. These new technologies and assets may lead to a scenario where miners no longer have to rely on subsidies for the majority of their revenue and operate in a future where their businesses primarily sustained by transaction fees, driven by a steady flow of active Bitcoin users and traders.

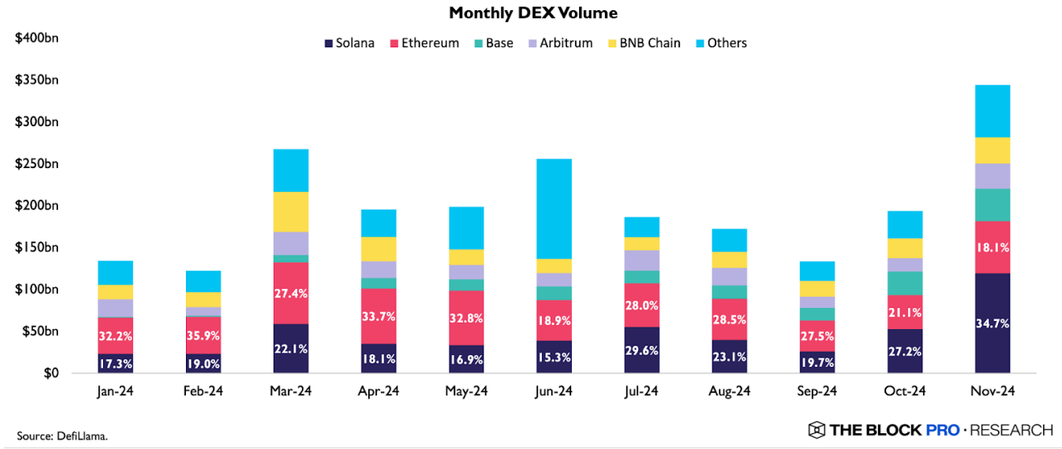
PART 3
LAYER-1s

The blockchain ecosystem underwent a transformative year in 2024, driven by advancements in scalability, parallel execution, and the rise of consumer-focused applications. High-performance Layer 1 (L1) networks, exemplified by Solana and Sui, captured outsized demand as their technical capabilities supported surging user activity across decentralized exchanges (DEXs), stablecoins, and DeFi protocols. Parallel execution became a pivotal innovation, not only redefining competitive dynamics among L1s but also influencing investor sentiment and valuations. Meanwhile, Ethereum maintained dominance in key sectors like lending, though emerging ecosystems challenged its market share across other metrics, underscoring the growing diversity and specialization in blockchain adoption.

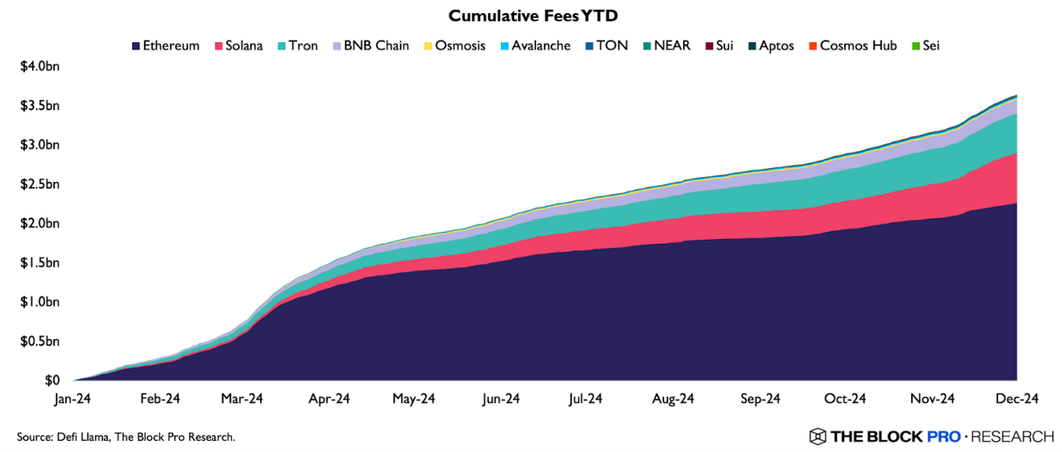
PARALLEL EXECUTION BECOMES CONSENSUS

Consumer applications were a powerful driver of growth and user activity on Layer 1 (L1) blockchains in 2024. L1 chains that prioritized scalability, low fees, and user experience were best positioned to support these apps, capturing outsized demand and market share relative to their peers. This dynamic was exemplified by Solana in 2024, whose

high throughput and parallel execution allowed it to sustain a surge of new demand for memecoin trading and reach new highs in terms of network activity.

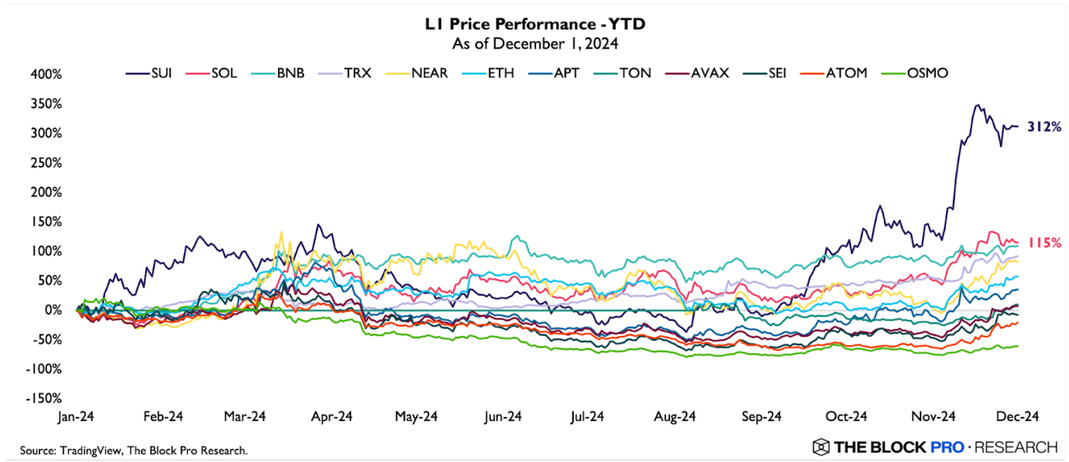


For the first time ever, monthly DEX volumes on Solana surpassed Ethereum to claim the largest share among both L1 and L2 chains - in July, October, and November - underscoring the dramatic shift in market dominance. Despite having significantly lower transaction fees on average compared to other L1s, cumulative fees paid by Solana users also surged to a new high, behind only Ethereum and Tron, again highlighting its outsized user demand this year.



From a valuation perspective, Sui was the largest beneficiary of the market's newfound recognition of parallel execution capabilities being a potential leading indicator for long-term performance and growth. Despite a large supply unlock in May that increased its circulating supply by ~82%, SUI was the top-performing L1 in 2024, up ~316% YTD as of December 1. SOL was the 2nd-best performing L1, up ~118% YTD, cementing parallel execution as a key theme for investors in 2024.

Other L1s focusing on network performance via parallel execution did not garner as much market interest as SUI and SOL, with APT up ~31% and SEI down ~6% YTD. This suggests that investors primarily coalesced their attention and capital around Sui's abilities to compete with Solana on a technical level in the long term, especially given Sui's major Mysticeti upgrade in July that brought major latency improvements to the network.

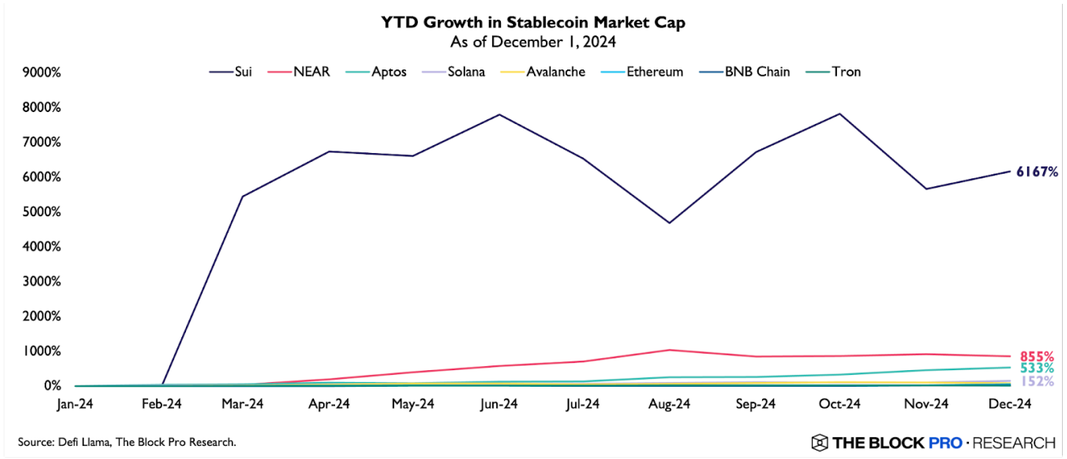


Nonetheless, it remains to be seen whether investment interest in Solana's competitors will eventually catch up to their continued technical development over time. One major area of active development is the integration of parallel execution with the Ethereum

virtual machine (EVM), which has traditionally been limited to single-thread processing and slower execution as a result. Monad, which claims to have solved this longstanding problem, raised over $200 million at a $3 billion valuation in March, demonstrating the market's appetite for EVM chains that might be able to match Solana's throughput figures. For comparison, Sei, which is also slated to introduce a parallelized EVM in Sei V2, is currently valued at ~$6 billion as of December 1, 2024.

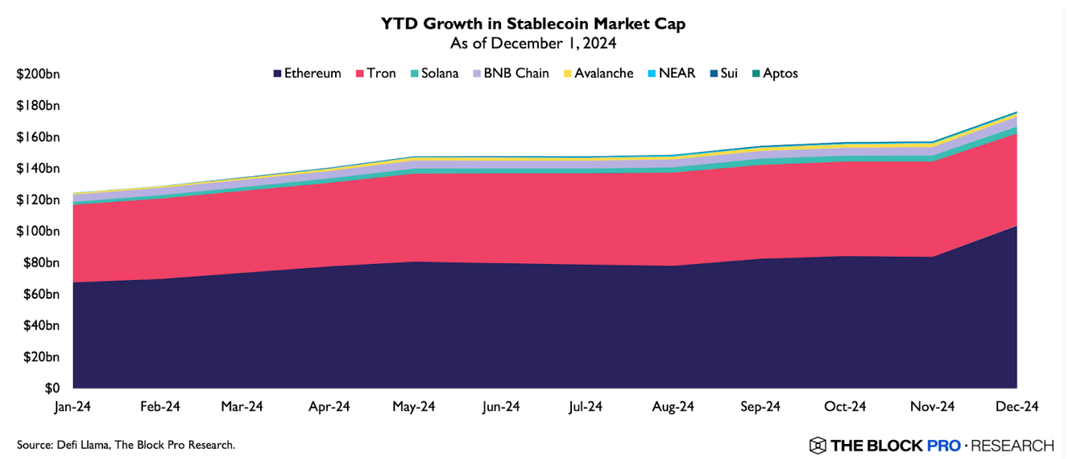
STABLECOINS AND TVL

Stablecoin flows were another indicator of growth and adoption of specific L1 ecosystems. In percentage terms, L1 chains with parallel execution were among the fastest-growing ecosystems in 2024 with respect to stablecoins, led by Sui, with a YTD gain of ~6167% as of December 1.



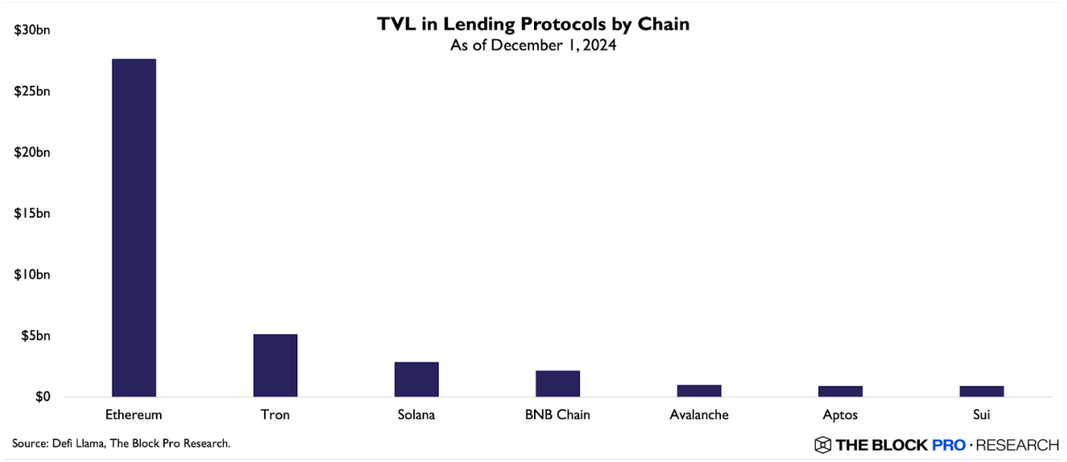
NEAR, Aptos, and Solana also saw significant gains in stablecoin market cap, with YTD gains of ~855%, ~533%, and ~152%, respectively. NEAR's stablecoin growth was likely related to the ecosystem's focus on consumer apps, which we found to be a strong driver of user behavior throughout the year. Sui and Aptos also saw the rise of so-called "clicker games" that contributed to brief but extreme spikes in user activity. However, for the most part, stablecoin growth was indicative of rising user interest in specific ecosystems, bolstered by an increase in institutional adoption, as well as the deployment of native stablecoins through issuers like Circle and Tether.

In September, Circle introduced native USDC to the Sui ecosystem, and in August, Tether announced the deployment of native USDT to the Aptos ecosystem. Both ecosystems have seen the emergence of institutional usage on their respective blockchains, with Ondo deploying its Treasury-backed USDY stablecoin on Sui in May and BlackRock launching its BUIDL Fund on Aptos in November. On Solana, most of the stablecoin growth can be attributed to the network's rise as the leading memecoin platform, though it also passed a major milestone with the introduction of PayPal's PYUSD on the network in May. Since then, PYUSD has grown to become the 3rd largest stablecoin in the Solana ecosystem, with a market cap of ~$146 million as of December 1.

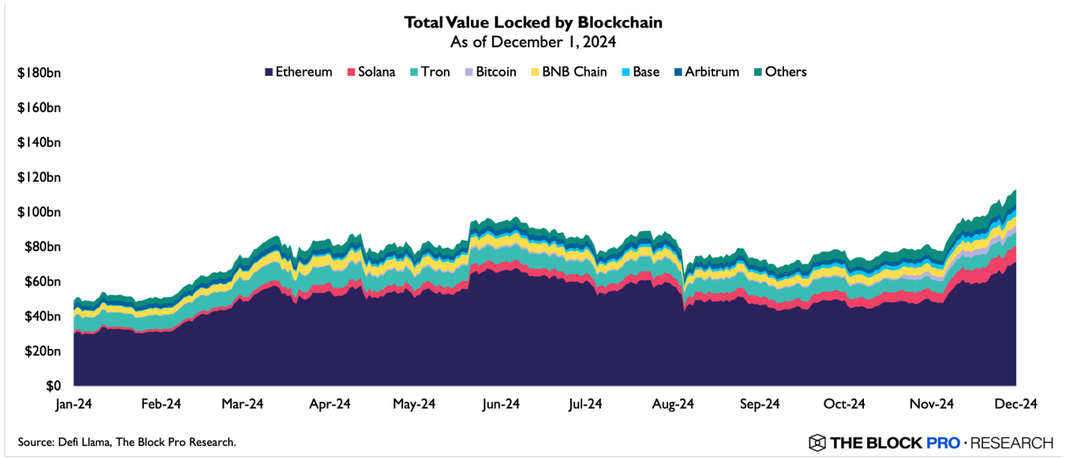


From a broader perspective, Ethereum remained dominant in the stablecoin sector, with a total stablecoin market cap of over $104 billion as of December 1. Ethereum's unwavering dominance in terms of stablecoins was partly a reflection of its continued role as a global settlement layer. In The Block Research's report on consumer apps this year, we noted

how each L1's individual strengths were ultimately strong predictors of the leading apps in their respective ecosystems. Whereas Solana's high throughput and low fees allowed it to gain significant market share in the DEX sector, Ethereum's superior liquidity and stablecoin supply allowed it to remain dominant in the lending sector.



Ethereum's dominance in the lending sector is so great that TVL in Ethereum lending protocols is larger than all other ecosystems combined. Since lending protocols are the largest category of DeFi protocols by TVL, Ethereum's grip on DeFi remained unchallenged in 2024, with a TVL of ~$70.2 billion as of December 1.



Nonetheless, it is worth noting the extent to which Solana was able to penetrate into L1 DeFi market share overall, in spite of Ethereum's continued lending dominance. As of December 1, Solana is the 2nd largest DeFi ecosystem with ~$9.1 billion in TVL. Much of this rise can be attributed to a surge in liquidity on Solana DEXs. Over the course of 2024, TVL in Ethereum DEXs rose from ~$6.5 billion to ~$8.2 billion as of December, whereas TVL in Solana DEXs rose from ~$449 million to ~$3.1 billion over the same period. Clearly, user demand for trading on Solana was a force powerful enough to impact not only the distribution of trading volumes on L1s but also TVL overall.

The rising dominance of high-performance L1s was the most significant theme of 2021, with broad implications for the L1 landscape overall. Among the most negatively impacted by this development were Ethereum L2s, which lost market share to Solana in terms of DEX liquidity and volume. Multi-chain ecosystems were also negatively affected by the rise of the monolithic L1 thesis, with Cosmos ecosystem networks failing to see significant growth across all metrics, especially compared to newcomers like Sui and Aptos. In the Avalanche ecosystem, which has leaned heavily into the subnet thesis in recent years, one standout was the Dexalot subnet, which saw significant gains in DEX volumes compared to other app-chains but nonetheless trailed behind larger L1s, including the Avalanche C-Chain.

Meanwhile, the Bitcoin ecosystem ate further into Ethereum's DeFi dominance with the rise of Ordinals and Runes. TVL in Bitcoin protocols, largely composed of capital allocated to NFTs, has risen to over $4.3 billion as of December 1, challenging Ethereum's claim as the leading L1 monetary asset and settlement layer for high-value digital artifacts.

LAYER 1 OUTLOOK FOR 2025

If there is one takeaway from the dramatic evolution of the L1 landscape in 2024, it is that performance and UX will continue to be paramount issues for users in the coming years. Consumer apps are becoming more influential than ever in driving user adoption, and the chains that are best positioned to support these rapidly evolving apps will likely have a significant competitive advantage going forward.

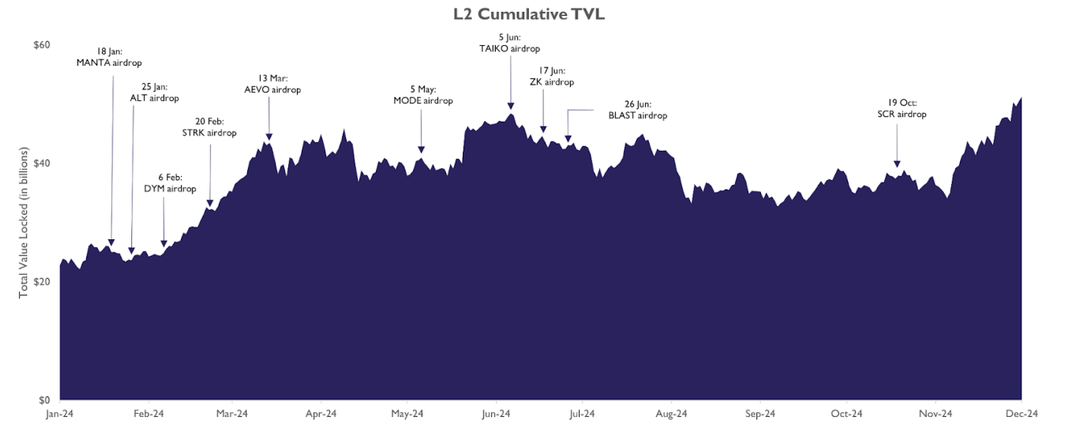
PART 4
LAYER-2s

The L2 landscape has grown considerably in 2024, with numerous mainnet launches and token airdrops. This brought renewed interest in the L2 space for the first half of the year but tapered off towards the latter half. It also highlights the prevalence of mercenary capital in the L2 ecosystem, as many of these users are farming the L2 ecosystems for potential rewards. While farmers do not necessarily harm L2 ecosystems, the decline of ecosystem activity post-airdrop suggests that many of the newer L2s lack significant user retention.

TOTAL VALUE LOCKED

L2 Total Value Locked has grown significantly in 2024, from $22.4 billion to $42.8 billion, as of this writing. However, most of this increase came in the first 3 months of 2024, and TVL has stagnated ever since.

This growth in TVL was also bolstered by the ten different L2 governance token airdrops this year, which have cumulatively injected over $2.6 billion in liquidity into the L2 ecosystem. We have covered the the distribution and performance of these airdrops in the "Year of the Airdrops" section above.



Source: L2Beat

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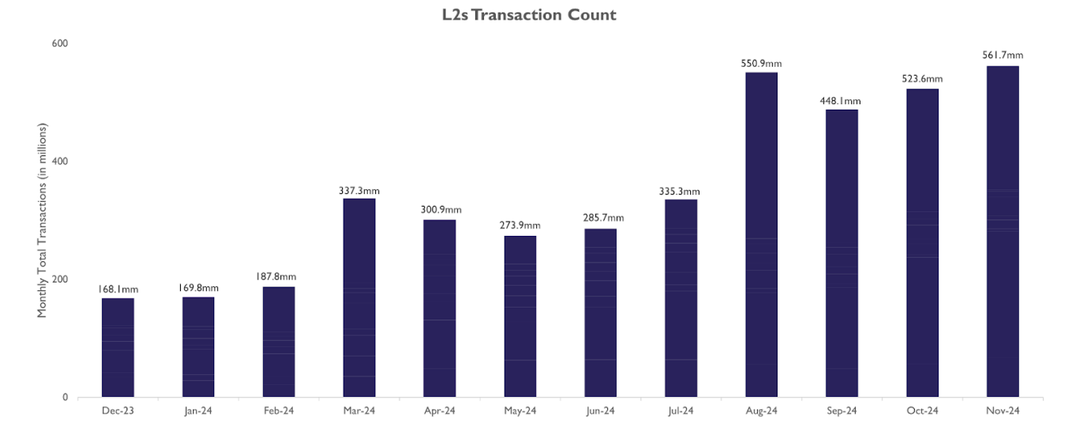
USER ACTIVITY

User activity on L2s has been climbing steadily for most of 2024, with monthly total transactions increasing from 169 million in January 2024 to 562 million in November 2024. The sustained activity on L2s suggests that there is a growing number of long-term users on L2s in general. This is an important point to determine if L2s are finding a product-market fit.



Source: L2Beat

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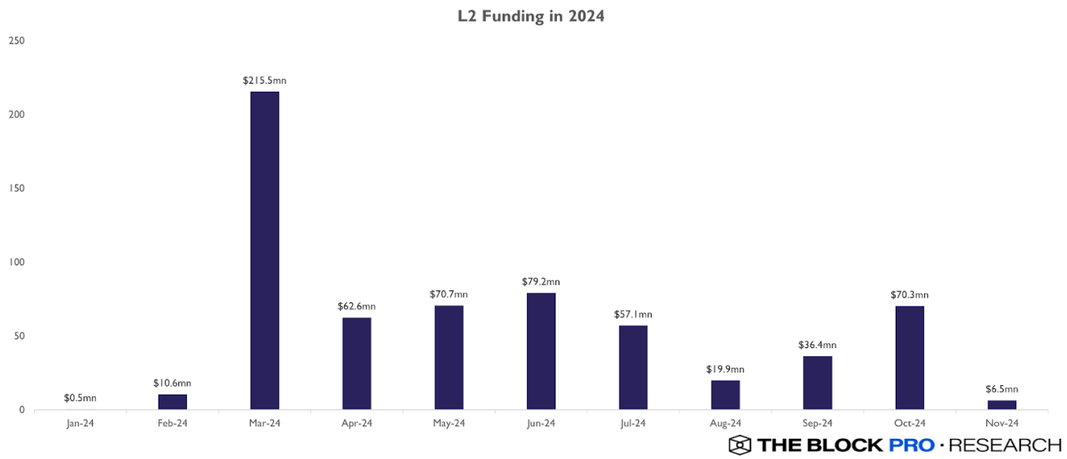
The sustained growth in user activity is caused by two main factors: reduced transaction costs on L2s and a growing number of L2s. We will dive more into the former in the L2 Revenue section. As for the latter, there has been a rapid proliferation of L2s, and even L3s, in 2024. While a handful of L2s, such as Arbitrum One and Base, saw consistent onchain activity this year, many others struggled with growing and maintaining sizable TVLs, and experienced short-lived onchain activity. Ultimately, L2s need long-term returning users to generate revenue reliably.

ETHEREUM L2 LANDSCAPE

The Ethereum L2 landscape has grown substantially in 2024, with over 100 different L2s that have deployed and another 85 that have announced their upcoming deployments. This pales in comparison to the 36 listed on L2Beat in January 2024. The rapid growth in the number of deployed L2s indicates a potential overcrowding in the space for the foreseeable future, with several L2s competing for the same set of users. This crowding effect has already led to the visible consolidation of economic and user activity towards the biggest and most liquid L2s like Base, Optimism, and Arbitrum.



Additionally, the L2 companies have received nearly $630 million in private funding year-to-date (YTD), with a notable spike in February 2024. The funding has since trended downwards but still sees a monthly average of $57 million, which is significantly higher than the monthly average of $22 million in 2023.

CLASSIFICATION OF ETHEREUM L2S

There are four main types of L2s, differentiated by the types of state proofs used as well as the data availability. The two types of state proofs are fraud proofs and validity proofs, while the two types of data availability are onchain and off-chain. With the ever-diverging landscape of L2s, classifying them is useful to understand the marginal innovation that each L2 makes.

Data Availability	Fraud Proofs	Validity Proofs
	Optimistic Rollups	Zero Knowledge Rollups
On-chain	OP Mainnet, Arbitrum One, Base, Blast	Linea, Starknet, zkSync Era, Scroll
Off-chain	Optimiums: Mantle, Manta Pacific, Metis, Fraxtal	Validiums: Immutable X, Cronos zkEVM, ApeX, zkLink Nova

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We are seeing more L2s opting for off-chain data availability due to the lower associated costs of posting data off-chain. However, with the Dencun upgrade in March 2024, we have also seen data costs for L2s drop significantly, which will be analyzed in greater detail in the next section. The landscape for cheap data availability solutions is also starting to heat up, with notable alternatives such as Celestia, Avail and EigenDA deploying their mainnet this year.

ETHEREUM L2S' DATA COSTS

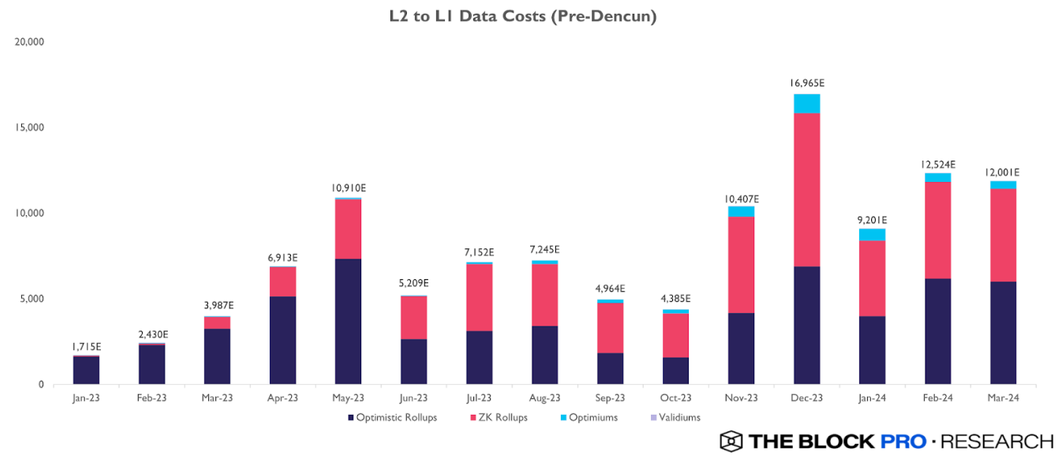
L2s are expected to post state proofs and transaction data in a permissionless environment. Typically, this environment has been Ethereum for most L2s, but we have seen the proliferation of various alternatives, ranging from data availability committees (DACs) to data availability layers, such as Celestia. DACs are committees where members are expected to maintain and if necessary, post all data for all transactions that had been processed on the L2. DA layers, on the other hand, are generalized layers that ensure the availability of data that had been posted on it.

The main reason for the proliferation of alternative data solutions is the high costs associated with posting transaction data on Ethereum as calldata. To minimize these costs, we have seen a divergence in data solutions that L2s have opted for.

PRE-DENCUN

The Dencun fork is a combination of two Ethereum upgrades, Cancun, which targets transaction management and processing on the execution layer, and Deneb, focusing on enhancing the consensus layer. The focus here is on the Cancun upgrade, which enabled proto-danksharding, allowing L2s to use data blobs to post transaction data to Ethereum.

Prior to the Dencun hard fork in March 2024, L2s could only post transaction data as calldata on Ethereum. This has been relatively expensive as opposed to cheaper off-chain data alternatives. Additionally, most L2s utilizing Ethereum for transaction data also opted to use the data blobs in order to save on data costs.



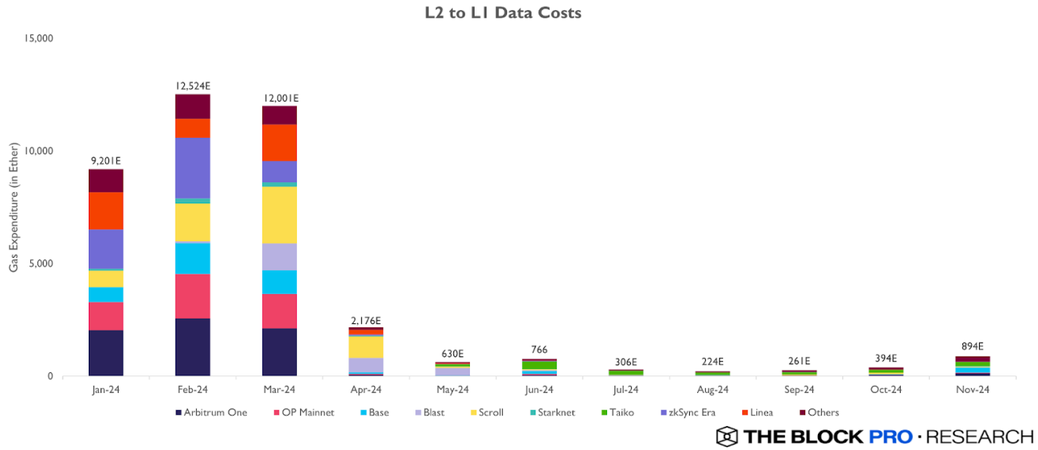
The cost savings associated with off-chain data has proven to be a strong incentive for L2 deployers, evidenced by the number of L2s opting for off-chain data availability (DA). The implementation of data blobs with the Dencun hard fork in March 2024 has since reduced onchain data expenditure significantly.

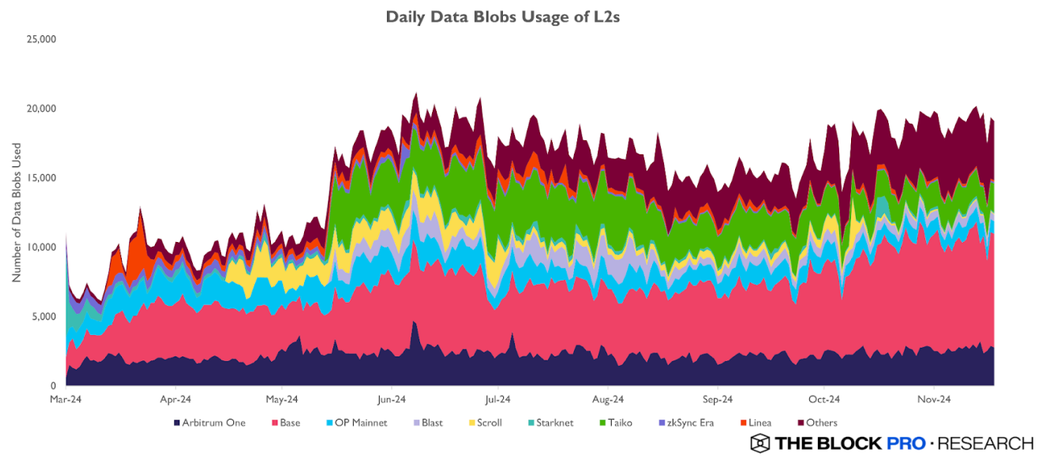
POST-DENCUN

As a result of L2s using data blobs for transaction data, the data costs for L2s that were previously using Ethereum for data availability have come down significantly, with a cumulative average decrease of 81.8% in the month following the implementation of data blobs.

The bulk of the cost savings stemmed from L2s using Ethereum for data availability, such as Base, Arbitrum One and OP Mainnet. Another notable adopter of data blobs is Taiko, which has averaged 17.1% of all data blobs posted to Ethereum once it opted to use data blobs instead of calldata.

Overall, we expect the usage of data blobs to continue growing as L2s reap the benefits of reduced data costs. These cost savings also get passed on to L2 users in the form of lower gas costs on L2s, which can be observed from the decline in L2 operator revenue, a trend that we look at in the L2 Revenue section.





DATA AVAILABILITY SOLUTIONS

Currently, there are three main types of data availability solutions:

1. Ethereum

   This refers to posting transaction data on Ethereum, either as calldata or in data blobs.

2. External DA Layers

   External DA solutions exist, such as MEMO Labs' cloud storage, which Metis uses, or Celestia's data availability sampling layer, which Manta Pacific uses.

3. DA Committees

   These are pseudo-decentralized entities with a handful of independent members who hold a copy of the transaction data for the L2. Many Validiums deployed under Starkware's StarkEx, such as ImmutableX and ApeX, adopt this model.

The landscape for L2s and their design choices in data availability will likely continue to evolve, though there appears to be limited room for innovation in data availability options that can further reduce data costs substantially at the moment. Perhaps the next major breakthrough in L2 design will come from other factors, such as a hybrid proof system that leverages both fraud proofs and validity proofs in a single L2.

REVENUE

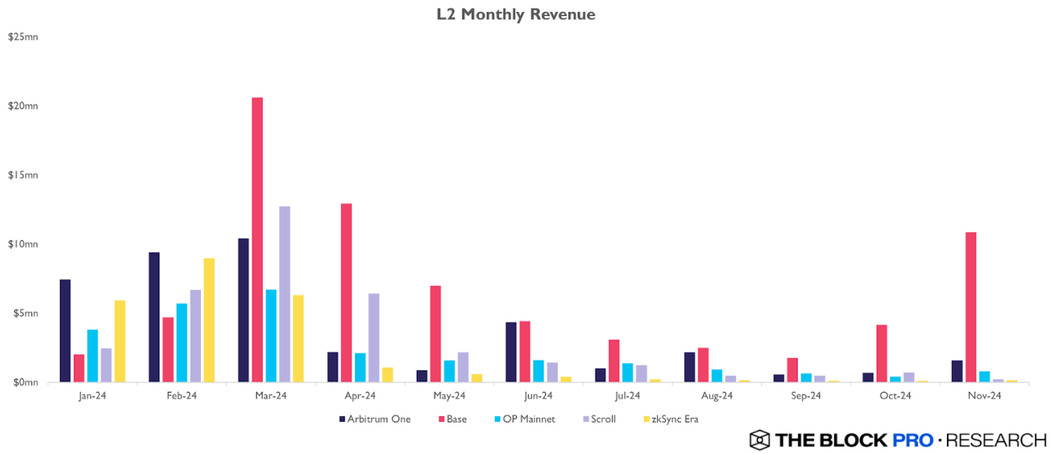
The biggest incentive for L2 operators to continue running L2s is the revenue generated by the transaction fees collected from L2 users. This revenue stream can be estimated from the amount of gas spent by users on L2s.

L2 REVENUE

The revenue L2s generate largely depends on two factors: the number of user transactions and the prevailing gas price on L2s. The more user transactions are made and the higher

the gas price, the larger the revenue that L2 operators collect.

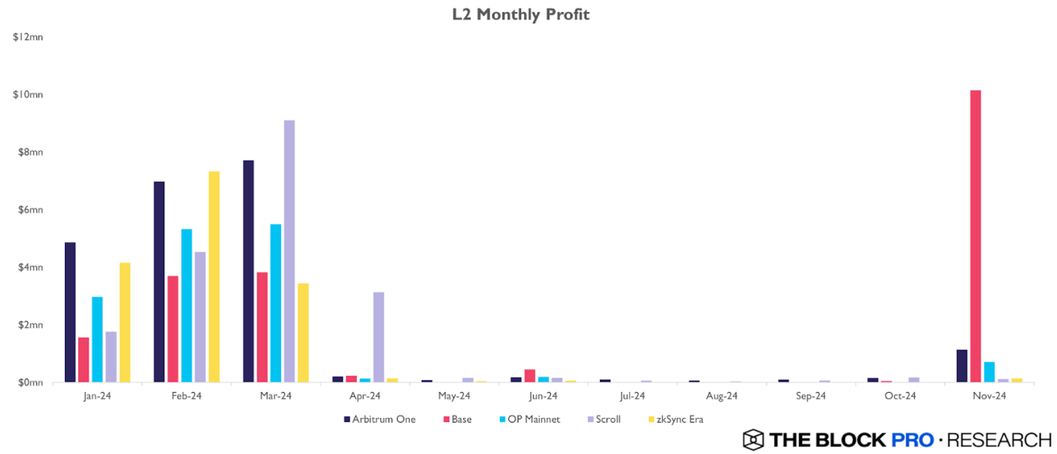
The largest grossing L2s are Base and Arbitrum One, averaging $6.74 million and $3.69 million in monthly revenue, respectively.



L2 PROFITS

Interestingly, if we exclude the outlier in the month of November, Base has a lower profit, compared to other L2s, after accounting for L1 data costs, despite holding the largest revenue stream.

In descending order, we have Arbitrum One at $1.96 million in average monthly profit, followed by Scroll at $1.76 million. Then we have zkSync Era and OP Mainnet at $1.39 million and $1.35 million, respectively. Without November's outperformance, Base's average monthly profit was approximately $920K. This puts Base's and Arbitrum One's data costs at 72.9% and 46.9% of their revenue streams, respectively. This highlights that the cost of posting data to Ethereum is still substantial for L2 operators and that a high revenue stream does not necessarily translate to high profits.



That said, Base's outperformance towards the tail end of 2024 was propelled mainly by increased trading activity on memecoins as well as the surge in the popularity of an AI-integrated application known as Virtuals, which aims to monetize the deployment and use of AI agents. This also proves how important applications are for L2s to continue operating profitably, especially since L2 fees are relatively low, which drives them to host applications that demand high transaction volume.

ETHEREUM L2 SECURITY

CRITERIA FOR L2 SECURITY

We explore the 5 criteria for L2 security, as laid out by L2Beat. These criteria determine the relative safety of using L2s in general, covering failsafes and exit windows. While no L2 have managed to meet the standards in all 5 aspects, this framework offers a succinct comparison between L2s' current security benchmarks.

1. State Validation

   State validation refers to the type of proof system that L2s use for ensuring the correctness of their state. Typically, L2s use either fraud proofs or validity proofs, but

there are nascent efforts at using a hybrid of both. That said, several L2s today lack a working state validation mechanism.

2 Proposer Failure

Proposer failure refers to the situation where proposers, who are responsible for submitting state roots from L2s to L1s, knowingly or unknowingly do not. This can cause L2s to halt indefinitely, which is very detrimental, especially if there are no safeguards to appoint another proposer or withdrawal mechanisms for users.

3. Sequencer Failure

Sequencer failures also have detrimental consequences, albeit less dire, than proposer failures. As sequencers are responsible for transaction verification on Layer 2 and submitting state reconstruction data to Layer 1, sequencer failure can be mitigated by enabling forced sequencing mechanisms on L1, such that Ethereum validators can process queued updates sent to an L2 smart contract if the sequencer goes offline for too long.

4. Exit Window

The exit window refers to the time in which users can withdraw their funds before an L2 undergoes an upgrade. This matters since many L2s are upgradeable and it is possible for malicious actors to undermine an L2 if they gain access to the private keys with permissions to upgrade the L2 contract code. In this unlikely scenario, it would be crucial for users to have a window to withdraw their funds. Most L2s currently do not have such a window, while L2Beat considers a 7-day window a minimum.

5. Data Availability

Data availability refers to the accessibility of the data needed for state reconstruction of the L2. Without access to said data, it is possible to censor the L2 indefinitely in the event of a sequencer or proposer failure. While using Ethereum for data availability offers the highest security, it also costs L2 operators the most. As such, we have seen the growing adoption of several cheaper alternatives with weaker security or centralization assumptions, as mentioned in earlier sections.

CENTRALIZATION RISKS

The L2 landscape is very much centralized in its current state of development, but that is expected considering that many L2s are still works-in-progress. That said, it is worth noting the centralization risks associated with many of the L2s today.

Security of Layer 2s

Layer 2	State Validation	Data Availability	Sequencer Failure (Enforcing Mechanism)	Proposer Failure (Escape Mechanism)	Exit Window (in days)
Arbitrum One	Fraud proof (whitelisted)	On-chain	Forced Txn via L1	Permissionless proposing	7 days
Base	Not functional	On-chain	Forced Txn via L1	No escape mechanism	N/A
OP Mainnet	Fraud proof	On-chain	Forced Txn via L1	Permissionless proposing	N/A
Mantle	Not functional	Mantle DA (EigenDA fork)	Forced Txn via L1	No escape mechanism	N/A
Blast	Not functional	On-chain	Forced Txn via L1	No escape mechanism	N/A
Scroll	Validity proof	On-chain	No enforcing mechanism	No escape mechanism	N/A
zkSync Era	Validity proof	On-chain	Queue Txn via L1	No escape mechanism	N/A
Linea	Validity proof	On-chain	No enforcing mechanism	No escape mechanism	N/A
Starknet	Validity proof	On-chain	No enforcing mechanism	No escape mechanism	N/A
Manta Pacific	Not functional	Celestia	Forced Txn via L1	No escape mechanism	N/A

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In terms of safeguards for proposer and sequencer failures, most L2s have some means to ensure the safety of users' funds. However, many of them lack an exit window in the event that the private keys controlling the L2 smart contracts are compromised. While this is a tail-end risk, it is something that should be addressed once an L2 has a decentralized operator network.

More importantly, there are several L2s that lack a working state validation system. This not only implies that there is a high degree of centralization risk, since only a centralized group of entities can verify the state of the L2 but this also requires a high degree of trust, as no other entity can independently verify newly proposed states of the L2. Although L2 operators are financially incentivized to behave honestly, this remains a significant security risk for users of such L2s.

BITCOIN L2S

Bitcoin scalability will largely rely on building high-performance L2s with the limited programmability that Bitcoin offers. This year, we see several notable developments that could catalyze the landscape for Bitcoin L2s. Some examples include the reintroduction of OP_CAT and the conceptualization of BitVM.

OP CAT ON BITCOIN

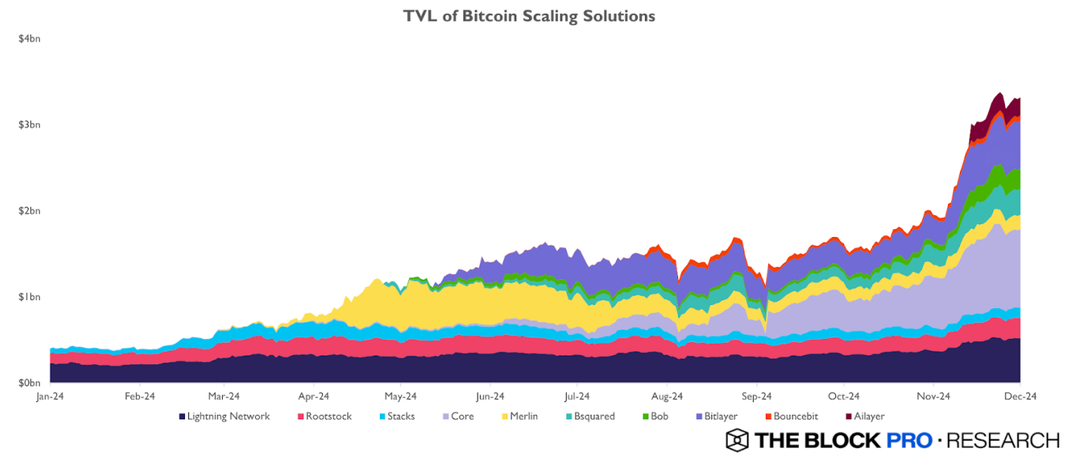
OP_CAT is a Bitcoin upgrade that allows the concatenation of data elements, which would enable more advanced smart contracts and enhance Bitcoin's scripting capabilities. The advancement in Bitcoin scripting capability opens up the door to the potential deployment of Bitcoin L2s, as state validation mechanisms can be coded into Bitcoin smart contracts. While OP_CAT has yet to be implemented, it has been suggested that this could go live in 2025, which could then lead to the proliferation of Bitcoin L2s.

BITVM

Bitcoin Virtual Machine (BitVM) is a concept aiming to enable Turing-complete smart contract capabilities to Bitcoin. BitVM works by processing computations off-chain before verifying them on Bitcoin, similar to the working principles of L2s. While the concept seems promising, there are still several hurdles to overcome, such as significant off-chain computational overhead and onchain footprint. However, the promise of Turing-complete smart contracts is a feature that has the potential to scale and grow the Bitcoin ecosystem.

EXISTING SOLUTIONS

We have also seen a rapid rise in the adoption of Bitcoin scaling solutions in 2024. Apart from the deployment of new Bitcoin scaling solutions, such as Bitlayer, we also see steady increases in the TVLs of older solutions, such as Stacks and Lightning Network. Cumulatively, the TVL of Bitcoin scaling solutions has surged from over $385 million to $3.2 billion (as of Nov 21, 2024).



LAYER 2 OUTLOOK FOR 2025

As 2024 draws to a close, we are seeing renewed strength in the crypto sector. With Bitcoin reaching all-time highs, activity on L2s is also starting to ramp up. While stakeholders are certainly incentivized by rising token prices and potentially increasing revenue streams, the main point of L2s is to scale blockchains. In other words, the real metrics for their success would be the transaction throughput they enable while keeping transaction costs for users low.

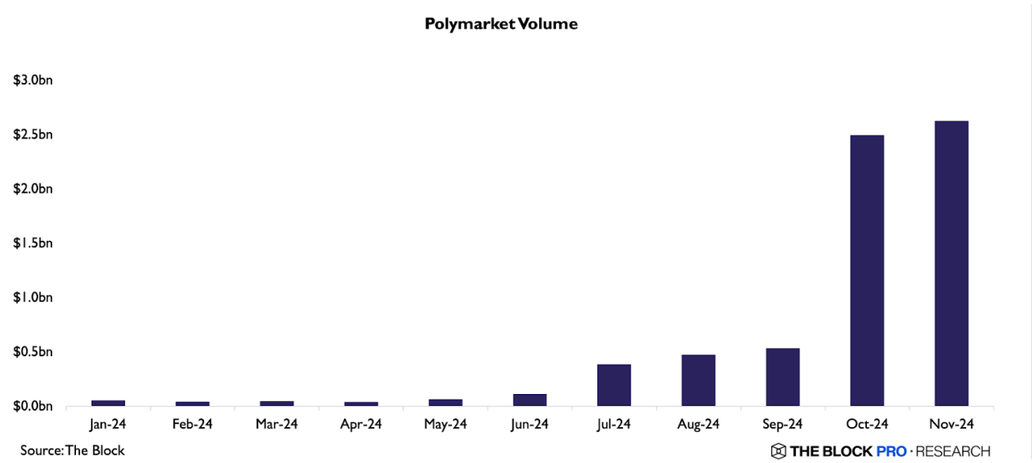
PART 5
DEFI

As the DeFi landscape continued to mature and consolidate in 2024, several key trends emerged that shaped the industry's direction, from prediction markets to memecoin trading and restaking protocols. This section examines the major developments that defined the year in DeFi.

POLYMARKET CAPITALIZES ON US ELECTION

The year 2024 marked a watershed moment for prediction markets, primarily driven by unprecedented trading activity surrounding the United States presidential election.

The Polygon-based platform Polymarket achieved record-breaking trading volumes exceeding $6.9 billion this year, with activity predominantly concentrated in the months leading up to the November election. This milestone cemented its position as the world's preeminent prediction market platform, substantially outperforming traditional Web2 competitors like Kalshi and PredictIt.



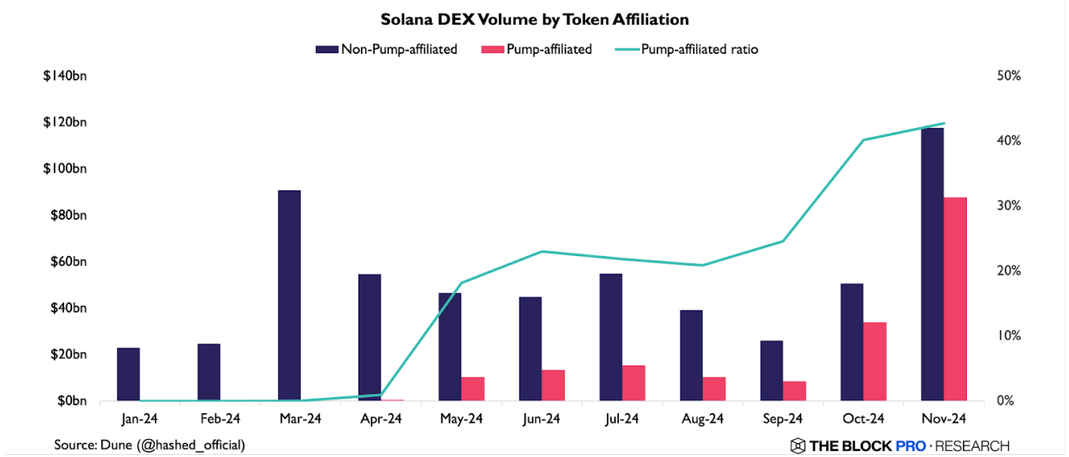
Polymarket demonstrated its efficacy as a reliable source of market intelligence. Its betting odds accurately signaled likely winners in swing states well ahead of mainstream media projections and political analysts' official calls. The platform's continued success will depend on its ability to maintain user engagement through diversified market offerings beyond electoral events.

MEMECOIN TRADING DRIVES SOLANA ACTIVITY

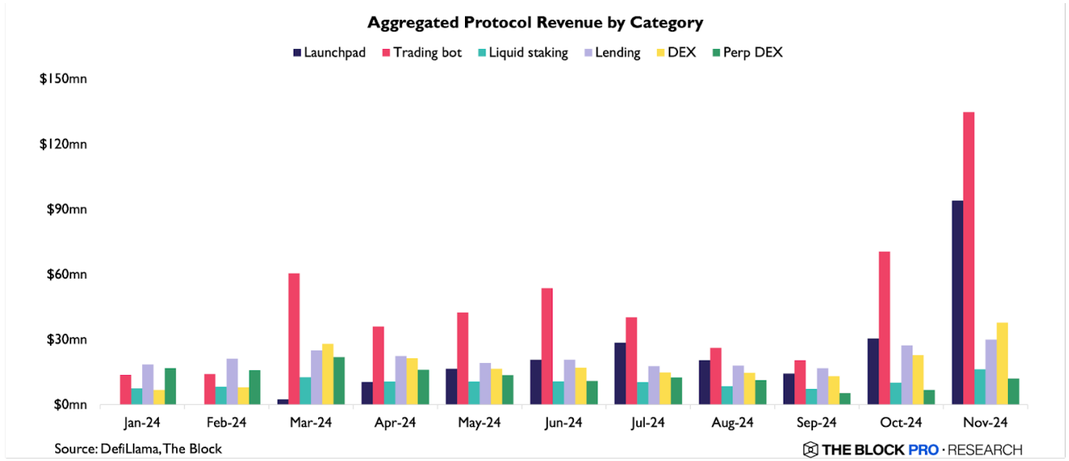
Amid a prolonged altcoin bear market characterized by subdued price action, crypto-native traders have pivoted their focus to memecoin trading.

The Solana-based platform Pump has established itself as a leading token launchpad since its January inception, distinguished by its "fair launch" methodology that eliminates premine allocations for insiders — a feature that resonates strongly with many memecoin traders. Throughout the year, Pump has significantly amplified trading activity on Solana, with Pump-affiliated tokens constituting 43% of Solana DEX volume in November.

The platform's success is particularly evident in its protocol revenue performance. Despite being the sole player in the launchpad space with significant traction, the launchpad category has outperformed many other DeFi segments in protocol revenue generation, surpassing the likes of liquid staking, lending, and DEXs.



This surge in memecoin trading activity has also catalyzed growth for trading bots, which facilitate streamlined trading via Telegram. Both Pump and major trading bots implement a 1% fee structure on all transactions, captured entirely as protocol revenue — a model that diverges from traditional DeFi categories, which typically employ lower fee rates and allocate substantial portions to supply-side revenue.



Together, Pump and trading bots have engineered an efficient ecosystem for memecoin creation and trading during this period of broader altcoin market stagnation, securing higher protocol revenue shares than DeFi liquidity layers such as DEXs.

This development suggests two key implications. First, user-facing frontends may possess stronger competitive advantages and asymmetric pricing power due to higher switching costs. Second, backend liquidity layers may be approaching market saturation and unable to match their counterparts' fee structures — as evidenced by Uniswap, the leading DEX, which currently does not generate protocol revenue.

On the contrary, Pump's impressive revenue trajectory could face questions of sustainability once the broader altcoin market volatility resumes and trader attention shifts. The platform's resilience remains untested against evolving market dynamics, and its long-term viability will require demonstrated adaptability across varying market conditions.

DEFI GIANTS STAY INNOVATIVE

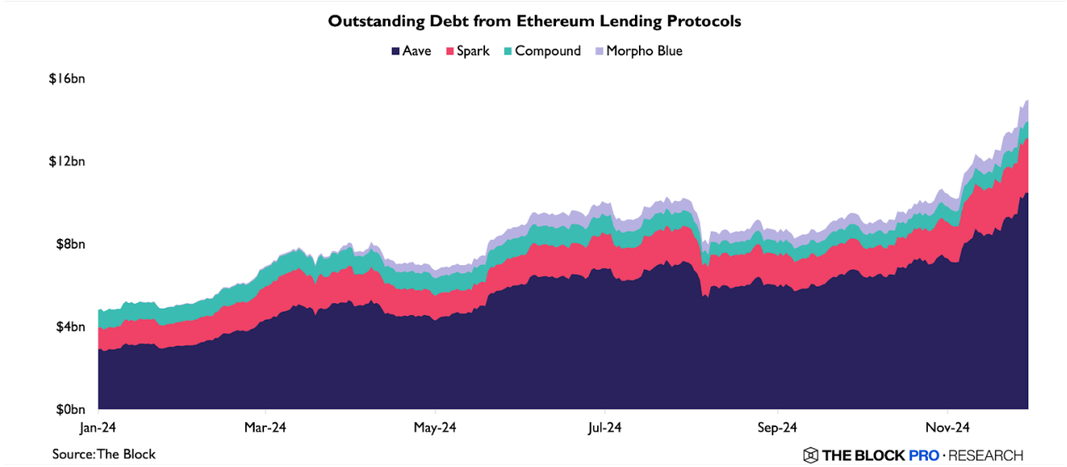
Speaking of Uniswap, leading DeFi protocols continue to demonstrate significant technological advancement.

The recently announced Unichain is a Uniswap-native, Ethereum-based optimistic rollup that enables MEV internalization through trusted executable environments (TEEs) for verifiable block building — potentially creating a new revenue stream to enhance liquidity provisioning incentives and generate protocol revenue.

Beyond Unichain, Uniswap V4's imminent release introduces substantial protocol improvements, including gas optimization via singleton contract implementation and programmable "hooks." These hooks enable developers to integrate custom logic at various stages in the lifecycle of a token swap transaction, fostering ecosystem-wide innovation.

Practical applications of hooks include limit order functionality, volatility-based dynamic fee adjustment, and automated deployment of out-of-range liquidity into yield-generating protocols.

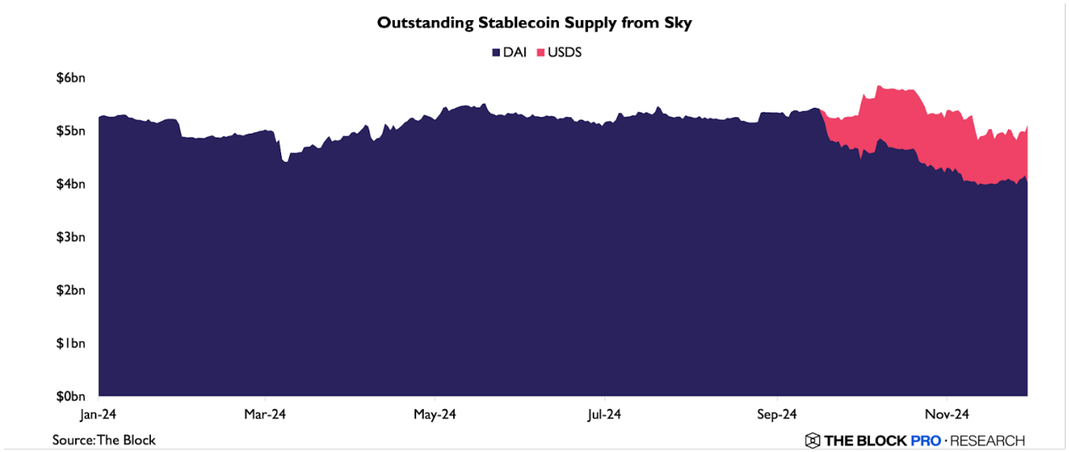
Aave, another DeFi cornerstone, has reinforced its position as the premier lending protocol by more than tripling its total outstanding debt year-to-date. The protocol's forthcoming V4 upgrade introduces a unified liquidity layer supporting both supplied and natively minted assets, enhancing integration with GHO, its native, yet relatively nascent, stablecoin. This expansion into crypto-backed stablecoins promises to diversify Aave's product offerings and revenue streams, further solidifying its market leadership in loan liquidity provision.



In a parallel development, Maker's recent rebranding to Sky signals its strategic expansion. The transformation encompasses the upgrade of its governance token from MKR to SKY and the evolution of its native stablecoin from DAI to USDS, which stands for Sky Dollar.

The brand's inaugural product, Spark, functions as a lending protocol facilitating native USDS issuance and savings. Spark's innovative model allows USDS depositors to earn a portion of collected borrowing fees, incentivizing USDS adoption. This development notably highlights the convergence of Aave's and Sky's strategic objectives.

Spark has emerged as the second-largest lending protocol on Ethereum, more than doubling its total outstanding debt year-to-date. Demand for USDS has risen steadily, with the stablecoin's outstanding supply ratio in the Sky ecosystem reaching 21%.



In November, the Sky community voted overwhelmingly in favor of retaining the Sky brand amidst a rebranding controversy, clearing the pathway for the protocol's future expansion and validating its strategic repositioning.

RESTAKING PICKS UP MOMENTUM

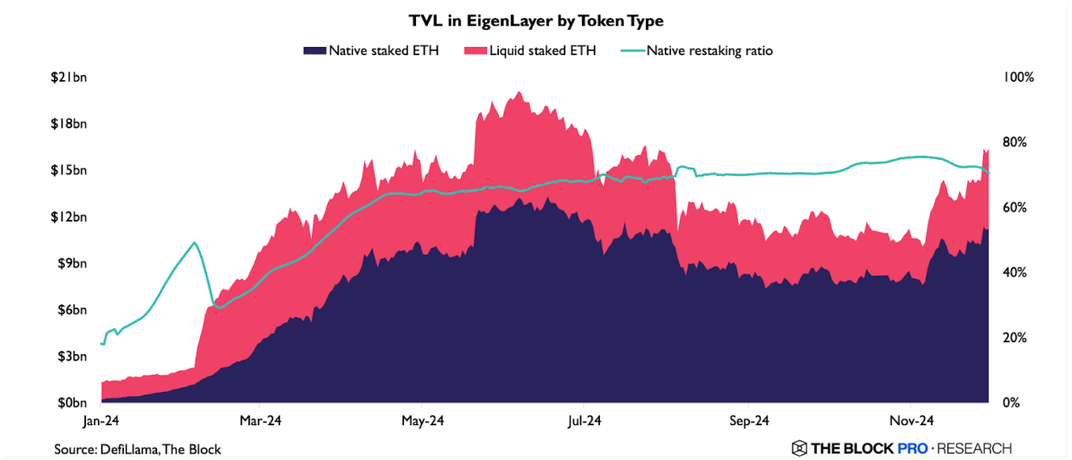
Restaking (or cross-staking) emerged as a breakthrough DeFi sector in 2024, representing a novel approach to rehypothecating collateral to economically secure multiple decentralized infrastructures simultaneously via proof-of-stake consensus.

While the concept has been enshrined in Avalanche and Cosmos ecosystems, emerging protocols are now enabling restaking on Ethereum and Bitcoin. Restaking protocols facilitate the utilization of exogenous collateral with higher market cap and lower volatility — such as BTC, ETH, and stablecoins — mitigating the systemic risk arising from endogenous collateral.

The Ethereum-based EigenLayer has spearheaded the restaking movement, beginning the year with a $1.3 billion TVL, predominantly in liquid-staked ETH. By June, its TVL reached an all-time high of $20 billion.

The moderate TVL decline in Q3 was likely a result of the departure of mercenary capital after the announcement of a retroactive airdrop to protocol participants. Still, EigenLayer has remained resilient, with the current TVL hovering around $16 billion — a twelvefold increase year-to-date.

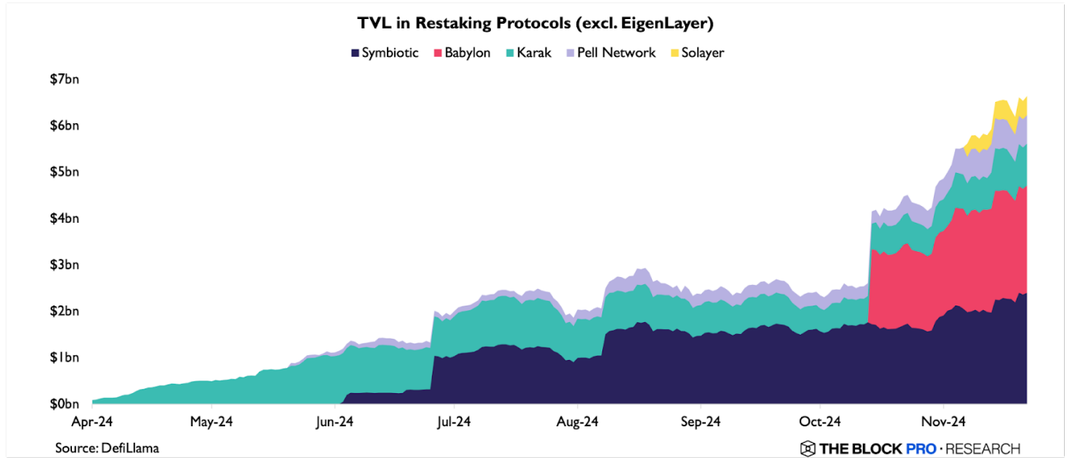
Notably, there has been a drastic increase in TVL in native-staked ETH. The native restaking ratio has exceeded 70%, ensuring the restaking protocol remains permissionless and censorship-resistant, thereby maintaining alignment with core decentralization principles.



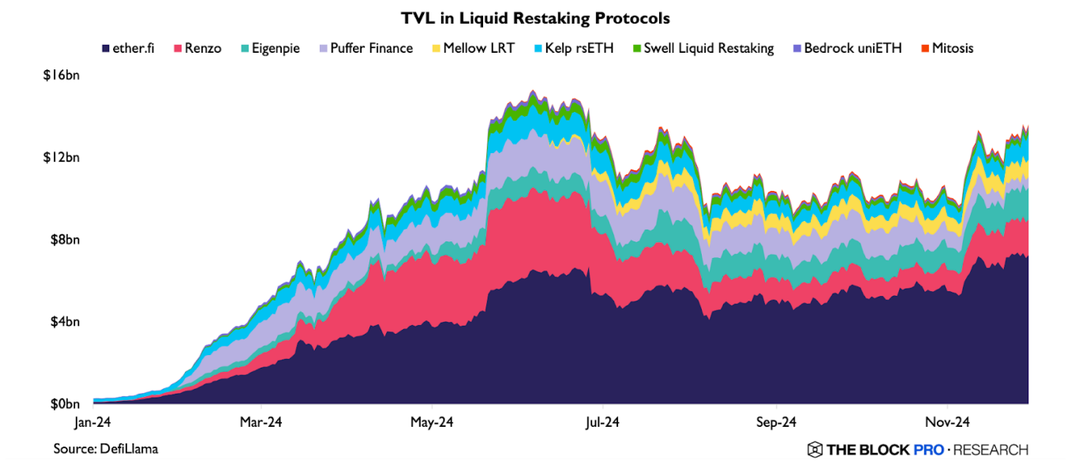
EigenLayer is the third-largest DeFi application by TVL, behind Lido and Aave, demonstrating the colossal amount of supply for shared security. Concurrently, demand for shared security is gradually increasing, with consumer applications such as oracles, data availability provisioning, shared sequencing, and cross-chain messaging being onboarded.

Beyond EigenLayer, 2024 saw the launch of multiple alternative restaking protocols bootstrapping their liquidity. Babylon emerged as the largest Bitcoin-based restaking protocol with $2.3 billion in TVL at the time of writing.

Meanwhile, the Ethereum-based Symbiotic, with $2.4 billion in TVL, is a modular restaking protocol that maximizes the configurability of economic security provision, catering to the needs of individual consumer applications.



The natural evolution of restaking is liquid restaking derivatives, allowing users to retain liquidity through a tokenized representation of their restaked assets.



Ether.fi emerges as the leading liquid restaking protocol with a $7.3 billion TVL, ranking as the fourth-largest DeFi application. Its dominance stems from its first-mover advantage and users' speculation on potential airdrops.

Over half of the outstanding supply of ether.fi Staked ETH resides in Aave, making it Aave's fourth-largest reserve asset. The early success of liquid restaking tokens underscores the market's robust appetite for yield and leverage. As we potentially enter the later stage of a bull market, demand for liquid restaking is poised to expand further.

DEFI OUTLOOK FOR 2025

As we potentially enter the euphoric stage of the bull market in 2025, market dynamics appear poised for further bifurcation. On one side, the rising tide of financial nihilism—propagated through social media platforms—continues to normalize memecoins. On the other, the sector's increasing maturity drives protocols toward sustainable protocol revenue generation.

PART 6
NFTs AND GAMING

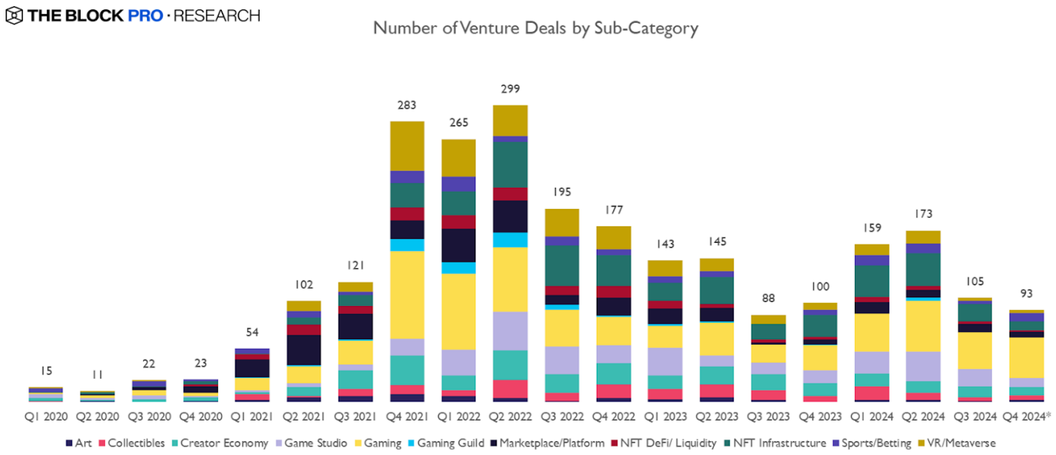
NFTs and Gaming faced another challenging year in 2024, continuing the prolonged market downturn that began in previous years. Projects in these segments experienced continued declines in total sales volume, transaction counts and average floor prices.

Gaming in particular, saw notable changes, with projects that have found relative success this year being ones that pivoted away from the speculative "play-to-earn" models that had dominated in years prior. Meanwhile, the Ronin network was also a positive exception, showcasing impressive network metrics during the first half of the year.

In the NFT sector, Milady Maker, Pudgy Penguins and Bitcoin-based Ordinals, at least in Q1, were standout performers.

Private market funding and venture deals remained relatively uneventful, echoing the trend of subdued funding from 2023.

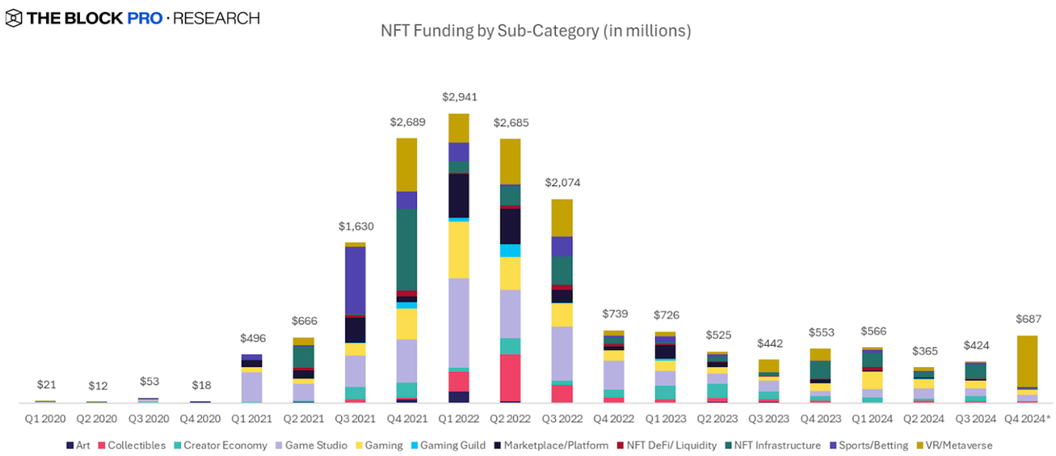
The number of venture deals in the sector for the year declined quarter-over-quarter at a rate of -14%, from 159 venture deals in Q1 2024 to just 93* in Q4 2024, although this data only takes into account the months of October and November.



Source: The Block

Q4 2024 exhibited a notable difference in terms of sub-categories. Total venture funding in Q4 increased by 62% compared to the previous quarter, with over 3/4th of the quarter's total funding raised coming from the VR/Metaverse sub-sector with $525 million.

The entirety of this $525 million came from Praxis' latest round on October 15th. Praxis is a project aiming to build a city that integrates decentralized governance and blockchain technology, it previously raised a $15 million series A round in 2022 which included Paradigm and Robot Ventures, among others.



Source: The Block

Throughout the year, the gaming sub-sector remained the most active in terms of the number of deals, and NFT infrastructure remained the most active in terms of amount raised, with the exception of VR/Metaverse in Q4 2024.

With funding and deal activity continuing to decline and no sub-sector emerging as a standout leader, this subdued environment reflects a market still grappling with the aftermath of the speculative boom in years prior, with private investor sentiment remaining fairly depleted despite positive wider market valuations of publicly traded NFT or gaming-related tokens.

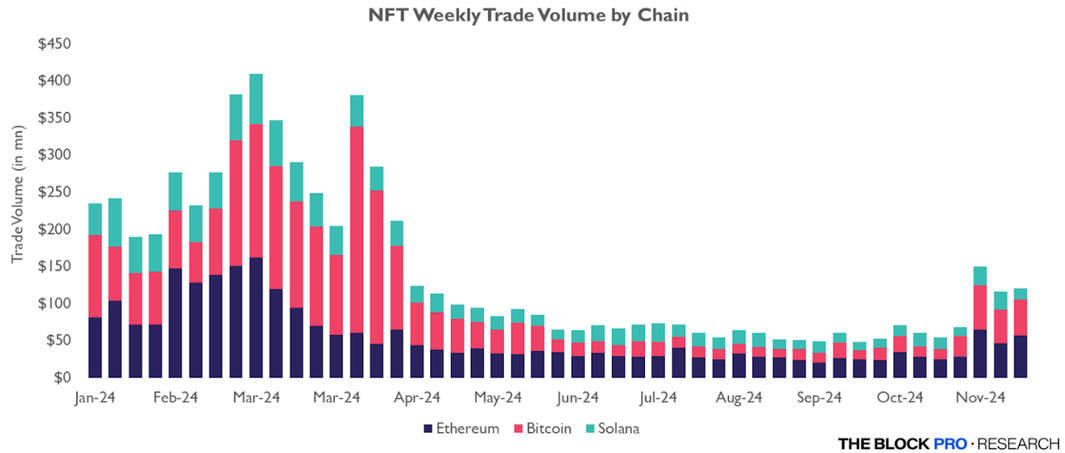
THE DECLINE OF TRADITIONAL NFTS

The year 2024 was largely uneventful in the traditional NFT market, as the era of explosive growth and speculation that characterized the early days of NFTs gave way to a more subdued reality, where oversaturation, reduced novelty and evolving buyer expectations reshaped the landscape. Bitcoin-based NFTs called Ordinals notably made waves in Q1.

In early 2024, Ethereum's NFT market had trade volumes averaging ~$82M per week in January and ~$140M per week in February. However, this optimism was short-lived, as volumes began a downward trend from March onwards, with average weekly trade volumes decreasing by roughly 35% per month for the following 3 months. By June, the average weekly trade volume of the Ethereum NFT market had dropped to about $33M, less than half of the weekly average at the beginning of the year, and remained stagnant for the rest of the year.

Bitcoin, in contrast, experienced an early-year surge, with sales volumes averaging nearly $200M per week in April, driven by the popularity of Bitcoin Ordinals. Yet, this trend proved unsustainable, as by October, NFT sales volume on Bitcoin averaged just ~$16M per week. The initial fascination with Bitcoin NFTs, while impactful, seemed more about novelty than lasting utility.

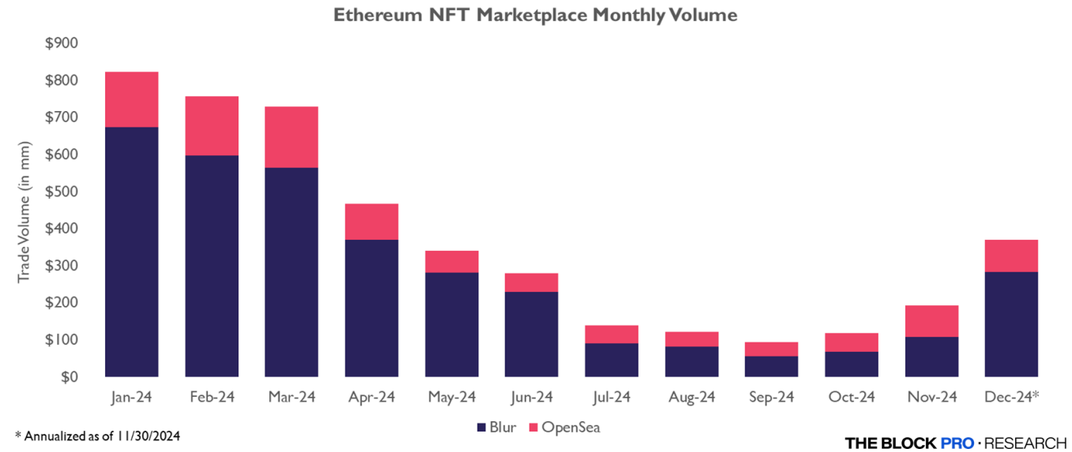
The NFT landscape on Solana offered a different narrative altogether. While it had some relatively high points in Q1, much like its counterparts on Ethereum and Bitcoin, it failed to capture any sustainability in subsequent months as well.



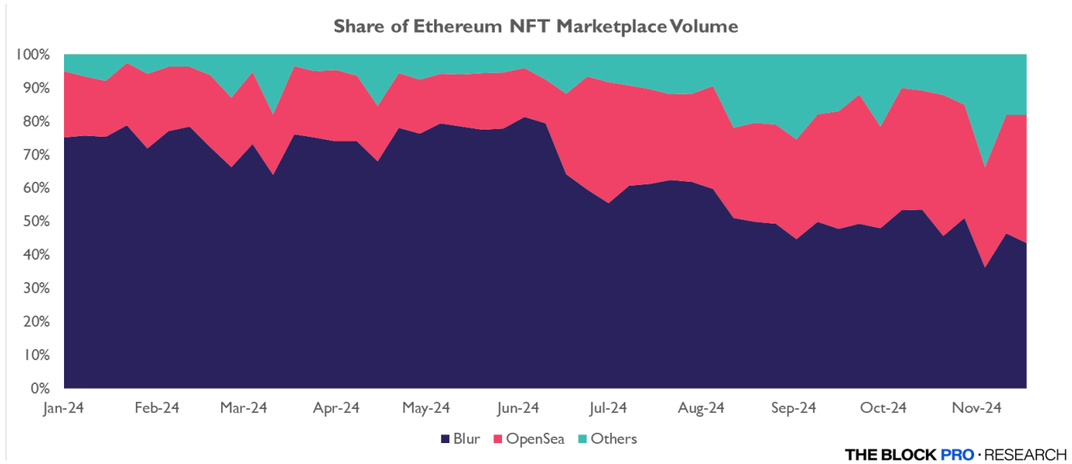
Source: The Block Pro

As we delve deeper into Ethereum, Blur and OpenSea still dominate market share, with Blur's 51% and OpenSea's 33%. Blur, thanks to its aggressive incentive programs in previous years, had a yearly peak market share of over 80% in early 2024, yet as the year progressed, Blur's monthly volumes fell significantly, from a high of around $673 million in January to just ~$107 million in November.

Meanwhile, OpenSea started to steadily gain ground against Blur in the second half of the year, increasing its market share from 19% in January to over 38% by the end of November. Blur's decline highlights the challenges of sustaining dominance when reliant on overly-aggressive incentive campaigns. However, it is also worth noting that OpenSea's increased market share is likely a result of Blur itself losing volume and then conceding market share, as opposed to OpenSea gaining an influx of volume itself, as noted by the sector-wide declines in activity and volume for the entire sector.

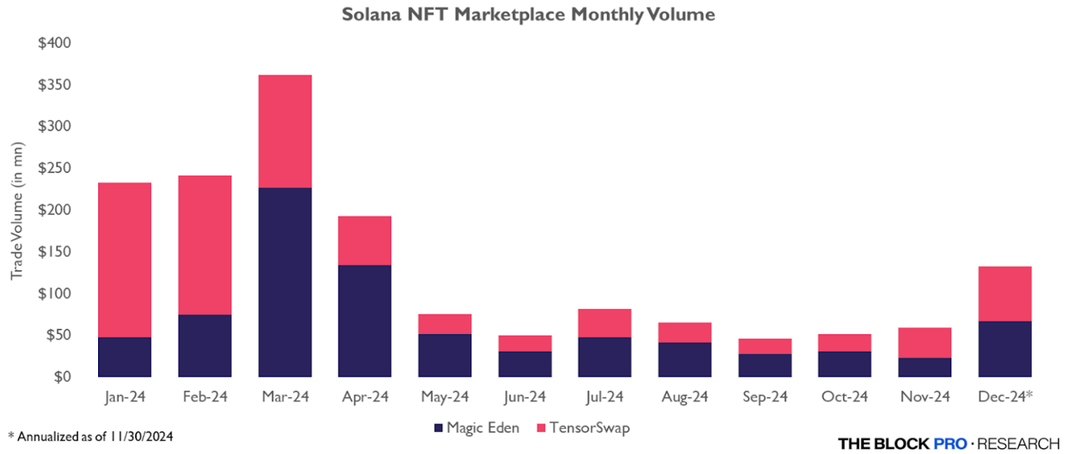


Source: The Block Pro



Source: The Block Pro

On the other hand, Solana's NFT marketplaces exhibited a similar pattern to its Ethereum counterparts, with significant declines from Q1 onwards.



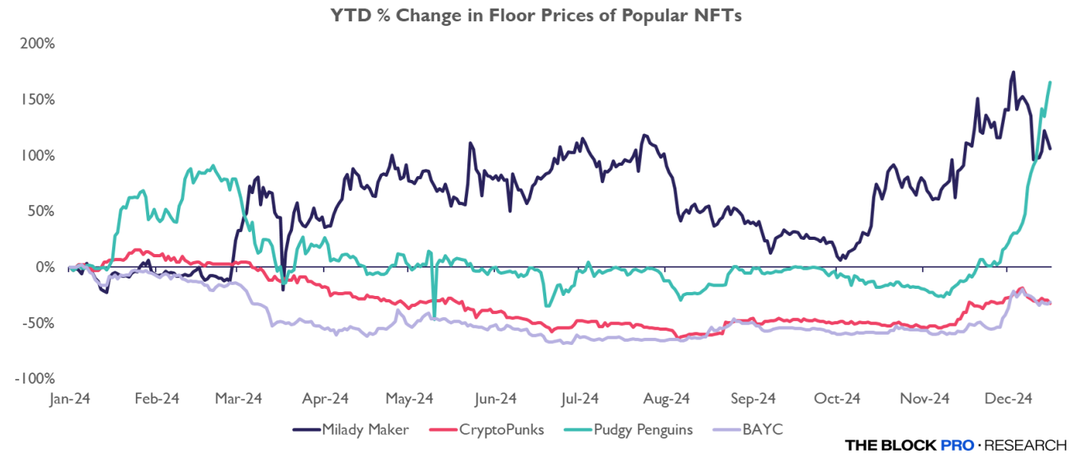
Source: The Block Pro

FLOOR PRICE PERFORMANCES

Legacy NFT collections continued to face challenges in 2024, with CryptoPunks and Bored Ape Yacht Club (BAYC) seeing 28% and 42% declines in their respective floor prices from January to November. Milady Maker and Pudgy Penguins, however, stood out as outliers as their floor prices increased by 105% and 165%, respectively, up to the third week of December.

Interestingly, both these projects have launched fungible tokens this year, with Remilia Corporation, the team behind Milady Maker, initiating a $20.5 million presale for its CULT memecoin in June before launching in December. Pudgy Penguins also launched their Solana-based official token, PENGU, in the third week of December. Two weeks earlier, the token announcement caused the collection's floor price to double in value.

These performances underscore the importance of community-driven momentum and cultural relevance as collectors are shifting their focus toward projects that offer sustained community engagement and cultural relevance rather than relying on the prestige of traditional "blue-chip" collections. As the market continues to evolve, the ability to cultivate a dedicated and active community will likely be a key determinant of long-term success for NFT projects.



Source: The Block Pro

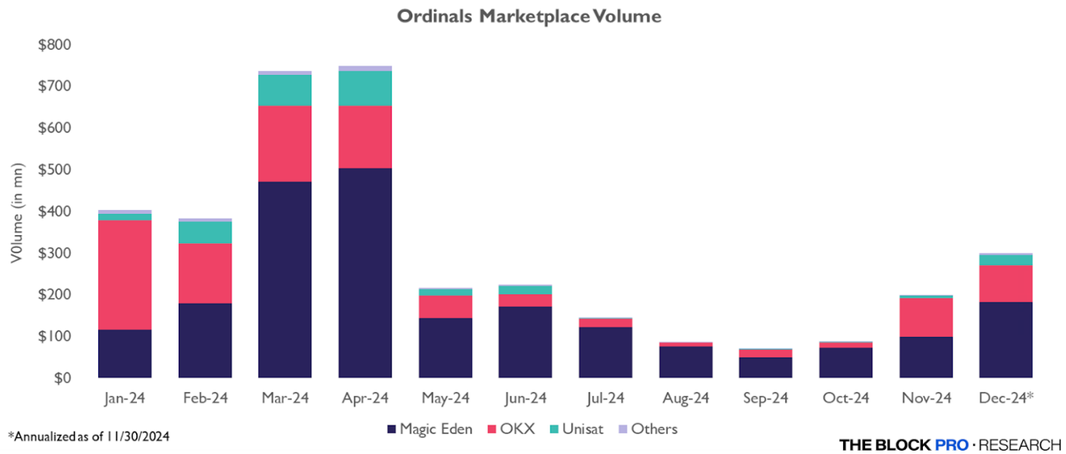
ORDINALS AND THE EMERGENCE OF BITCOIN NFTS

While traditional NFTs on Ethereum and Solana generally struggled in 2024, Bitcoin-based Ordinals initially emerged as a promising countertrend, attracting attention from collectors and sparking conversations across the NFT community.

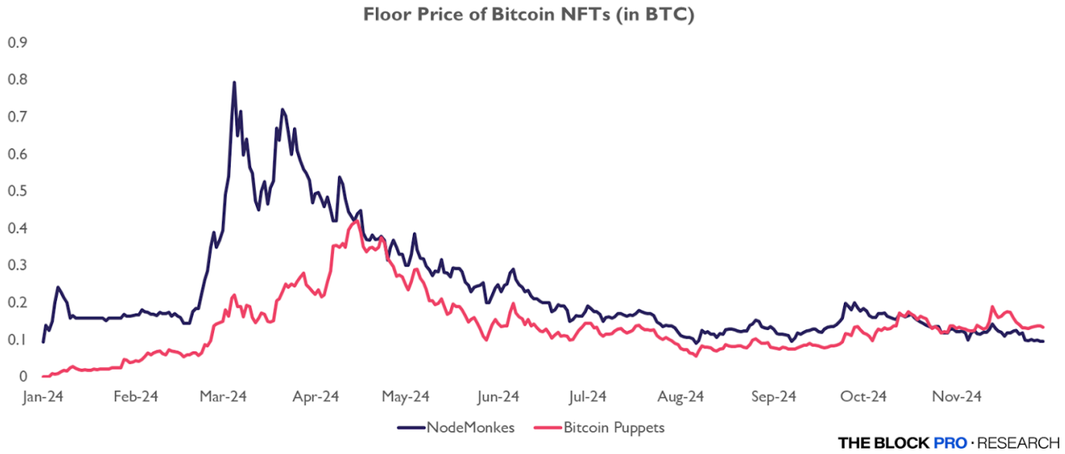
By allowing NFTs to be inscribed directly onto individual satoshis, Ordinals introduced a new concept that created a novel use case for Bitcoin as a platform for digital assets. However, despite the initial surge in interest, with over $740 million in total trade volume per month in March and April, Ordinals faced a steep decline in the following months, gradually fading into relative obscurity.

Without the network effects and development momentum found on Ethereum or Solana, Ordinals gradually faded, and by year-end, they were less significant in the broader NFT space.

Two of the most popular Bitcoin NFTs at the time, NodeMonkes and Bitcoin Puppets peaked early in the year. The former peaked at a floor price of ~0.8 BTC, while the latter peaked at ~0.4 BTC. They have since failed to reach anywhere near those levels.



Source: The Block Pro



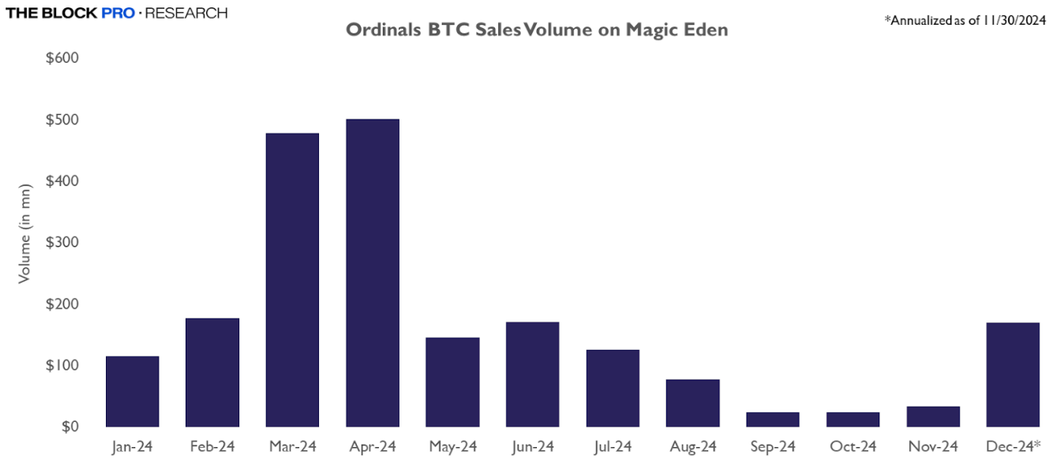
Source: The Block Pro

MAGIC EDEN'S STRATEGIC ADAPTATIONS

Magic Eden navigated 2024 by expanding its user base from to Ethereum, Polygon, and Bitcoin, setting it apart from competitors that mostly focused on one ecosystem.

The addition of Bitcoin Ordinals was a particularly successful expansion, tapping into the heightened interest in Bitcoin-based NFTs in Q1, where it facilitated over a total of $1.27 billion worth of trading volume in the first 4 months of the year, averaging over $318 million worth of trading volume per month in this period.

For further reference, Ordinal sales volume on Magic Eden totaled just $600 million from May to November 2024, highlighting the drastic downturn the narrative experienced.



Source: Dune

GAMEFI

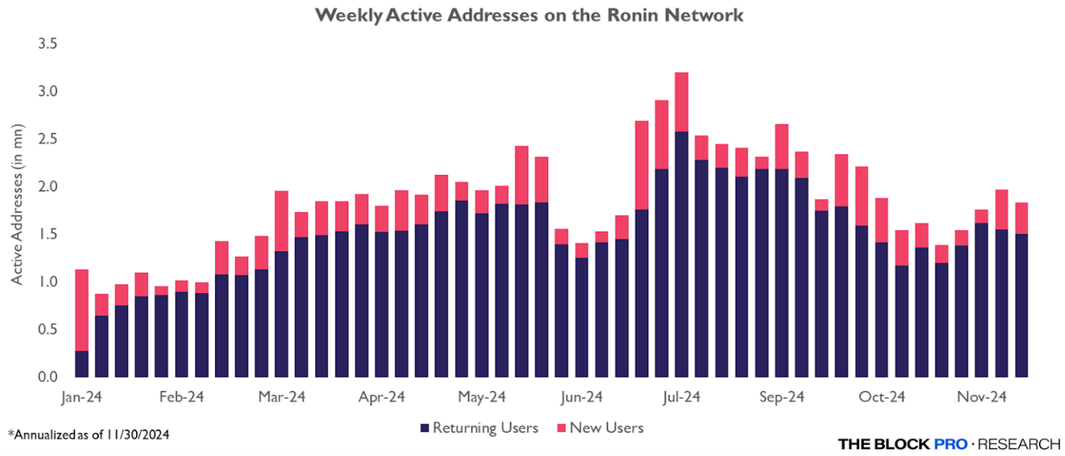
RONIN

While not many notable things occurred this year in the gaming sector, Ronin has stood out as one of the few clear exceptions.

At the time of writing, Ronin is the 4th most used blockchain when measured in terms of the number of active addresses and transaction count, behind Ethereum, Bitcoin and Solana.

This comes as the network averaged just 1M active addresses in the first week of January to a peak of nearly 3.2M active addresses during the last week of July 2024, representing an average week-over-week increase of 5% in this period.

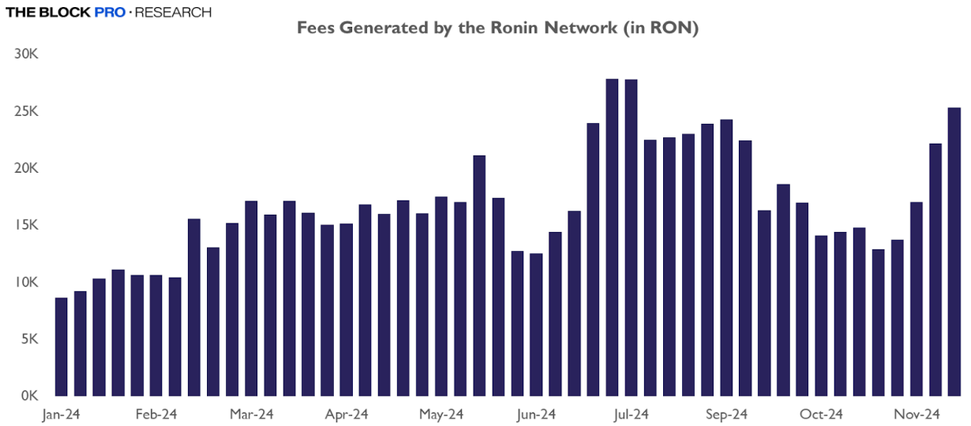
The impressive growth the Ronin network experienced during the first 3 quarters of the year likely came from various gaming guilds migrating over following the network's rebuild post-Axie Infinity. This was also helped by the well-built infrastructure surrounding the network, most notably with native direct fiat onramps and the Katana DEX.



Source: *Dune (@ronin)*

Ronin has generated over 811K RON, currently worth over $1.8 million at the time of writing, in fees from January to the end of November 2024, averaging 16.9K RON generated per week in this period. Up until July 2024, the fees generated by the network were increasing at a weekly rate of 5.1% every week, before a more gradual cool off and decline in the following 3 months during which they declined by ~5% per week.

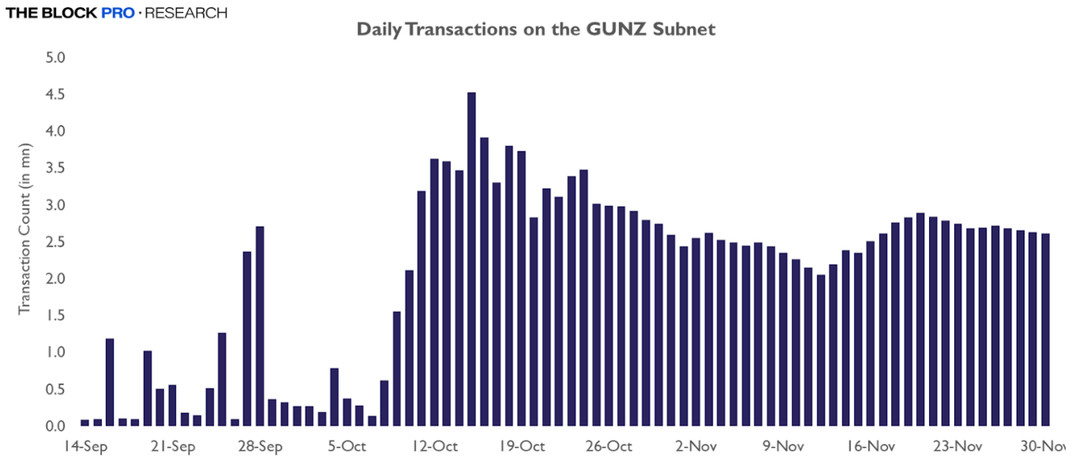
The fees generated by the Ronin Network have since seen a notable recovery, averaging 19.5K RON generated per week in November 2024, with week-over-week increases of nearly 19% for the month.



Source: Dune (@Ronin)

OFF THE GRID

Off the Grid, a battle royale game developed by Gunzilla Games, also stands out as a success story, as it briefly became one of the Epic Games Store's most popular free-to-download games following its early access launch.

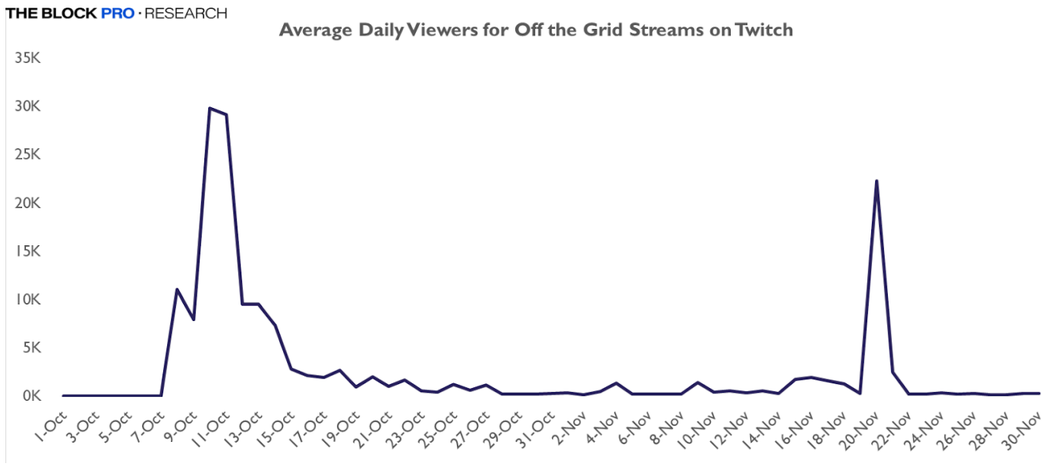


Source: Flipside

The game's blockchain integration is optional from its core gameplay, allowing players to engage with the game without interacting with its NFT marketplace—a design choice that has likely contributed to its early success.

Following its launch, the custom Avalanche L1 blockchain (GUNZ L1) used by *Off the Grid* saw significant upticks in both transaction volume and active address growth and has remained fairly heightened compared to the levels it displayed prior to *Off the Grid*.

In addition to blockchain metrics, *Off the Grid* initially attracted considerable attention on streaming platforms like Twitch, where it reached nearly 30,000 average viewers within its first few days. However, this viewership declined sharply over the following weeks, averaging just 620 daily viewers in November, excluding a single-day spike that occurred on the 20th of that month.



Source: TwitchTracker

NFTS AND GAMING OUTLOOK FOR 2025

One of the most anticipated trends for 2025 is the integration of artificial intelligence within NFT and GameFi projects. AI's ability to create personalized, dynamic experiences offers a compelling new layer for games, allowing for adaptable in-game environments, procedurally generated content, and responsive non-player characters (NPCs) that can learn and evolve with the player. Additionally, AI-driven analytics could enable more sophisticated personalization and player feedback, enhancing user engagement and retention.

As speculative trends shift, we may see a unique convergence of memecoins, NFTs, and GameFi in 2025. Memecoins, which captured cultural and market interest in 2024, may intersect with NFTs and GameFi in novel ways. This convergence could manifest through NFT-backed memecoins, gamified experiences involving meme-based characters, or community-driven ecosystems where memes, NFTs, and gaming rewards overlap. The playful, socially driven aspects of memecoins could create opportunities for cross-over appeal in both GameFi and NFT markets.

PART 6
ONCHAIN APPLICATIONS

The cryptocurrency ecosystem has evolved dramatically since Bitcoin's inception in 2009, growing from a single digital currency to a complex landscape of financial products and services worth trillions of dollars. Despite this expansion, some argue that Bitcoin and stablecoins represent the only blockchain applications with real staying power. This perspective is driven by Bitcoin's outsized success as a store of value and the crypto industry's decade-long focus on refining payment use cases, much of which has culminated in the development of stablecoins. However, this view overlooks the many applications that are showing real signs of product-market fit in sectors such as memes and gambleFi, onchain consumer, real-world assets, and DePIN.

The growth of these new applications follows a pattern observed in previous technological shifts: the apps-infrastructure cycle. Early applications drive the development of supporting infrastructure, which then enables more sophisticated applications to emerge. In crypto, we've seen this play out repeatedly: the explosion of DeFi in 2020 led to the development of better oracle infrastructure and standardized smart contract libraries, which in turn enabled more complex DeFi applications. Similarly, the NFT boom drove improvements in metadata standards and marketplace infrastructure, laying the foundation for more advanced NFT applications in gaming and social. Now, with increasingly mature and capable infrastructure, we're seeing a new wave of applications demonstrate genuine signs of product-market fit and sustainable user growth.

MEMES & GAMBLEFI

The first category of applications showing clear signs of traction centers around speculation. While critics often dismiss these applications as merely gambling platforms, their rapid growth and sustained user engagement reveal crypto's ability to create compelling entertainment experiences. These platforms have found ways to blend financial incentives with engaging social and gaming elements. Importantly, many of these applications have demonstrated both impressive user growth and revenue generation.

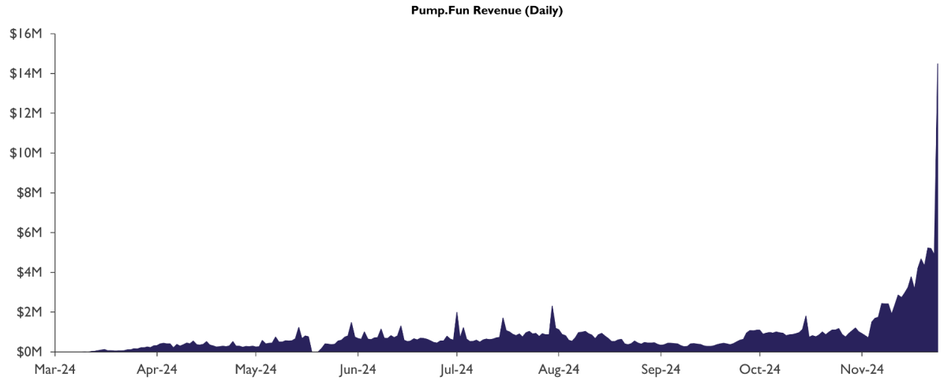
This section will cover four platforms that exemplify this trend, each taking a unique approach to combining social engagement with speculative mechanics: Pump.fun's social trading platform, Fantasy Top's competitive portfolio games, Rollbit's crypto-native casino, and Polymarket's prediction markets. Each of these platforms has carved out a distinct niche while demonstrating impressive growth metrics and user engagement.

PUMP.FUN

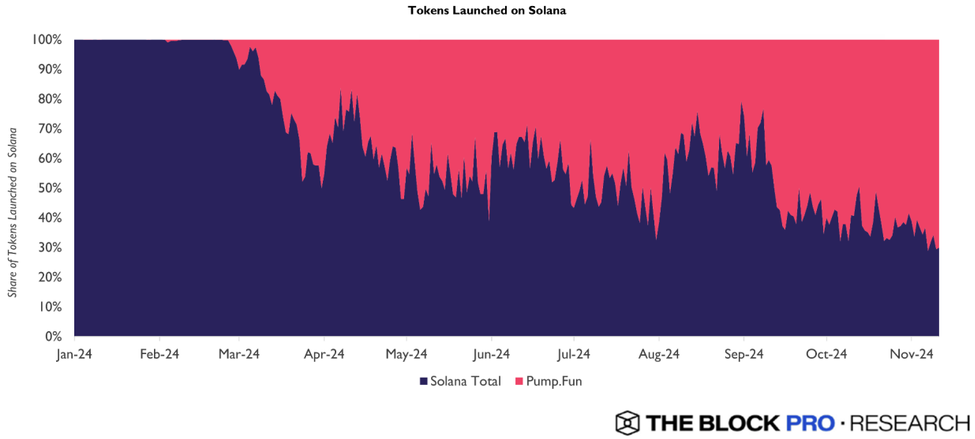
Pump.Fun is a decentralized platform on Solana that lets users easily create and trade meme-inspired cryptocurrencies through a simple interface. The platform resonates with users by democratizing token creation, making it accessible to anyone regardless of technical expertise. It also offers a fair trading experience with no presales or team allocations, while Solana's fast speeds and low fees make trading affordable and efficient, with instant liquidity allowing quick responses to market changes.

GROWTH METRICS

Pump.Fun has demonstrated impressive revenue growth since its launch earlier this year. As the above chart shows, the platform's daily revenue consistently ranged between $500K to $1M from April to October. In November, it steadily increased before spiking to reach its highest all-time daily revenue, over $14M toward the month's end. Pump.



Fun primarily generates revenue through listing fees charged to projects that launch memecoins on their platform in addition to a 1% fee on transactions. The rising revenue indicates growing activity on the platform.



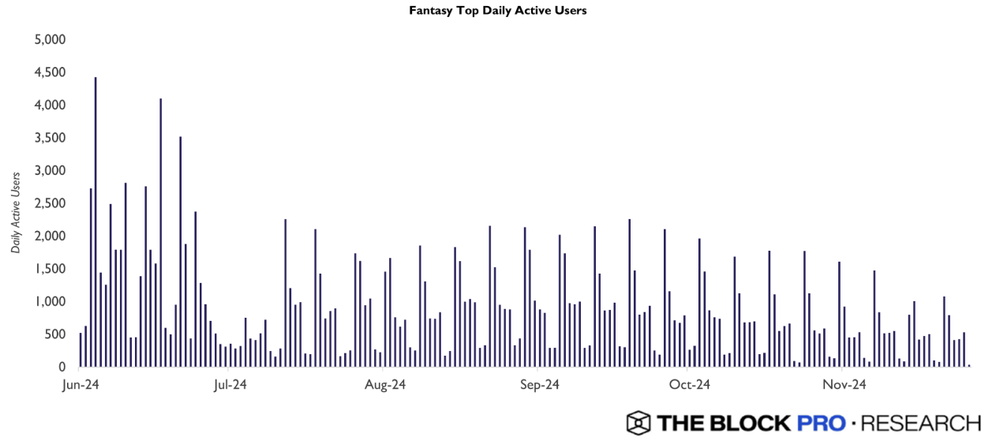
Since roughly March 2024, Pump.Fun has consistently accounted for a significant portion of new token launches on Solana. While the percentage of tokens launched has fluctuated, Pump.Fun has maintained a dominant position since March, growing throughout the year

to become responsible for roughly 70% of all Solana tokens launched as of November 2024. This substantial share of total token launches on Solana highlights the impressive scale at which Pump.Fun is now operating.

FANTASY TOP

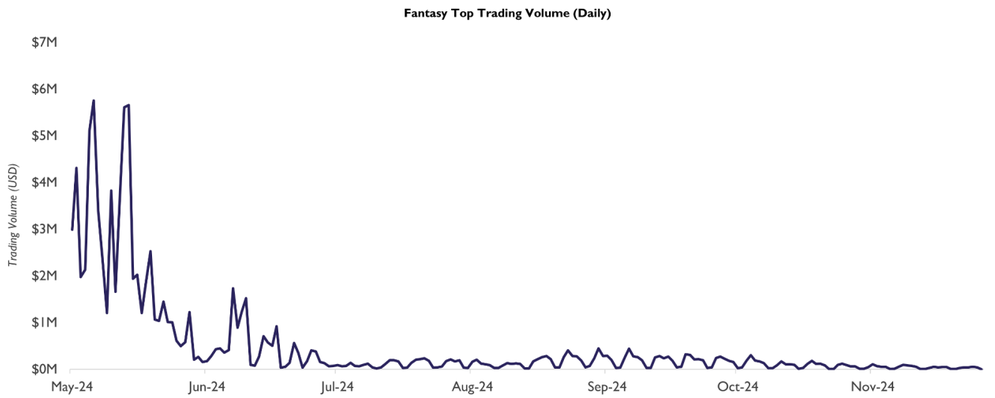
Fantasy Top is a social trading card game on the Blast network where players collect, trade, and compete with NFT cards featuring Crypto Twitter influencers. For players, the game offers an exciting and dynamic experience that combines the thrill of collectible card games with the strategic elements of fantasy sports. The use of real-time Twitter engagement data to determine scores creates a sense of authenticity and unpredictability, keeping players engaged and invested in the performance of their chosen influencers. For Crypto Twitter influencers, Fantasy Top presents a novel way to monetize their content and engage with their audience.

GROWTH METRICS



The above graph shows a clear decline in daily active users (DAU) for Fantasy Top since its peak in mid-2024, where activity occasionally exceeded 4,000 users per day. Over the following months, DAU steadily dropped, stabilizing at lower levels by late 2024, with daily

figures often below 1,000 users. Despite the decrease, the consistent baseline activity indicates that a core group of users remains active on the platform. This stability suggests Fantasy Top has retained some level of traction and could serve as a foundation for future growth if the platform can introduce new features, incentives, or strategies to re-engage users and attract new participants.

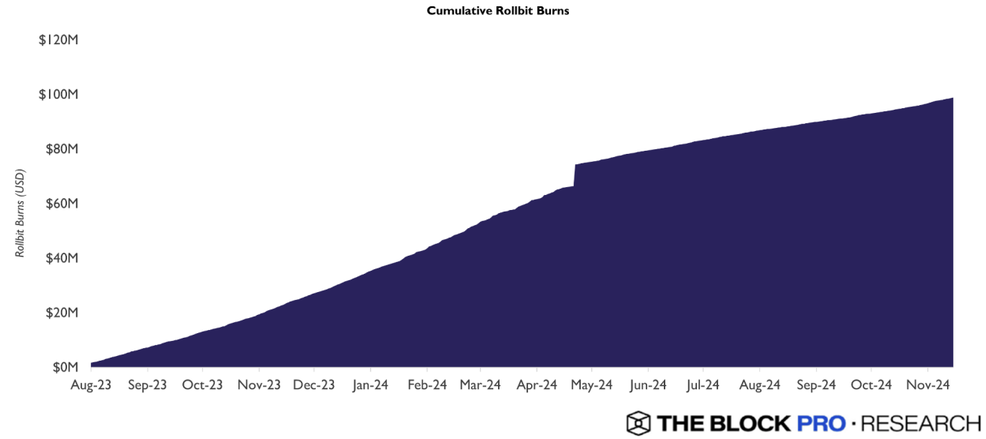


Fantasy Top trading value declined steeply from its peak in mid-2024, when volumes frequently exceeded $5 million, to consistently lower levels by late 2024, often below $1 million. This decline mirrors the trend seen in user activity, suggesting reduced engagement and trading on the platform over time. However, even if the platform's early success was transient, the initial spike in trading volume demonstrates that there is clear potential for this type of application to capture significant user interest and activity under the right conditions.

ROLLBIT

Rollbit is an online crypto casino that offers a wide range of gaming options, including slots, table games, game shows, sports betting, and exclusive in-house games. The platform appeals to users through its diverse gaming selection and generous rewards program that returns up to 70% of the house edge, while its high-leverage options attract thrill-seeking players and its crypto integration provides convenient deposits and withdrawals for crypto natives.

GROWTH METRICS

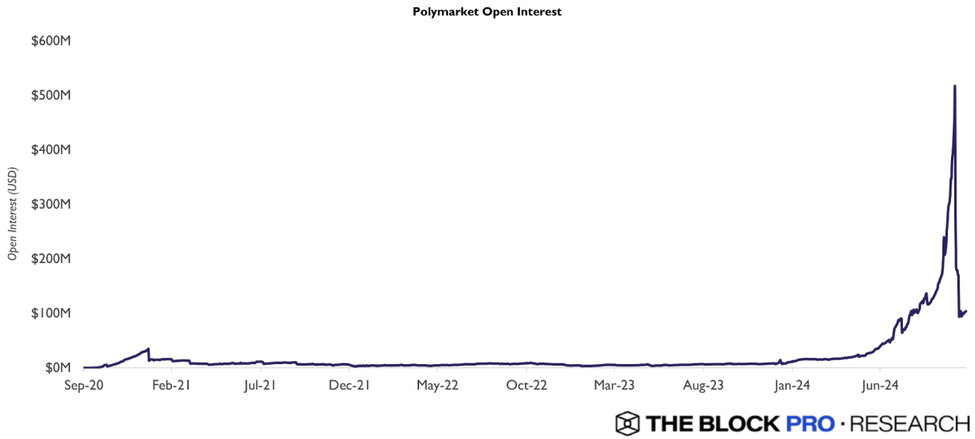


The chart above displays the cumulative amount of Rollbit token (RLB) burns measured in USD over time. Rollbit utilizes a portion of its revenue to buy back and burn RLB tokens, removing them from circulation.The data shows a consistent and significant increase in the total value of RLB tokens burned since August 2023. The cumulative burn value grew from approximately $5 million in August 2023 to over $100 million by November 2024, representing a substantial 20-fold increase in the span of just 15 months.

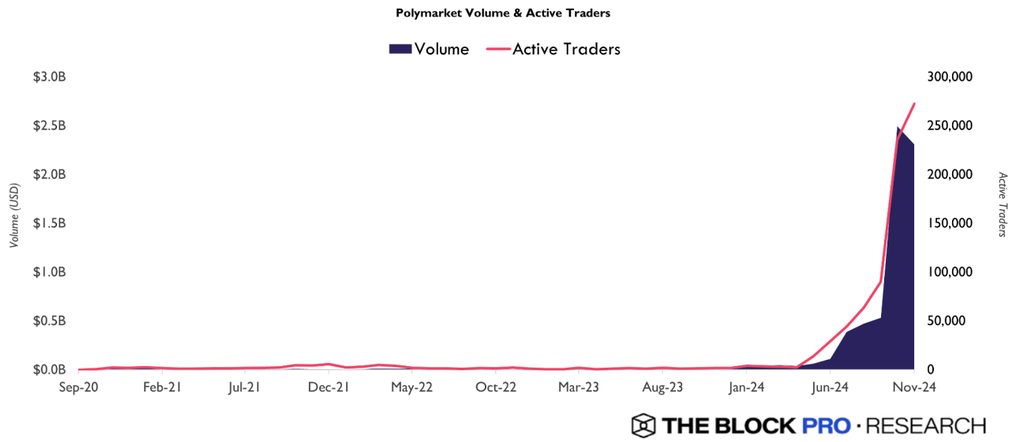
POLYMARKET

Polymarket is a decentralized prediction market platform on Polygon where users trade USDC on binary outcomes of future events, with share prices between $0 and $1 representing market-determined probabilities. The platform appeals to users by enabling them to profit from their forecasting insights across a wide range of events including politics, sports, and entertainment, while offering transparent price discovery, real-time trading capabilities, and incentives like liquidity provider rewards and trading competitions.

Growth Metrics



Polymarket shows a significant increase in open interest over the observed period in the chart above. Starting at approximately $5 million in September 2020, the open interest started to meaningfully increase in 2024, reaching around $50 million by July 2021. From there, it experienced a dramatic surge, peaking at over $550 million in November 2024.



Polymarket's trading volume, measured in USD, experienced significant growth over the observed period. The volume increased steadily from 2020 reaching well over $2B in October and November of 2024. The number of active traders on the platform also witnessed substantial growth, closely mirroring the trend in trading volume. Active traders peaked at over 270,000 in November of 2024.

ONCHAIN CONSUMER PRODUCTS

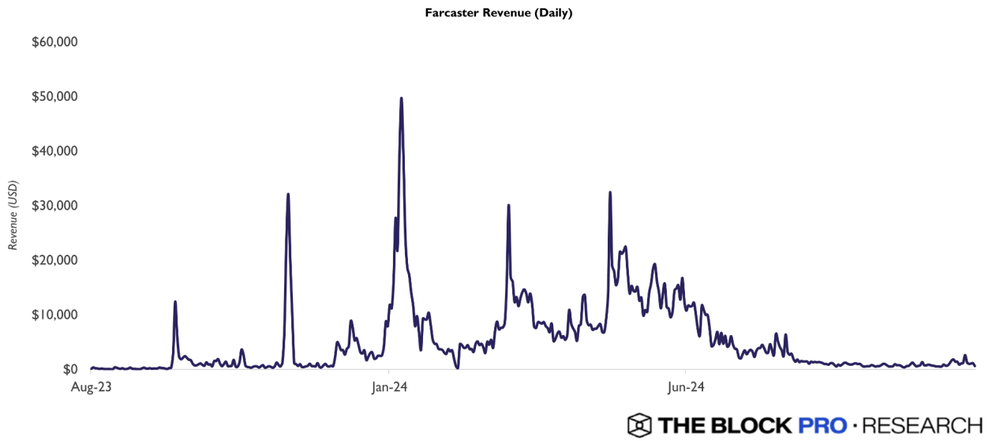
The second category of applications demonstrating clear traction focuses on onchain consumer products. While early blockchain adoption focused primarily on financial use cases, we're now seeing compelling evidence that this technology can enhance and transform traditional consumer experiences across gaming, social media, content creation, and community engagement.

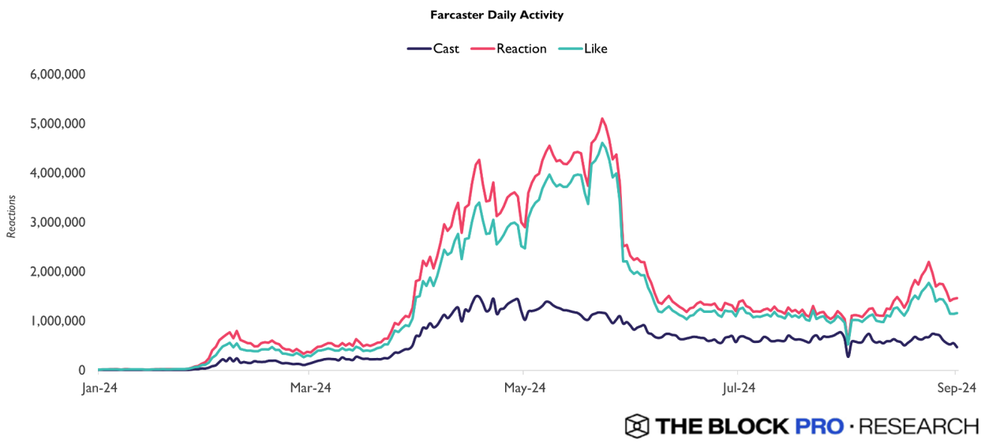
Let's explore three platforms that exemplify this trend, each offering a unique approach to onchain consumer experiences: Farcaster's decentralized social network, Blackbird's restaurant loyalty program, and Galxe's onchain credential system. These platforms have attracted significant user bases and investment, showcasing the potential for blockchain technology to transform how we interact and transact online. Across these categories, we're seeing signs of product-market fit and sustained user growth, suggesting that consumer crypto applications may be approaching an inflection point in mainstream adoption.

FARCASTER

Farcaster is a decentralized social network protocol on Ethereum that lets users maintain ownership of their social data while accessing it through various client applications, featuring interactive "Frames" that enable mini-applications within the social feed. The platform has attracted users by providing complete control over their digital identities and social connections, while its open architecture has attracted developers to build diverse clients for niche communities, offering a compelling alternative to traditional social media's walled gardens.

GROWTH METRICS





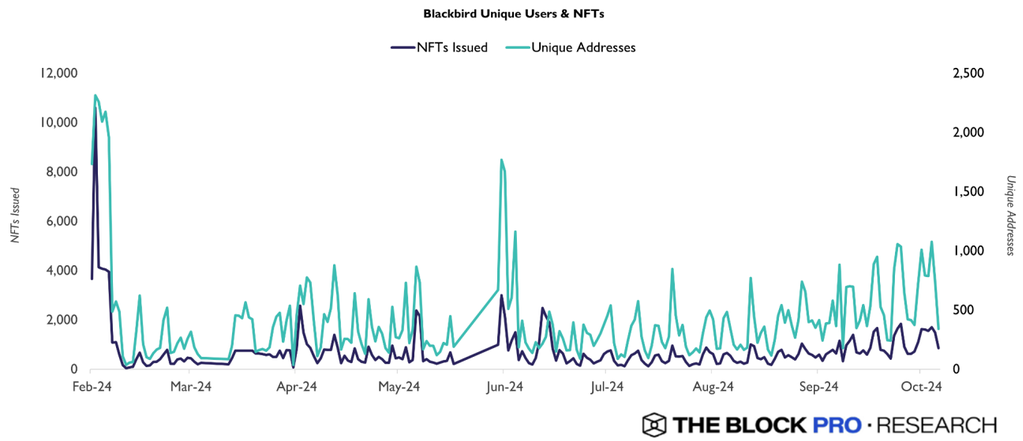
Farcaster's revenue has dropped significantly from its February peak, highlighting the challenges of sustaining momentum in the SocialFi space. However, its earlier success, with daily revenues exceeding $50,000, demonstrates the potential for decentralized social applications to capture user interest and generate meaningful activity. While its recent decline suggests that its success may have been transient, it also underscores the broader viability of these platforms as they continue to iterate and refine their models to meet user needs.

Farcaster's daily activity has seen significant fluctuations throughout the year, peaking in mid-2024 when reactions and likes exceeded 5 million daily, indicating strong engagement during this period. However, activity has declined sharply since its peak, reflecting challenges in sustaining long-term user interaction. Despite this decline, the platform's ability to drive such high levels of engagement earlier in the year underscores the potential for decentralized social applications to capture user attention.

BLACKBIRD

Blackbird is a blockchain-powered loyalty and payment platform that helps restaurants reduce transaction costs while enabling diners to earn $FLY cryptocurrency rewards redeemable at participating venues. The platform appeals to restaurants by providing lower payment processing fees and valuable customer insights through its proprietary Guest Value Score, while diners appreciate the seamless reward system and personalized experiences they receive as valued customers.

GROWTH METRICS

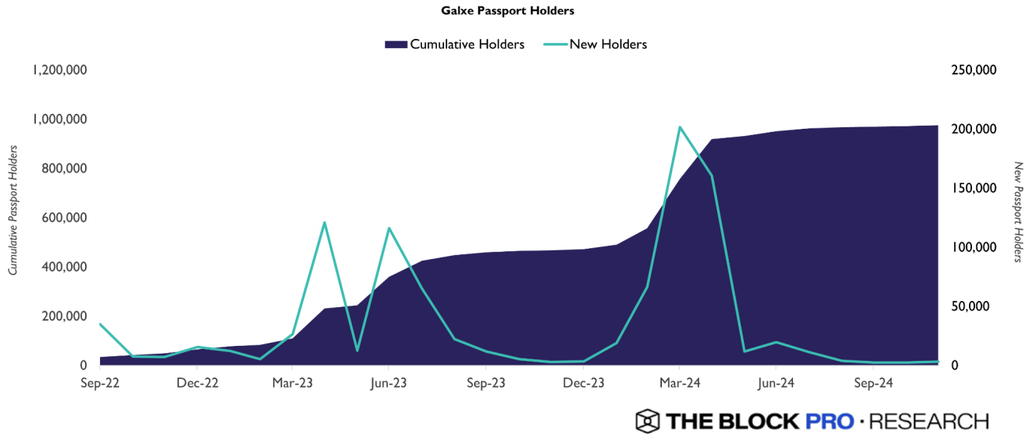


After a strong start in February 2024, when over 10,000 NFTs were issued, activity sharply declined, suggesting an initial surge of interest followed by cooling demand. However, from mid-2024 onwards, the data reveals a more stable pattern, with consistent NFT issuance and a gradual increase in unique addresses, reflecting steady user engagement and adoption. The upward trend in unique addresses, particularly from mid-year, highlights a growing user base. This suggests that Blackbird is managing to attract and retain new participants in its program, underscoring its potential to sustain engagement in the long term.

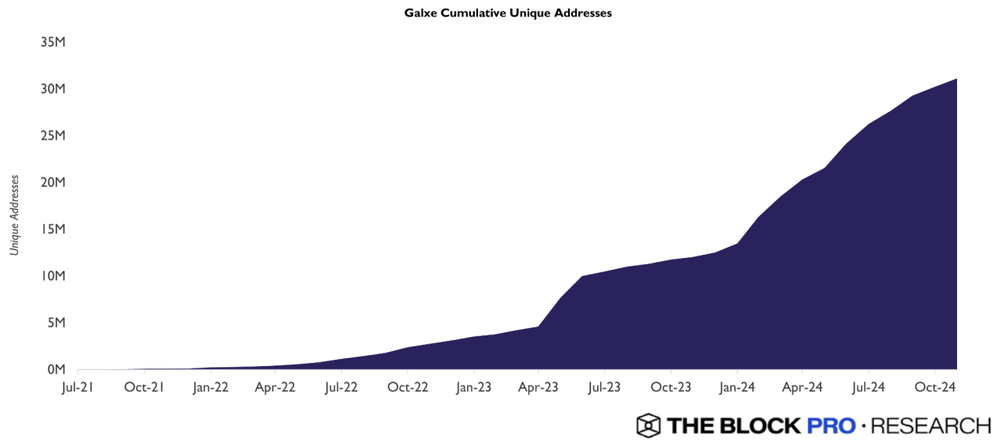
GALXE

Galxe is a Web3 ecosystem that combines AI, digital identity, and blockchain solutions to help users manage their decentralized identities and discover opportunities through tools like Quest, Passport, and Compass. The platform resonates with users by consolidating identity verification and credential management in one place, while its structured quest system makes Web3 exploration more accessible to newcomers and allows users to build their reputation while maintaining control over their personal data.

GROWTH METRICS



Galxe's growth trajectory tells a compelling story about its product-market fit. Since launching in April 2022, the platform has seen steady growth in passport holders, reaching nearly 1 million users by late 2024. What's particularly notable is the acceleration in adoption - after an initial period of modest growth through early 2023, the platform experienced several significant user spikes, with the largest occurring in early 2024 when monthly new holders peaked at around 200,000. While new user growth has moderated from these peak levels, the platform has maintained its user base, suggesting that those who obtain Galxe passports continue to find value in them. The cumulative holder curve shows consistent upward momentum without major dropoffs, indicating that Galxe has moved beyond just temporary hype cycles to achieve more sustainable growth.



The above chart highlights Galxe's impressive growth in cumulative unique addresses, reflecting its expanding user base. The platform experienced accelerated adoption starting in mid-2022, with particularly sharp growth through 2023 and 2024. By late 2024, Galxe surpassed 35 million unique addresses, underscoring its traction within the ecosystem.

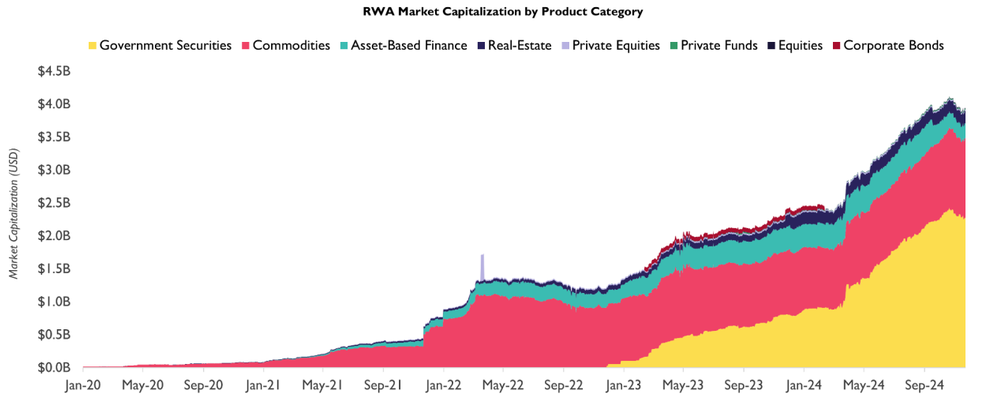
REAL WORLD ASSETS

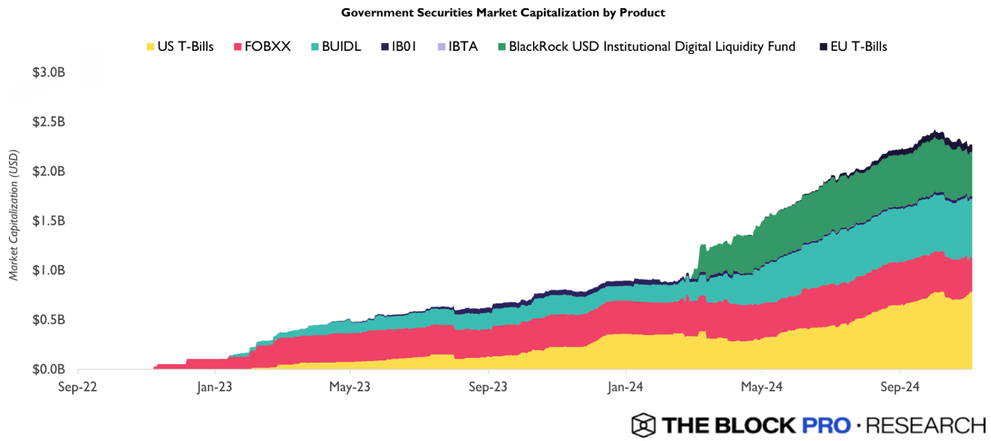
The tokenization of real-world assets has emerged as another area showing meaningful adoption. While stablecoins, often considered a form of tokenized real-world assets themselves, have become one of crypto's most successful applications, the tokenization of other real-world assets is also showing promise. Real-world assets (RWAs) are physical or financial assets - like real estate, bonds, or commodities - that are represented onchain through tokens. These tokens can then be traded, borrowed against, or used in DeFi applications. This model changes how people can invest in several ways. Instead of having to buy an entire office building, investors can purchase tokens representing just a small portion. These tokens can be traded more easily than traditional real estate, potentially making previously illiquid assets more accessible. Smart contracts can also automate many processes that traditionally require paperwork and middlemen, like distributing rental income or interest payments.

Several protocols are building infrastructure to bring these assets onchain. The appeal is practical: tokenization could make traditionally illiquid assets easier to trade, reduce minimum investment sizes, and automate many manual processes through smart contracts. Unlike many speculative crypto applications, RWA protocols have attracted significant institutional interest and real-world usage. Major financial institutions have begun piloting RWA programs, and the total value of tokenized assets has grown steadily even during broader crypto market downturns.

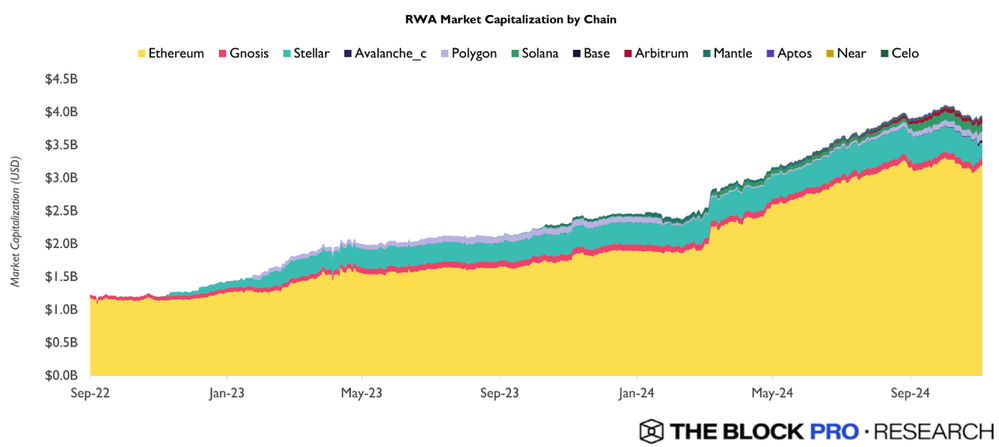
GROWTH METRICS

The growth in tokenized real-world assets provides compelling evidence for this category's emerging product-market fit. The total market capitalization has grown from near zero in early 2020 to over $4 billion by late 2024, with particularly strong acceleration since 2023. What's notable is the diversity of assets being tokenized. Government securities and commodities make up significant portions of the market, suggesting that both traditional financial institutions and crypto-native teams are finding practical applications for the technology. Real estate and asset-based finance have also seen steady growth, indicating demand across multiple sectors rather than just one type of asset. This steady expansion, particularly during the 2022-2023 crypto market downturn, suggests that RWA tokenization is driven by genuine utility rather than speculative interest. The growth appears more measured and sustainable compared to previous crypto boom-bust cycles, with new asset categories gradually being added as the infrastructure matures.





Looking more closely at government securities, the data shows significant institutional adoption of tokenization. The market has grown from under $500 million in early 2023 to over $2 billion by late 2024. BlackRock's entrance marks a particularly notable milestone - a major traditional finance player committing to the technology. The growth hasn't been limited to a single product or region. While U.S. T-Bills represent the foundation, the market includes products from multiple issuers (FOBXX, BUIDL, IB01) and spans both U.S. and EU securities. The steady upward trajectory, especially during a period of broader market uncertainty, indicates that investors are finding practical value in tokenized government securities. This is likely driven by advantages like 24/7 trading and automated settlement.



The distribution of RWAs across multiple blockchains suggests that tokenization is gaining traction as a technology rather than just being tied to any single platform's success. While Ethereum holds the largest share, networks like Gnosis, Stellar, and Avalanche have all captured meaningful portions of the market. This diversification accelerated notably in 2024, with newer chains like Base and Mantle gaining traction. The multi-chain adoption likely reflects different platforms optimizing for specific needs - some chains might offer lower fees for frequent trading, while others prioritize security for large institutional holdings. Rather than simply shifting value between networks, the rising tide of RWA adoption appears to be lifting all boats, with total value growing from around $1.5B to over $4B since late 2022.

DEPIN

The fourth category of applications showing clear signs of traction centers around decentralized physical infrastructure networks (DePINs). While some may view these projects as mere experiments, their rapid growth and increasing user engagement demonstrate crypto's ability to create compelling real-world solutions. These platforms have found ways to blend token incentives with real-world infrastructure, enabling individuals to contribute resources and earn rewards while creating decentralized networks that provide valuable services to businesses and consumers alike.

Importantly, many DePIN applications have demonstrated impressive adoption rates, network coverage, and community participation. Let's examine three platforms that exemplify this trend, each taking a unique approach to decentralizing physical infrastructure: Helium's decentralized wireless network, Hivemapper's community-driven mapping platform, and Filecoin's decentralized storage marketplace. These platforms have not only attracted significant investment and partnerships but also showcased the potential for blockchain technology to disrupt traditional infrastructure models and create new economic opportunities.

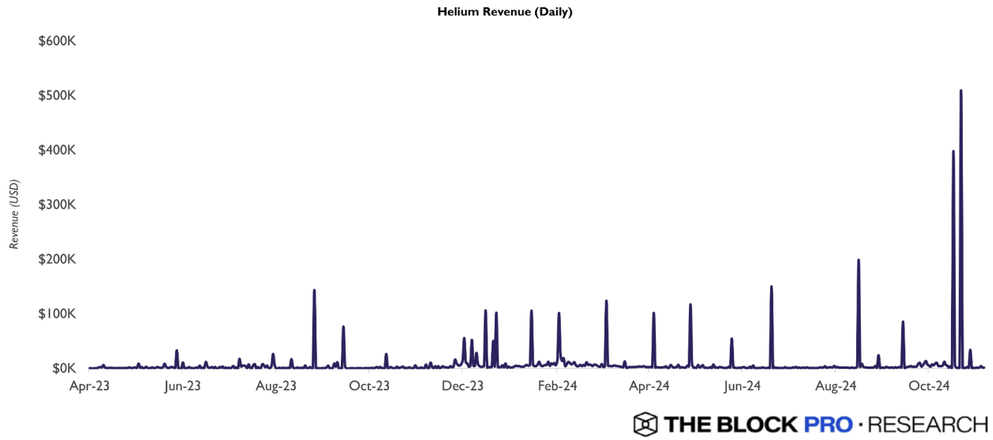
By leveraging token incentives and decentralized networks, these DePIN applications are enabling individuals to monetize their resources, whether it's excess wireless coverage, dashcam footage, or storage capacity. At the same time, they are providing businesses and developers with access to low-cost, resilient, and scalable infrastructure solutions. As the DePIN ecosystem continues to mature and expand, these platforms are poised to drive the next wave of innovation in their respective industries, ultimately paving the way for a more decentralized and inclusive future.

HELIUM

Helium is a decentralized wireless network where individuals deploy hotspots to provide IoT and 5G cellular coverage while earning cryptocurrency rewards through various subDAOs that govern specific network types. The platform appeals to users by democratizing wireless infrastructure deployment, offering cost-effective connectivity

for IoT devices, and providing affordable cellular plans through Helium Mobile, while rewarding participants for contributing to network coverage and sharing location data.

GROWTH METRICS



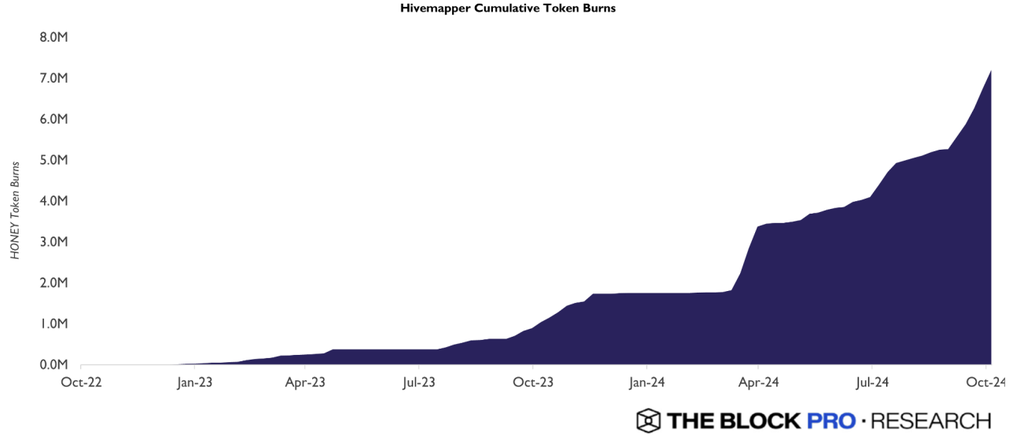
Helium's revenue trajectory has shown clear signs of acceleration, culminating in all-time highs in late 2024. This growth has been largely driven by the success of Helium Mobile, which now accounts for approximately 90% of the network's revenue. Helium Mobile's strategy of offering affordable, decentralized telecom services, such as $20/month unlimited data plans and the Discovery Mapping feature, has helped attract a broader user base. Partnerships with major telecom providers like Telefónica have further expanded its geographical reach, solidifying its presence in regions like Mexico and parts of the United States.

The revenue spikes also reflect the platform's ability to incentivize participation in its network, both from hotspot operators and subscribers, through its MOBILE token rewards system. This aligns with Helium's broader strategy of decentralizing infrastructure costs while maintaining competitive offerings compared to traditional telecom providers. Despite the fluctuations in daily revenue, the consistent upward trend highlights the growing adoption of decentralized wireless networks, with Helium emerging as a leader in the space.

HIVEMAPPER

Hivemapper is a decentralized mapping platform where users earn HONEY tokens by capturing street-level imagery with custom dashcams to create an up-to-date global map. The platform offers a community-driven alternative to traditional mapping services, enabling more frequent updates and broader coverage while rewarding contributors for their data collection and quality assurance efforts, particularly in areas often overlooked by centralized mapping companies.

GROWTH METRICS



Hivemapper's cumulative token burns have shown a steep upward trend throughout 2024, reflecting significant growth in network activity and revenue generation. The consistent increase in token burns is a direct result of the platform's unique economic model, where usage fees tied to map contributions and data licensing are burned in HONEY tokens. This mechanism creates a strong link between token burns and network revenue, providing a clear indicator of the platform's expanding adoption. The platform leverages blockchain technology to incentivize contributors to build and update maps faster, with claims of being 10 times more efficient than traditional platforms. This efficiency, coupled with partnerships and a growing global contributor base, has driven increased utility for

the platform's data, fueling higher revenue and token burns.

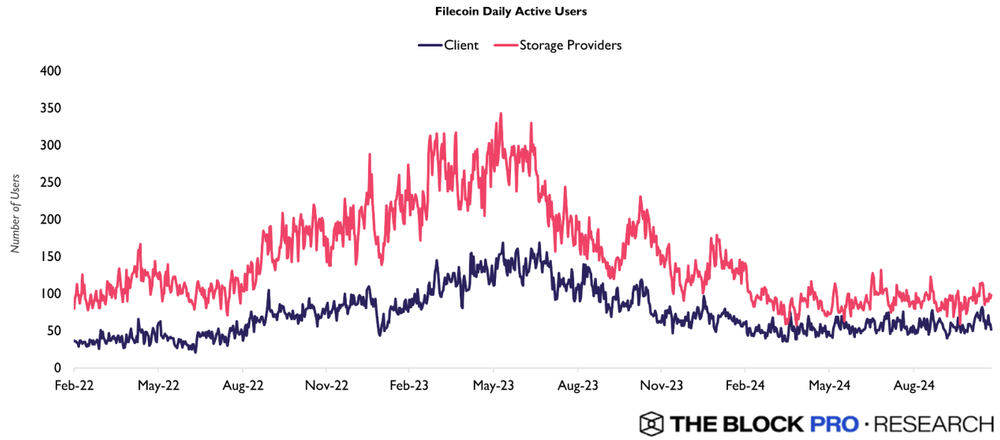
FILECOIN

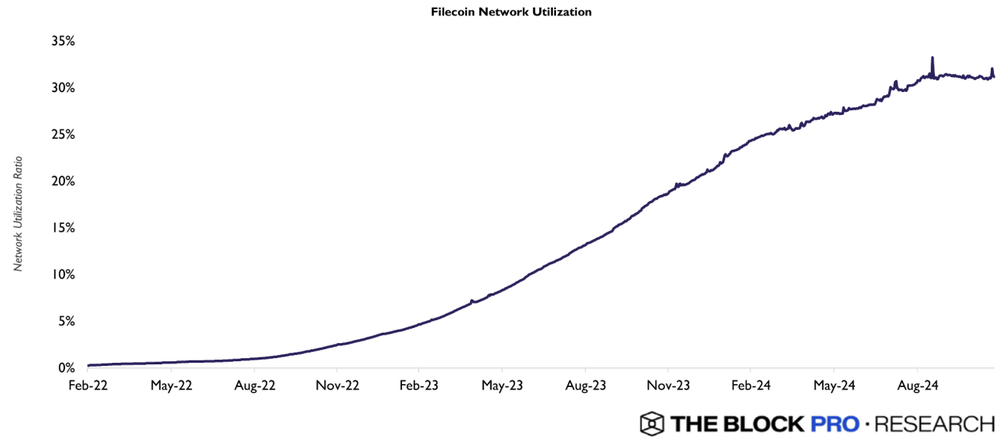
Filecoin is a decentralized storage network that allows users to rent out their unused hard drive space and earn cryptocurrency for doing so. Built on the InterPlanetary File System (IPFS) protocol, Filecoin enables users to store and retrieve data in a secure, efficient, and distributed manner. The network relies on a system of storage miners and retrieval miners, who compete to provide storage and retrieval services to clients. Storage miners earn Filecoin (FIL) tokens by storing data and providing proof of storage over time, while retrieval miners earn FIL by quickly retrieving and delivering requested data to clients. Filecoin utilizes unique consensus mechanisms, such as Proof of Replication (PoRep) and Proof of Spacetime (PoSt), to ensure data integrity and availability.

Filecoin resonates with users because it offers a compelling alternative to centralized cloud storage solutions, which are often expensive, potentially unreliable, and susceptible to data breaches and censorship. By leveraging a decentralized network of storage providers, Filecoin enables users to store their data in a more secure, resilient, and cost-effective manner. The platform's open market for storage and retrieval services fosters competition among miners, driving down costs and encouraging continuous improvement in performance and reliability. Moreover, Filecoin's incentive structure, which rewards miners for providing storage and retrieval services, creates a sustainable ecosystem that aligns the interests of all participants.

GROWTH METRICS

The above graph shows the trends in daily active users on the Filecoin network, segmented into clients and storage providers. From mid-2022 to early 2023, the network experienced steady growth in activity, peaking in mid-2023 when storage providers surpassed 350 daily users and clients exceeded 150. With that said, activity has declined since mid-2023, suggesting challenges in sustaining the same level of adoption. Despite this, the network has maintained a consistent baseline of both clients and storage providers, indicating a degree of stickiness and continued use of the platform.





Filecoin's network utilization has shown consistent growth since early 2022, reaching over 30% by late 2024. This upward trend highlights increasing adoption of Filecoin's storage capacity and the network's ability to onboard new clients efficiently.

The cryptocurrency ecosystem has grown significantly since Bitcoin's creation, evolving into a diverse landscape of financial products and services. While Bitcoin's success and the industry's focus on payment use cases have been notable, other blockchain applications are gaining traction in various sectors, such as memes and gambleFi,

onchain consumer, real-world assets, and DePIN. These applications are attracting users, generating revenue, and showcasing the potential for blockchain technology to transform traditional industries. As these applications gain broader use and show practical value, they are poised to contribute meaningfully to mainstream adoption. This growth reflects the potential of decentralized infrastructure to support a wide range of innovative use cases.

PART 7
TRADFI AND CRYPTO

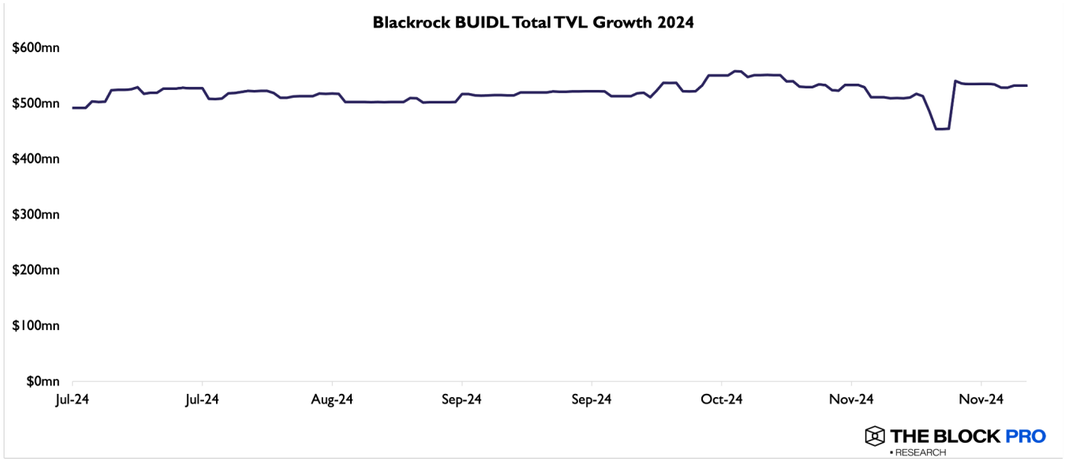
BLACKROCK'S BUIDL PROGRAM: INSTITUTIONAL BRIDGE TO ONCHAIN TREASURY MARKETS

In March 2024, BlackRock, the world's largest asset manager with over $10 trillion in AUM, made a decisive move into blockchain technology by launching its first tokenized investment vehicle - the BlackRock USD Institutional Digital Liquidity Fund (BUIDL). This pioneering initiative represented a significant milestone in the institutional adoption of blockchain technology, specifically targeting the intersection of traditional finance and digital assets.

BUIDL was designed as a tokenized money market fund that invests in U.S. Treasury bills, repurchase agreements, and cash, with tokens pegged to $1 and paying daily accrued dividends monthly. The fund launched on Ethereum in partnership with Securitize, who acts as both the transfer agent and tokenization platform. The initial minimum investment was set at $5 million, clearly targeting institutional clients rather than retail investors.

The fund's growth trajectory proved remarkably steep. Within its first week, BUIDL attracted $160 million in deposits, including a substantial $95 million allocation from

Ondo Finance's tokenized Treasury ETF. By July, the fund had surpassed $500 million in assets under management, overtaking Franklin Templeton's FOBXX to become the largest blockchain-based tokenized fund by market value. By November, assets had grown to approximately $520 million.



Throughout 2024, BlackRock systematically expanded BUIDL's utility and accessibility. In April, Circle implemented smart contract support, enabling BUIDL holders to transfer their shares for USDC, while October saw the integration of Zero Hash to facilitate USDC-to-USD conversions for fund subscriptions. These developments created crucial on/off ramps between traditional and digital finance systems.

The fund's influence extended into DeFi as protocols began building on top of BUIDL. Most notably, in September, Ethena announced plans to launch USTb, a new stablecoin backed by BUIDL, demonstrating how traditional financial instruments could be leveraged within decentralized finance. BlackRock further expanded its reach by pitching major crypto exchanges, including Binance, OKX, and Deribit, to use BUIDL tokens as collateral for derivatives trading while securing agreements with prime brokers FalconX and Hidden Road.

By November, BlackRock had expanded BUIDL beyond Ethereum to five additional blockchains: Aptos, Arbitrum, Avalanche, Optimism, and Polygon. This multi-chain approach featured differentiated fee structures, with management fees of 50 basis points on Ethereum, Arbitrum, and Optimism, while offering reduced 20 basis point fees on Aptos, Avalanche, and Polygon through ecosystem development partnerships.

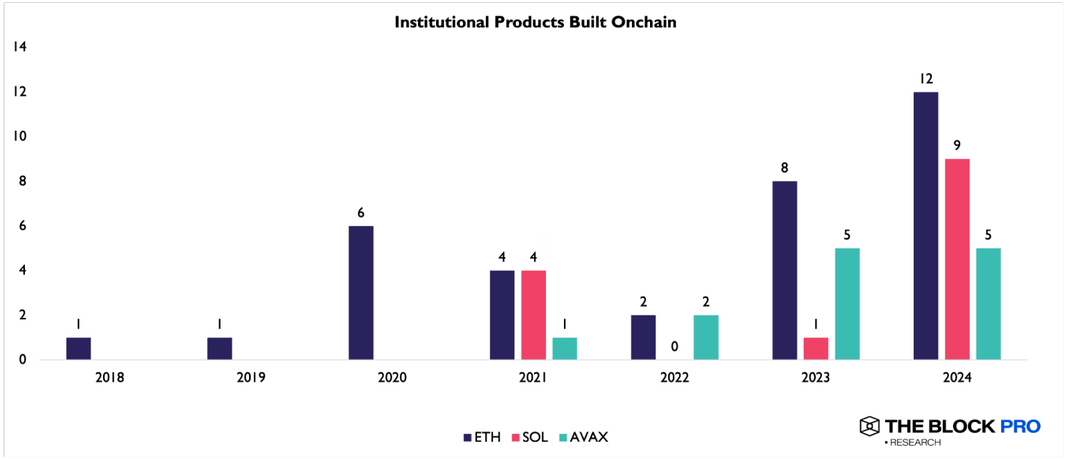
The BUIDL program represents a significant shift in institutional approaches to blockchain technology, moving beyond simple crypto exposure through ETFs to actually utilizing blockchain infrastructure for traditional financial products. This development has been particularly noteworthy as it brings legitimacy to public smart contract platforms, which were previously often dismissed by traditional finance as merely "retail casinos." The program's rapid growth and expansion suggest that major institutions are increasingly viewing blockchain technology as a viable infrastructure for traditional financial operations rather than merely a speculative asset class.

INSTITUTIONAL PRODUCTS BUILT ON ETHEREUM, AVALANCHE, AND SOLANA

While BlackRock's BUIDL expansion to multiple chains in November 2024 highlighted growing institutional interest across the broader blockchain ecosystem, each major smart contract platform has carved out distinct niches in attracting traditional finance throughout 2024.

Ethereum maintained its position as the primary choice for institutional-grade financial products, with over 25 major deployments in 2024 alone. The platform's institutional momentum accelerated following UBS's November launch of uMINT, their first tokenized money market fund, which was noted for "putting ETH into the heart of traditional finance." This was preceded by significant moves from other major players, including WisdomTree's launch of WisdomTree Connect in September - a comprehensive platform for tokenized real-world assets (RWAs) - and Franklin Templeton's expansion of their FOBXX fund across multiple Ethereum-based chains, including Base, Arbitrum, and mainnet. Traditional payment giants also deepened their Ethereum integration, with PayPal and Venmo adding ENS support and external transfer capabilities for business customers.

Avalanche emerged as a preferred chain for institutional infrastructure projects, particularly in the government and banking sectors. The California DMV's groundbreaking initiative to digitize 42 million car titles on Avalanche marked one of the largest government blockchain implementations to date. JPMorgan's Onyx platform continued to expand its Avalanche presence, facilitating Siemens' digital commercial paper settlement and First Abu Dhabi Bank's programmable payments pilot. Traditional asset managers also showed increasing interest, with Grayscale launching its Avalanche Trust in August and Franklin Templeton extending its FOBXX offering to the platform.



Solana distinguished itself in 2024 as a hub for innovative institutional products, particularly in the realm of alternative investments. The July launch of Libre, backed by Nomura and Brevan Howard, brought the first institutional alternative RWA fund to Solana, including access to the Hamilton Lane's SCOPE fund and Brevan Howard's Master Fund. This was followed by Etherfuse's introduction of Mexican "Stablebonds" in August, marking one of the first government bond products in Latin America to utilize blockchain infrastructure. Franklin Templeton's September announcement of plans to launch a mutual fund on Solana, coupled with VanEck's October partnership with Kiln for institutional staking services, further validated the platform's growing institutional appeal.

The diversification of institutional products across these three chains suggests a maturing market where different platforms are being selected based on their specific technical advantages rather than a one-size-fits-all approach. Ethereum's robust security and proven track record continue to attract major financial products. Avalanche's subnet architecture has proven appealing for enterprise and government implementations. Solana's high performance has made it particularly attractive for innovative trading and investment products requiring high throughput.

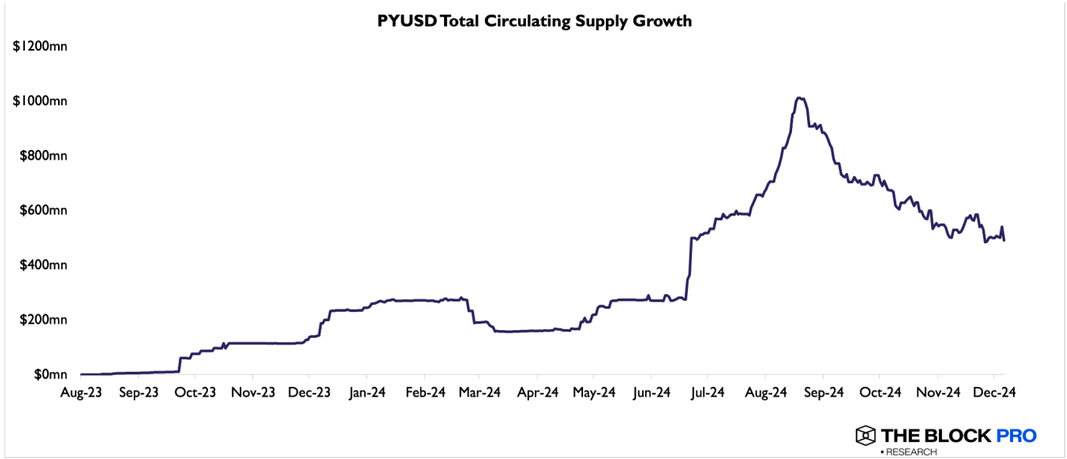
INSTITUTIONAL INITIATIVE PROGRESSION

While individual blockchain ecosystems attracted specific institutional use cases throughout 2024, the broader institutional landscape underwent several transformative shifts that signaled a deepening commitment to digital assets across multiple sectors.

The ETF landscape evolved dramatically, moving beyond simple exposure products to more sophisticated offerings. Following the landmark approval of spot Bitcoin ETFs in January, institutions rapidly developed next-generation products focusing on staking yields. 3iQ pioneered this trend in late 2023 with North America's first staking ETF, followed by ETC Group's ET32 Ethereum staking ETP launch on XETRA in February.

Payment giants made decisive moves into crypto infrastructure, notably exemplified by Stripe's trajectory. After previously entering and exiting the crypto space between 2014-2018, Stripe made a definitive return in 2024, culminating in October's $1.1 billion acquisition of Bridge - the largest M&A deal in crypto history. This strategic purchase, coupled with their expansion of stablecoin payment support across multiple chains, represents a significant shift from their previous cautious approach to full-scale infrastructure building.

The stablecoin sector witnessed unprecedented institutional participation, with major financial entities launching their own offerings. PayPal's PYUSD achieved a milestone in October with its first corporate payment settlement with Ernst & Young, while November saw the launch of the Global Dollar Network's USDG stablecoin, backed by an impressive consortium including Robinhood, Kraken, and Paxos. These initiatives suggest a growing recognition of stablecoins as a critical component of future financial infrastructure.



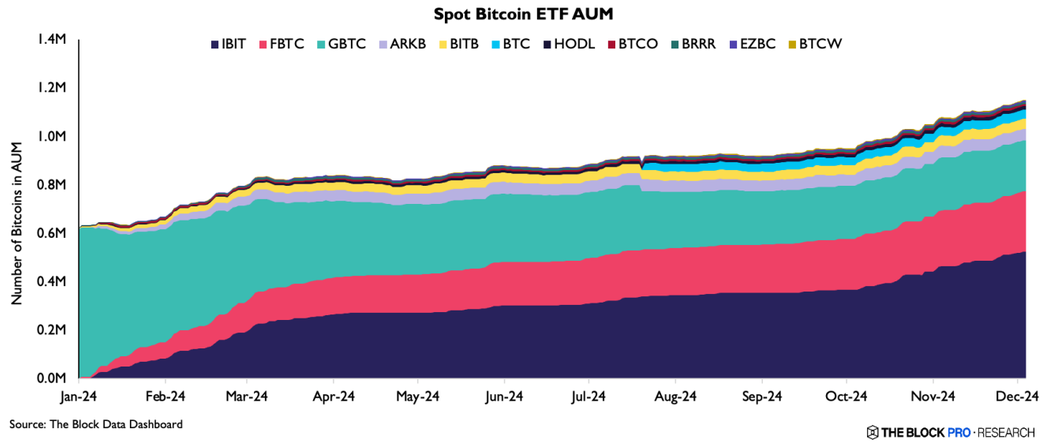
Traditional financial institutions took concrete steps toward blockchain integration through collaborative initiatives. The Bank for International Settlements' Project Agora marked a significant milestone in September when 41 major financial firms, including Visa, Mastercard, and SWIFT, joined seven central banks to develop a unified ledger for tokenized deposits and wholesale CBDCs. This unprecedented collaboration between traditional finance incumbents and blockchain technology represents one of the largest coordinated institutional efforts in the space.

The tech sector's institutional approach evolved beyond simple blockchain experiments to full-scale infrastructure development. Sony's August launch of their dedicated Web3 division and Layer 2 network, Soneium, developed in partnership with Astar Network, exemplifies how major technology companies are moving from exploratory blockchain projects to building fundamental infrastructure.

This progression throughout 2024 marks a distinct shift from previous years' institutional involvement, which largely focused on asset exposure and experimental pilots. The current wave of institutional initiatives demonstrates a more sophisticated approach, with organizations building core infrastructure and developing products that bridge traditional and decentralized finance, suggesting a more permanent and substantive integration of blockchain technology into the global financial system.

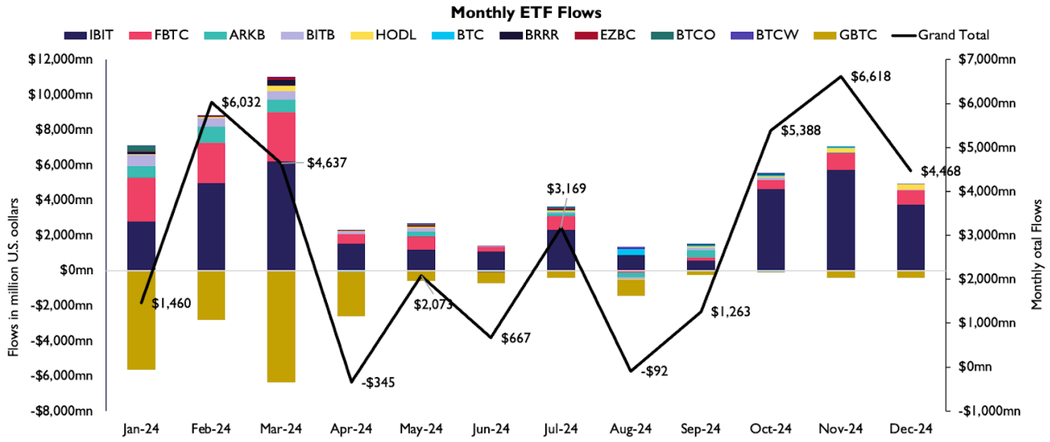
SPOT CRYPTO ETFS

Spot bitcoin ETFs have emerged as a cornerstone of the current crypto landscape, attracting unprecedented institutional attention and consequently lending legitimacy to both Bitcoin and the broader crypto industry. Since their January 2024 launch, these ETFs have accumulated net inflows of $35 billion, a figure particularly noteworthy considering it includes $21 billion in outflows from Grayscale's GBTC. These GBTC outflows can be attributed to two main factors: liquidations from bankruptcy proceedings (notably Genesis) and strategic exits by investors seeking to avoid the fund's relatively high 1.5% management fee compared to the industry average of 0.3%. Many investors, having realized substantial gains, are strategically timing their withdrawals to spread capital gains and minimize tax impact. However, these outflows have significantly decreased over time, dropping from an average daily outflow of $402 million in January to just $41 million in November. GBTC has offloaded 408,000 Bitcoins since the ETFs' launch from its initial 617,000 BTC, currently holding 209,000 BTC.



In stark contrast, new ETFs have demonstrated remarkable success, accumulating $55 billion in inflows year-to-date. BlackRock's IBIT has emerged as the clear market leader, accounting for over $35 billion of these inflows. IBIT's market dominance has grown substantially, particularly in the recent one-month period. Prior to October 14, spot Bitcoin

ETFs (excluding GBTC) recorded a total of $39.5 billion in inflows, with BlackRock's IBIT accounting for 55% of it. However, since then, its dominance has surged to over 81%, contributing $13.8 billion of the total $17 billion in recent inflows. IBIT's success is further exemplified by reaching the $50 billion asset mark in just 228 days – a mere two weeks after hitting $40 billion – shattering the previous record of 1,329 days held by ETF IEFA, the developed market equity fund index. This rapid growth has positioned IBIT in the top 1% of all ETFs by assets, surpassing all 2,800 ETFs launched in the past decade despite being just 11 months old. This continued dominance can be attributed to two key factors: BlackRock's established reputation and trust among traditional financial investors and the self-reinforcing cycle where market leaders maintain their position through superior liquidity and tighter bid-ask spreads as more clients are onboarded and volume increases. Following IBIT, Fidelity's FBTC ranks second with $12 billion in inflows.

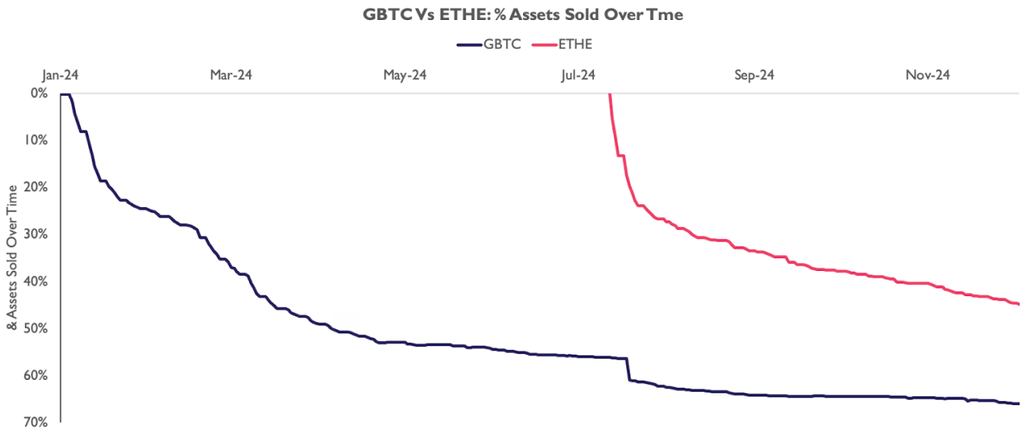


However, it's important to note that while institutional adoption through ETFs signals growing mainstream acceptance, a significant portion of ETF activity represents sophisticated basis trading strategies. Major hedge funds like Millennium Management and Capula Management Ltd. participate in Bitcoin ETFs primarily to execute cash-and-carry arbitrage by simultaneously purchasing spot Bitcoin ETFs while shorting Bitcoin futures at higher prices. This allows them to capture the spread between spot and futures markets while maintaining neutral exposure. The introduction of institutional-grade ETFs has made this traditional hedge fund strategy more accessible and efficient than dealing directly with crypto exchanges or OTC markets.

While Bitcoin ETFs have enjoyed unprecedented success, Ethereum ETFs have had a more modest trajectory. Despite initial excitement and billion-dollar trading volumes on their July debut, these products experienced a significant cooldown, with daily trading volumes dropping below $200 million and reaching net outflows of $687 million at their lowest in late September. For the majority of the Ether ETFs' existence, the inflows have been minuscule compared to spot Bitcoin ETFs. However, November marked a notable shift, with Spot Ether ETFs accounting for $1 billion in inflows – representing 16% of total spot Bitcoin ETF inflows for the month. The cumulative flow of spot Ethereum ETFs, which had remained negative for the entirety of the period, has finally turned positive mid-November and is currently at $2.2 billion. The new ETFs, led by BlackRock's ETHA and Fidelity's FETH, have finally cumulatively negated Grayscale's ETHE's $3.5 billion in outflows, as the new ETFs have combined generated $5.7 billion of inflows, resulting in a cumulative inflow of $2.2 billion since inception. Notably, ETHA has emerged as the flagbearer with $3.1 billion in inflows – over half of the total Ether ETF inflows – positioning itself in the top 20% by market cap among 2,800 ETFs.

A notable distinction between the January Bitcoin ETF launch and the July Ethereum ETF launch was Grayscale's strategic approach. When Bitcoin ETFs launched, Grayscale's Bitcoin Mini Trust, filed for in March 2024, missed the initial wave, resulting in GBTC outflows being primarily absorbed by BlackRock and Fidelity's products. However, potentially determined not to lose market share in the Ethereum space, Grayscale executed a different strategy by launching its Ethereum Mini Trust alongside competitors in 2024. Just as GBTC holders had migrated to lower-fee alternatives, ETHE holders were expected to seek more cost-effective options. Grayscale preemptively addressed this through the Ethereum Mini Trust, which was structured as a spinoff and seeded with approximately $1 billion worth of ETHE shares (representing 10% of ETHE) to provide substantial initial liquidity. The trust's attractive fee structure - offering zero fees for the first six months or

until reaching $2 billion in AUM, followed by a competitive 0.15% fee - helped Grayscale regain some of its AUM. This strategic timing and competitive positioning helped the product secure $600 million in inflows, ranking it third among all Ethereum ETFs and capturing 11% of total Ethereum ETF inflows, positioning it favorably against other market offerings.

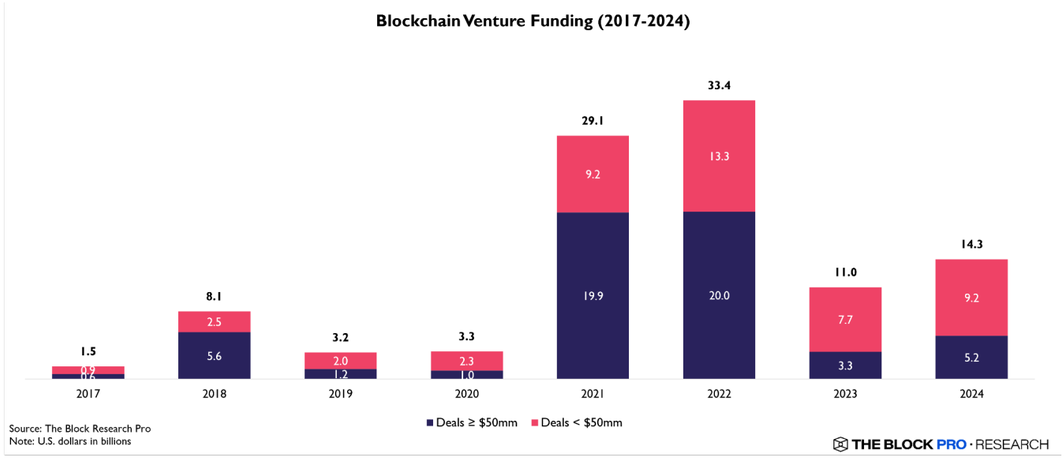


The market's reaction pattern to ETHE differed notably from GBTC's trajectory. While GBTC saw steady outflows after the Bitcoin ETF launches, ETHE experienced more concentrated initial selling pressure - with first-week outflows reaching 86% of GBTC's, despite ETHE's smaller AUM (38% of GBTC's). ETHE rapidly sold 22% of its 2.9 million ETH holdings compared to GBTC's 4% BTC reduction in the initial week. However, these outflows significantly tapered off over time. In its first 102 days of trading, ETHE offloaded 1.28 million ETH (49% of holdings), compared to GBTC's 328,000 bitcoins (54% of holdings) over the same period, demonstrating a different unwinding pattern between the two products.

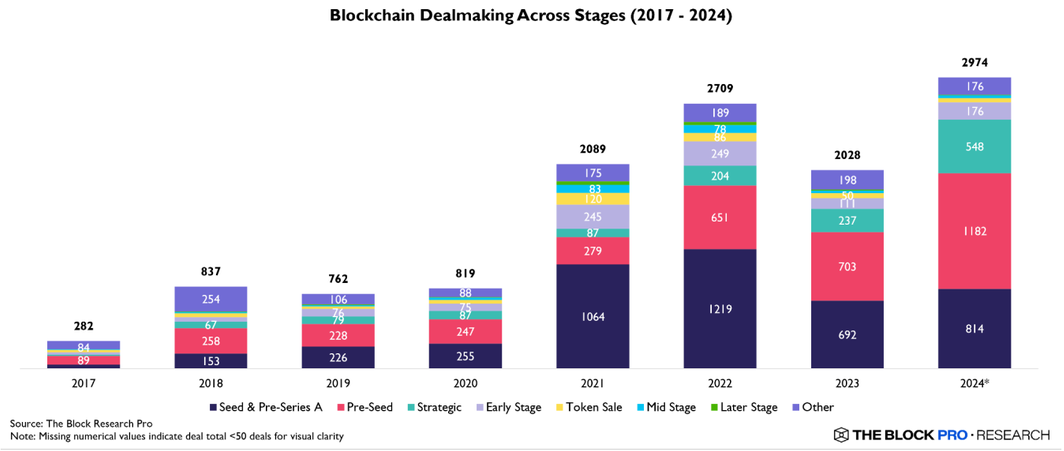
Recent 13F filings show that 211 US-listed companies with over $100 million in assets have reported holdings of spot Bitcoin ETF shares. Notable institutions holding ETF shares include JP Morgan Chase, Goldman Sachs, Bank of Canada, HSBC, Morgan Stanley, Bank of America, UBS Group, and the State of Michigan Retirement Fund. Wall Street titan Goldman Sachs disclosed $710 million in various spot Bitcoin ETF holdings, primarily on behalf of its clients, marking a substantial 71% increase from the previous quarter. This includes $461 million worth of shares in BlackRock's iShares Bitcoin Trust (IBIT), positioning Goldman as the second-largest IBIT holder behind Millennium Management's $849 million stake. The New York-based Millennium Management more than doubled its IBIT position ($849 million) while also expanding its ARK 21Shares Bitcoin and Bitwise Bitcoin fund holdings. By September, their total crypto ETF positions, including spot Bitcoin and Ethereum funds, reached $1.7 billion - though this represents just a fraction of their $70 billion assets under management. London-based macro hedge fund Capula also bolstered its positions in IBIT and Fidelity Wise Origin Bitcoin Fund to approximately $600 million. In comparison, Paul Tudor Jones' Tudor fund turbocharged its IBIT exposure five-fold to 4.4 million shares ($230 million as per current prices). This strategic move aligns with Jones' recent statements emphasizing the importance of alternative investments like Bitcoin and gold as hedges against inflation. While these hedge funds' 13-F filings only disclose long equity positions, not short positions or derivatives, they highlight a growing trend in the so-called bitcoin basis trade. In this strategy, investors simultaneously purchase spot bitcoin or ETFs while shorting cryptocurrency futures, capitalizing on the substantial price disparity. According to CF Bitcoin data, this gap widened post-election, reaching 17% annually on November 11 before paring gains to 12% by Friday.

VENTURE FUNDING

Venture funding in the blockchain sector during 2024 reflected a year of recalibration, highlighting resilience amidst evolving market dynamics. Bitcoin's climb toward the $100,000 milestone and a favorable regulatory environment under the Trump administration bolstered confidence in digital assets. Total venture capital funding is projected to reach $14.3 billion across 2,974 deals, marking a 30% year-over-year (YoY) increase in financing and a 47% rise in deal volume. Despite this growth, funding levels remain significantly below the peak years of 2021 and 2022, which saw $29 billion and $33.3 billion in investments, respectively.



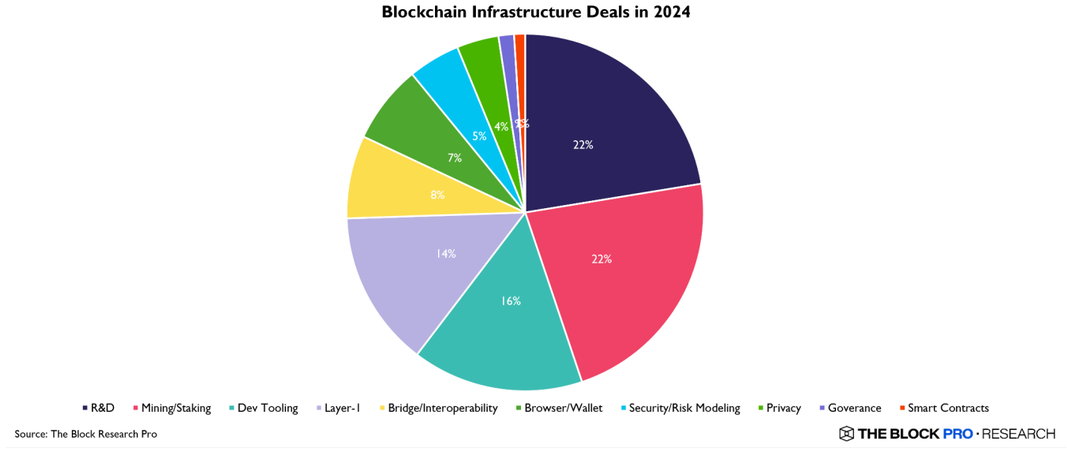
A notable shift in 2024 was the emphasis on early-stage projects. Pre-seed deals reached an all-time high of 1,101, up 57% YoY, reflecting strong interest in emerging opportunities. Seed-stage funding totaled $3.3 billion, showing similar levels to the $3.8 billion recorded in 2021 despite significantly reduced overall capital inflows. Series A funding also saw substantial growth, with 168 deals (+51% YoY) generating $2.6 billion, a 40% YoY increase. Conversely, mid and late-stage funding faced headwinds, falling short of the prominence achieved during previous cycles. This dynamic has spurred early signs of mergers and acquisitions (M&A) and sector consolidation, trends likely to intensify in 2025.



Key factors driving this year's funding trends include Bitcoin's resurgence and supportive regulation. While total funding remains below previous highs, 2024 showcased the sector's maturation. A record number of deals and sustained strength in early-stage investment highlight a robust and evolving venture capital environment. Looking ahead, increased M&A activity and continued focus on innovation are poised to shape the landscape further, setting the stage for potential growth in 2025.

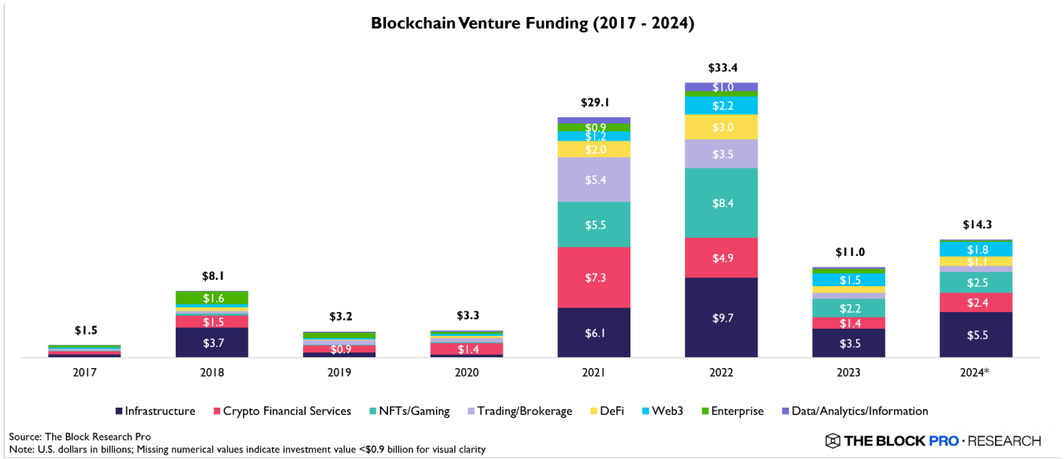
INFRASTRUCTURE LEADS VENTURE FUNDING

Infrastructure investment dominated blockchain venture funding in 2024, attracting $5.3 billion across 584 deals, representing the largest total funding to date and a 49% year-over-year increase. This growth highlights the sustained focus on scaling blockchain networks to address critical challenges related to speed, cost efficiency, and scalability. A notable emphasis was placed on Layer-2 solutions, particularly for Bitcoin and other blockchain networks. Modularity was also a key trend, with significant investments directed toward projects focused on data availability, shared sequencers, and rollups as a service, aiming to streamline and expand blockchain network functionality. Additionally, liquid staking protocols garnered strong investor interest, reflecting efforts to improve the liquidity and utility of staked assets, enabling participants to maximize rewards without compromising network security. Developer tooling was a priority, with investments targeting advanced tools to support blockchain developers.



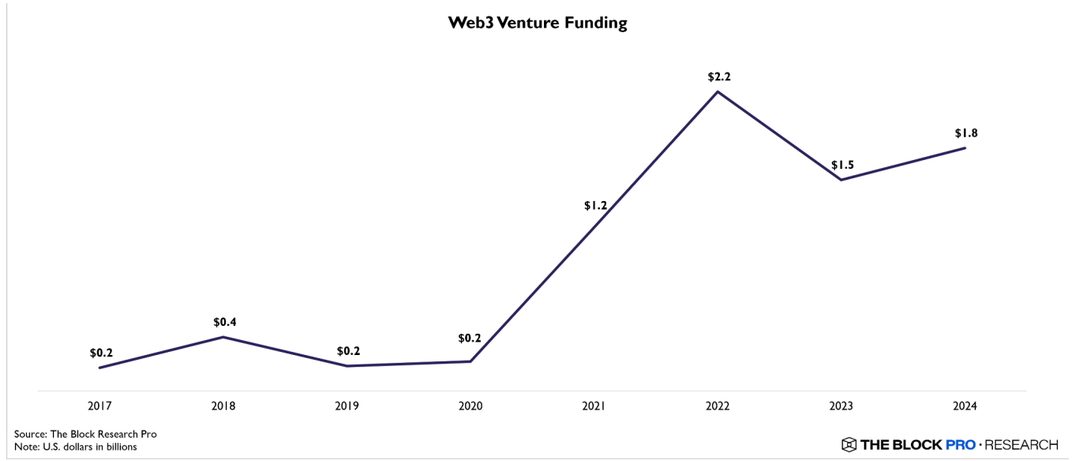
The NFTs/Gaming vertical ranked second, securing $2.9 billion in funding, consistent with its 2023 performance of $2.2 billion. Despite stable funding levels, onchain metrics indicate waning user activity, particularly in NFT marketplaces, as trends like memecoins captured attention. Still, with 526 deals, NFTs/Gaming remains a key market, albeit maturing from its 2022 peak of 936 deals.

In contrast, enterprise blockchain funding dropped dramatically, declining 71% YoY to $155 million from $536 million in 2023. Once a focal point under the "Blockchain, not Bitcoin" narrative, enterprise applications have lost traction, with investor attention shifting to more scalable and impactful blockchain use cases.



WEB3: RESILIENT AMID MARKET CONTRACTION

Web3 has demonstrated strong resilience, raising $3.3 billion over the past two years, closely aligning with the $3.4 billion raised during 2021–2022. This steadiness is notable given the broader contraction in blockchain investment, which fell from $62.5 billion in 2021–2022 to an estimated $25.3 billion in 2023–2024. While other blockchain sectors have seen sharp declines, Web3 has received a constant influx of investment, driven by investor interest in emerging verticals like SocialFi, Decentralized AI (DeAI), and Decentralized Physical Infrastructure Networks (DePIN).



DePIN has been a standout, representing one of the fastest-growing verticals in the blockchain ecosystem. DePIN focuses on decentralized networks that manage physical infrastructure and has captured significant attention from investors. By the end of 2024, DePIN protocols are expected to raise $1.1 billion across 263 deals, reflecting a 353% year-over-year increase in deal activity and a 306% year-over-year rise in total investment. This funding level nearly doubles the previous record of $550 million set in 2022, underscoring the explosive growth of this segment.

Web3's resilience is further reinforced by its ability to approach funding levels seen during the blockchain sector's peak in 2022, a year of record-high venture capital investment. This reflects the strength of emerging narratives like AI and DePIN, which are not only attracting significant funding but also capturing a growing share of market attention. These sectors are seen as foundational to the future of decentralized applications and infrastructure, further solidifying their strategic importance.

DECENTRALIZED FINANCE (DEFI): A SECTOR REIMAGINED

DeFi experienced a resurgence in 2024, with venture deals rising 72% YoY, from 286 in 2023 to 492. This growth, driven by renewed investor confidence, excludes two major trends—Real World Assets (RWAs) and Liquid Staking Tokens (LSTs)—which, if included, would further elevate these figures.

DeFi's evolution reflects diversified investor interest across key areas:

Bitcoin-Based DeFi: Expanding Bitcoin's utility with stablecoins, lending protocols, and perpetual swaps positions it as a central DeFi player.

L2 Solutions: Investments surged as projects focused on scalability and cost efficiency, enhancing DeFi ecosystems.

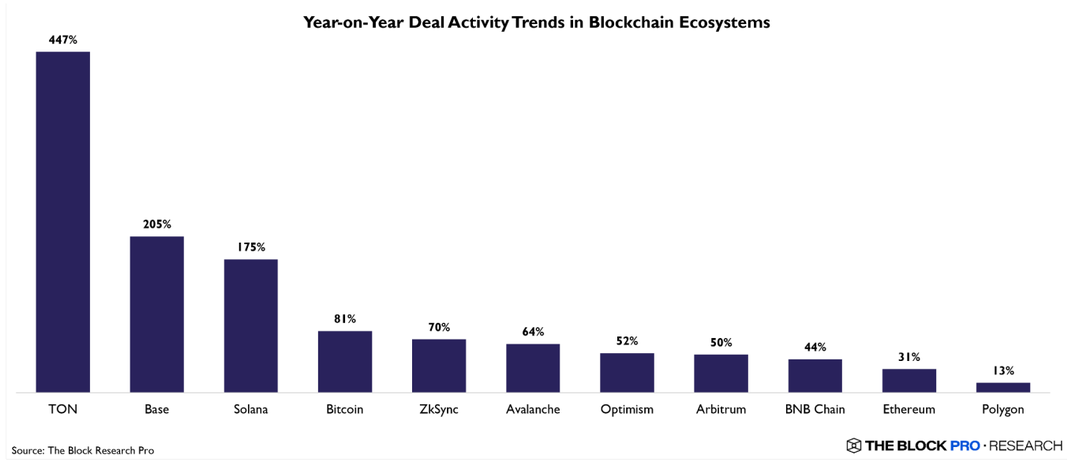
AI Integration: The convergence of AI and DeFi unlocked new efficiencies, attracting significant investment.

Non-Custodial Payments: Innovations in cross-chain liquidity and stablecoins fueled momentum, meeting the demand for transparent and borderless financial solutions.

INVESTMENT BY BLOCKCHAIN ECOSYSTEM

Ethereum continued to dominate as the leading blockchain network, recording 525 deals and attracting approximately $2.6 billion in ecosystem investment. This dominance is driven by its established infrastructure, expansive developer community, and wide-ranging applications in decentralized finance (DeFi) and non-fungible tokens (NFTs), solidifying its role as the backbone of blockchain innovation. Polygon remains a key scaling solution for Ethereum-based projects, securing 315 deals in 2024, supported by strong partnerships and ease of integration. However, competition is intensifying, particularly from Base, Coinbase's L2 network. Base recorded 200 deals in 2024, marking a 174% year-over-year increase, and briefly surpassed Polygon in deal count during September, signaling potential long-term shifts in the competitive landscape.

Solana has experienced remarkable growth, with deal activity rising by 162% year-over-year, from 118 deals in 2023 to 309 in 2024. This surge highlights Solana's appeal as a high-performance blockchain, fueled by the popularity and craze of memecoins. Bitcoin-related projects have also gained traction, with deals increasing by 58%, growing from 77 in 2023 to 163 in 2024. The expansion of Bitcoin's Layer-2 ecosystem, bolstered by innovations such as Ordinals, BRC-20 tokens, and Runes, has attracted diverse investments in payments, decentralized exchanges, and infrastructure projects tailored for Bitcoin.



The TON network has emerged as a standout performer in 2024, recording 76 deals, a 347% increase from 17 in 2023. TON's seamless integration with Telegram has enabled it to capitalize on its user base and attract significant venture interest. Similarly, Base has demonstrated strong momentum with an 88% quarter-over-quarter growth in unique chain deals during Q3, establishing itself as a leading EVM-compatible Layer-2 solution.

Overall, 2024 marks a transformative period for blockchain ecosystem venture funding. While Ethereum remains the dominant Layer-1 network, chains like Solana, Base, and TON have gained significant traction, reflecting the diversification of investment within the sector in the Layer 1 and 2 space. Bitcoin's resurgence, driven by the expansion of its Layer-2 ecosystem, underscores its growing utility beyond being a store of value.

CLOSING

2024 has been a strong year for blockchain venture funding, with significant growth in deal activity and investment volumes across multiple stages. The surge was primarily driven by an explosion in Pre-Seed deals and accelerator participation, underscoring a renewed appetite for early-stage innovation. However, other funding stages, such as Series A, also experienced notable year-over-year growth, reflecting a balanced distribution of venture interest across the ecosystem. Infrastructure investments dominated, but emerging narratives like Decentralized Physical Infrastructure Networks (DePIN) and

SocialFi captured substantial funding within the Web3 category, signaling the sector's continued evolution. Blockchain networks such as Bitcoin, TON, Solana, and Base stood out, with Solana emerging as the leader in the non-EVM category and Coinbase's Base establishing itself as the frontrunner among Ethereum's Layer-2 solutions. These trends reflect the sector's maturing landscape, with investors gravitating toward high-performance networks and application use cases.

While the uptick in venture funding has not been as drastic as in 2022 and 2023, the steady resurgence of investor interest sets a strong foundation for 2025. With rising prices and heightened deal activity in late 2024, the data from early 2025 will likely reflect this momentum. However, the limited activity in mid- and late-stage deal-making could pose challenges for companies that raised large sums at high valuations in previous years, potentially leading to financial strain and a wave of consolidation in the sector. Despite these risks, the surge in interest for newer projects and early-stage investment indicates a healthy overall funding market, with investors remaining engaged and optimistic. The private markets in this sector have historically shown strong correlations with the price performance and cyclical nature of digital assets, a trend that remains intact. As a result, while 2025 appears promising in terms of potential capital influx and innovation, its success will largely hinge on the performance of digital assets throughout the new year.

PART 8
REGULATION

U.S. ELECTION & CRYPTO

The cryptocurrency industry emerged as a pivotal force in the 2024 U.S. presidential election, deploying an unprecedented $135 million through strategic super PACs. The pro-crypto group Fairshake dominated political fundraising, becoming the largest single-issue super PAC in history with over $200 million in support from industry leaders like Coinbase, Andreessen Horowitz, and Ripple. This coordinated effort secured victories for all 48 supported candidates, most notably in Ohio, where $40 million helped Bernie Moreno defeat crypto-skeptic Senator Sherrod Brown. The industry's sophisticated campaign strategy deliberately avoided direct cryptocurrency mentions, instead focusing on mainstream issues like economic policy and immigration.

The election highlighted crypto's growing influence in national politics, with both major candidates compelled to address digital asset policy. While Trump positioned himself as strongly pro-crypto, pledging industry-friendly policies that contributed to record bitcoin prices following his victory, even Harris made late-campaign efforts to engage with the crypto community, signaling that digital asset policy had become too significant for any

candidate to ignore. This strategic alignment between cryptocurrency interests and mainstream politics demonstrated the sector's increasing political sophistication and influence.

Looking ahead, the industry has secured $78 million in additional commitments for future campaigns while expanding its Washington presence. Major players are increasing their lobbying efforts, with Coinbase and Ripple enhancing their political operations and Andreessen Horowitz planning a Washington office. This sustained investment marks crypto's evolution from an emerging technology to a significant force in shaping U.S. economic and technological policies.

TRUMP'S PRO-CRYPTO STANCE

Donald Trump has actively courted the crypto community throughout his campaign. He has promised to end what he calls an "unlawful and un-American crackdown" on the U.S. crypto industry and has made numerous overtures to crypto supporters. His campaign began accepting crypto donations in May, raising over $4 million in bitcoin and other cryptocurrencies. Trump has also attended crypto-focused events, such as the Bitcoin 2024 conference in Nashville, where he raised $21 million. He has also received endorsements from key crypto industry players, with Gemini co-founders Tyler and Cameron Winklevoss donating $2M worth of BTC to Trump. On X, Cameron Winklevoss said he planned to vote for Trump, calling the former president "pro-bitcoin, pro-crypto, pro-business."

Trump has been actively cultivating ties with the cryptocurrency community, demonstrating a personal and political commitment to the space. In a notable disclosure, Trump revealed ownership of up to $5 million in Ethereum-based assets, signaling his direct participation in the crypto market. Furthermore, he has capitalized on the NFT trend, with his digital collectibles generating over $7 million in profits. In August, Trump launched his fourth series of NFT trading cards, titled "Series 4: The America First Collection." This release recorded over 26,000 sales on the Polygon network, amassing more than $2.58 million in value. Trump's campaign has also endorsed "World Liberty Financial," a crypto project led by two of his sons, underscores the Trump family's broader involvement in blockchain initiatives. This project supports the growth of U.S.-pegged stablecoins and aims to leverage decentralized finance (DeFi) tools to address banking access inequality, potentially appealing to both crypto enthusiasts and those concerned with financial inclusion.

THE CRYPTOCURRENCY AGENDA UNDER TRUMP'S SECOND TERM

The cryptocurrency industry faces a transformative period following Trump's victory as his administration prepares to fundamentally reshape America's approach to digital assets. With Senator J.D. Vance as the Vice President and strategic appointments including Elon Musk and Vivek Ramaswamy to lead the Department of Government Efficiency (DOGE), Trump's commitment to establishing U.S. leadership in the global crypto ecosystem appears robust and multi-faceted.

The administration's agenda centers on several crypto initiatives. Plans to establish America as a "bitcoin mining superpower" and create a national strategic bitcoin reserve signal a dramatic shift in federal crypto policy. The proposed comprehensive stablecoin framework aims to position U.S.-based digital dollars as global standards, while Trump's explicit opposition to Central Bank Digital Currencies (CBDCs) aligns with industry preferences. His pledge to replace SEC Chair Gary Gensler promises a pivotal shift from adversarial enforcement to collaborative oversight, reflecting a broader vision of regulatory reform.

This transformation extends to specific regulatory developments expected to reshape the crypto landscape. The FIT21 Act and new stablecoin regulations could provide long-sought regulatory clarity, while a more cooperative regulatory approach might ease existing enforcement actions against major industry players like Coinbase. The banking sector stands to see increased crypto integration through the repeal of restrictive policies like SAB 121, with anticipated leadership changes at the FDIC and OCC potentially facilitating broader institutional participation.

Market growth is expected across multiple channels under the new regulatory environment. Beyond expanded ETF offerings and multi-token products, the sector could

see unprecedented levels of venture capital funding, mergers and acquisitions, and IPO activity. Enhanced collaboration on tokenization and DAOs, supported by progressive legislation like Wyoming's DAO framework, could accelerate innovation in decentralized finance. The market has already responded positively, as evidenced by significant price movements across major cryptocurrencies.

The creation of DOGE particularly exemplifies Trump's innovative approach to crypto policy. While focused on government reform, the initiative's appointment of prominent crypto figures like Musk and Ramaswamy signals strong alignment with the digital asset industry. The deliberate choice of the "DOGE" acronym and engagement with crypto community culture demonstrates a sophisticated understanding of the sector, while the initiative's core mission of reducing regulatory burdens mirrors cryptocurrency's decentralization ethos. The market's response has been notable, with Dogecoin's value increasing from $0.15 to $0.40, raising its market capitalization from approximately $22 billion to $59 billion, indicating increased confidence in the administration's supportive approach to cryptocurrency.

While some ambitious proposals, such as the Bitcoin Act's national reserve initiative, face implementation challenges, the overall direction suggests an unprecedented level of government support for cryptocurrency development. This comprehensive approach, combining regulatory reform, institutional integration, and market expansion, positions the U.S. to potentially emerge as the dominant force in global crypto innovation.

PRO-CRYPTO LEGISLATIVE & REGULATORY EFFORTS

As aforementioned, cryptocurrency policy has emerged as a significant bipartisan issue, with both Republicans and Democrats recognizing the need for clear regulation in this rapidly evolving sector. Republicans in Congress have been actively pushing for crypto-friendly legislation in the past few years. Some Democrats are breaking ranks to support crypto-friendly legislation, as seen in the vote to overturn SEC guidance on crypto. Here's a detailed look at some notable legislative efforts:

Financial Innovation and Technology for the 21st Century Act (FIT21) – In May 2024, the House passed the Republican-led FIT21 with a vote of 279 to 136. This bill marks the first time comprehensive crypto legislation has been voted on in the full House. The bipartisan support for FIT21 demonstrates growing recognition of the need for clear crypto regulation across party lines. Key provisions of FIT21 include:

- Granting more power and funding to the Commodity Futures Trading Commission (CFTC) to oversee crypto spot markets and "digital commodities," particularly bitcoin.
- Establishing a process for secondary market trading of digital commodities that were initially offered as part of an investment contract.
- Addressing stablecoin regulation and anti-money laundering provisions.

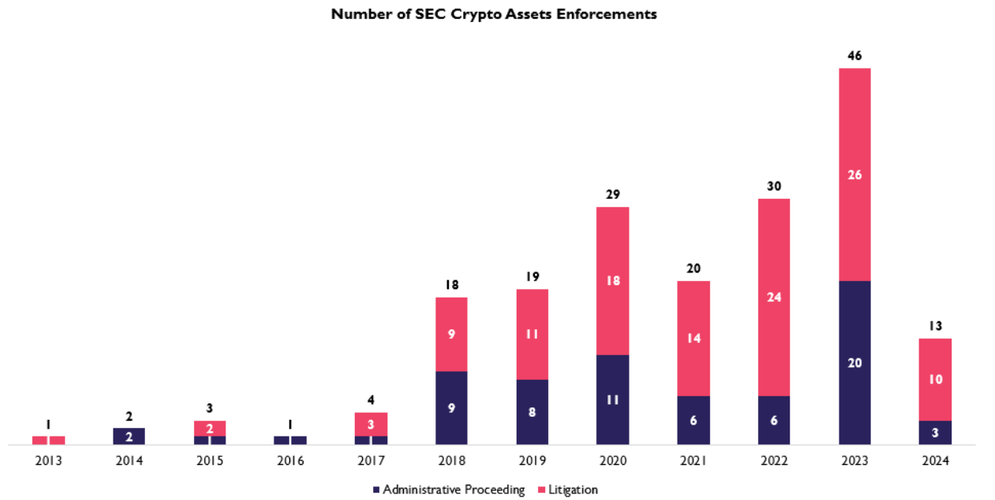
Senator J.D. Vance's Proposed Legislation – Building on FIT21, Senator J.D. Vance is drafting new cryptocurrency legislation. Vance's proposal aims to take a more industry-friendly approach than the House bill by refining the regulatory oversight of the SEC and CFTC in the crypto market. The bill will be proposing a simplified method for determining SEC vs. CFTC jurisdiction over digital assets. While some in the industry are split on whether to support Vance's push given the bipartisan support for FIT21, the bill represents ongoing efforts to refine crypto regulation.

The Bitcoin Act – Introduced by Senator Cynthia Lummis in July, this proposed legislation aims to establish a strategic bitcoin reserve for the United States. This would represent a significant shift in U.S. monetary policy and asset management. Key provisions include:

- Establish a decentralized network of secure bitcoin vaults operated by the United States Department of Treasury with statutory requirements ensuring the highest level of physical and cybersecurity for the nation's bitcoin holdings.
- Implement a 1-million-unit bitcoin purchase program over a set period of time to acquire a total stake of approximately 5% of total bitcoin supply, mirroring the size and scope of gold reserves held by the United States.

- Be paid for by diversifying existing funds within the Federal Reserve System and Treasury Department.
- Affirm self-custody rights of private bitcoin holders and emphasize that the strategic bitcoin reserve shall not infringe upon individual financial freedoms.

SEC SETBACKS & U.S. CRYPTO REGULATIONS POST-2024



The cryptocurrency regulatory landscape underwent significant changes during 2023-2024, marked by court decisions that refined the SEC's oversight authority. The pivotal Ripple case in July 2023 established a watershed precedent by distinguishing between programmatic sales and institutional offerings. The court ruled that XRP tokens sold on public exchanges did not constitute securities, significantly limiting SEC's authority over secondary market crypto trading. While the SEC appealed this decision in October 2024, the initial ruling has already influenced broader industry practices and regulatory approaches.

This legal momentum extended beyond token classification. Grayscale's August 2023 court victory compelled SEC review of spot bitcoin ETF applications, leading to January 2024's approval of eleven spot bitcoin ETFs and subsequent Ethereum ETF authorizations. Traditional financial institutions like BlackRock and Fidelity entering the space further legitimized these investment vehicles.

The stablecoin sector gained clarity when the SEC dropped its investigation into Paxos/BUSD in July 2024, following a court decision that BUSD sales weren't securities offerings. This precedent facilitated increased industry partnerships and development in the stablecoin space. Similarly, Coinbase secured a partial victory in September 2024, compelling the SEC to provide documents about token classification, though the exchange still faces ongoing legal challenges.

These judicial decisions significantly impacted enforcement patterns, with SEC crypto-related actions decreasing from 46 cases in 2023 to 13 in 2024. While regulatory uncertainty persists, courts have increasingly defined limits on SEC authority over crypto assets while maintaining necessary oversight powers, creating a more balanced regulatory framework for the industry's continued development.

LEGISLATIVE CHALLENGES TO SEC AUTHORITY

The House passed landmark bipartisan legislation in June to overturn key SEC crypto guidance, with over 280 representatives supporting measures to limit the commission's authority over digital assets. This included the Digital Asset Market Structure Act, which proposed clear definitions for crypto securities versus commodities and established new oversight frameworks.

September's high-profile congressional hearings marked a turning point in legislative scrutiny. Chair Gensler faced aggressive questioning from both parties regarding enforcement decisions and statutory interpretations. Republican committee members highlighted perceived inconsistencies in the SEC's application of the Howey test to crypto assets, while Democrats expressed concerns about regulatory clarity and market innovation. The contentious five-hour session revealed deep divisions within the

commission itself, as Commissioners Peirce and Uyeda publicly disagreed with Gensler's enforcement-first approach.

U.S. CRYPTO REGULATION OUTLOOK FOR 2025

The anticipated departure of SEC Chair Gary Gensler following Trump's election victory marks a pivotal shift in U.S. cryptocurrency regulation. This leadership transition, following traditional protocol of SEC chairs resigning under new administrations, sets the stage for significant regulatory reform. The change comes after a period where over half of the SEC's crypto enforcement actions since 2015 occurred under Gensler's tenure.

Trump has positioned himself as a strong advocate for cryptocurrency innovation, pledging to establish a national bitcoin reserve and actively embracing digital assets during his campaign. His own ventures into the space, including a line of NFTs and involvement with World Liberty Financial - a decentralized finance project naming him "chief crypto advocate" - underscore his commitment to the industry. This stance represents a dramatic departure from the previous regulatory environment.

Expected policy changes suggest a fundamental restructuring of cryptocurrency oversight. The regulatory approach is likely to pivot from aggressive enforcement to enabling compliance, with new regulations modifying existing securities laws. This shift particularly benefits the DeFi sector, which has long sought clearer operational guidelines. The incoming administration's approach emphasizes constructive engagement with the industry, contrasting sharply with previous enforcement-heavy strategies.

The industry's response has been overwhelmingly positive, reflected in both market performance and institutional support. The success of pro-crypto congressional candidates, coupled with a coordinated legal challenge from 18 states against the SEC's previous approach, demonstrates growing mainstream acceptance of cryptocurrency innovation. Trump's stated intention to change SEC leadership also resonated with the crypto community, contributing to increased industry engagement and discussions about potential regulatory developments.