# Explore the State of Crypto 2024 New Data on Crypto Users, Builders, and Technologies

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Hi everyone, my name is Darren Matsuoka, I'm a data science partner on the A16z crypto team, and I'm here to present the 2024 State of Crypto Report. We first started doing this report three years ago, back in 2022, and at the time we were excited about transaction fees being in the single-digit dollars on a handful of brand new Layer 2s. These L2s accounted for just one percent of activity on Ethereum.

There were no crypto ETFs, and this technology was certainly not top of mind for policymakers. Ethereum was still consuming huge amounts of energy with proof-of-work. As we're about to cover, the world has changed a lot since then.

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We'd like to use this report as an opportunity each year to take a step back, look at all the data that we have, consult with various experts, and ultimately bring it all into a single perspective on the state of crypto today. Let's jump right in. This report is divided into six sections.

We'll start by sizing up the industry, we'll talk about how crypto has entered the main stage as an important political topic, we'll discuss the infrastructure improvements, the emerging applications, we'll share some proprietary data that we have on builders, and then end with a few thoughts on where we're headed. So, how big is crypto today? This is a question we get all the time. As a starting point, you can see that monthly active addresses are at an all-time high.

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And if you overlay a time-shifted plot of internet users starting in 1992, you'll see that we're on a somewhat similar trajectory. Now I'll be the first to tell you that active addresses is not the best measure of real crypto users. And in fact, in the coming slides, we'll unpack what's behind those addresses and provide an estimate of what we think the real number of crypto users is.

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Still, monthly on-chain usage is an intentionally strict measure of crypto adoption, and there's plenty to be excited about with the overall trends here. So we'll see what happens between now and 2031 on our path to what is hopefully a billion crypto users. Now, which blockchains are these users transacting on? Of course, there's a lot of noise and sensitivity when it comes to comparing chains.

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But I don't think it's unfair to say that Base and Solana were some of the top destinations for crypto users in 2024. Now I'd caution you in drawing too many conclusions from this data alone. But I think the bigger point here is that we are in a multi-chain world and there's plenty of high-quality block space to build on.

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Another data source that we like to look at is mobile wallet users, which is harder to gain because it comes directly from the App Store and Google Play Store. Just like active addresses, we recently hit an all-time high. And if you look at the geographic trends, you'll see that countries like Nigeria, India, and Argentina are growing quickly.

You might also notice the U.S.'s diminishing market share over the last few years, that's the dark blue, which has gone from a majority share to less than 20% as crypto becomes more global. Here is an attempt to size up the crypto industry. We believe that there are 30 to 60 million real users transacting monthly.

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This is based on an internal analysis where we took a number of different approaches to the estimate. We don't have time to go into the details here, but we published a separate write-up on our latest thinking around this topic if you're interested. But if you compare the 30 to 60 million number with the 617 million people who own crypto, you'll see that there's a huge growth opportunity to convert existing crypto owners into active users by bringing them on-chain.

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We are now just a few weeks out from the U.S. presidential election, and it's clear that crypto has now become an important political issue. There is a ton of noise out there, but the truth is, crypto has seen bipartisan support. The quotes on this slide from key political leaders, including Vice President Harris and former President Trump, show that they're ready to pass legislation and give this industry much-needed regulatory clarity.

I think our policy team would say there's still a lot of work to do, but we're optimistic that the U.S. will eventually get this right. Now, I don't think it's a coincidence that all this support comes in an election year. As we know, this is shaping up to be a very tight race that will likely be decided by a handful of counties in a handful of swing states.

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As a result, we did an analysis using Google Trends data where we looked at the relative change in crypto search interest over a basket of terms from 2020 to 2024, and we

found that Pennsylvania and Wisconsin are in the top five. There are 40 million Americans who own crypto. They're young, bipartisan, and could throw their weight behind crypto-friendly candidates.

Election aside, there are real crypto policy discussions happening around the world. Our team pulled together some data on crypto-related consultations across topics, authorities, and jurisdictions, and we found that jurisdictions like the EU and the UK are ahead of the United States when it comes to public engagement. All this work has put us on a good path toward regulatory clarity for the crypto industry.

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The results speak for themselves. DUNA, which recognizes DAOs as legal entities, was signed into law by the state of Wyoming in March. This could become an industry standard for decentralized protocols.

FIT21, a bill that provides clear rules while promoting crypto innovation in America, received support from 71 House Democrats in May. The EU regulations are also coming online, with MICA's full regulatory framework becoming applicable in December. With the shifting political winds, a headline story of 2024 was the surprise approvals of Bitcoin and Ethereum ETFs, or more properly stated, ETPs.

While the info numbers haven't been that high, I've talked to some experts and they say that getting the distributors activated is just something that's going to take time. I think this is a big deal because it legitimizes crypto as an asset class and puts us on a path to being a part of every diversified portfolio. There are national security concerns for policymakers to consider.

As many of you know, the U.S. dollar's status as a reserve currency gives the United States tremendous power, but it's under threat from foreign sovereign digital currencies. Since Russia invaded Ukraine and sanctions were imposed, wholesale CBDC developments have doubled. So what should the U.S. do about this? Well, the opportunity is right there.

Over 99% of stablecoin market cap is denominated in USD. This split is unusually high. We know that the dollar dominates the global economy, but not nearly to this level, as you can see with foreign exchange reserves which are in decline, international debt, loans, and payments.

So rather than developing a U.S. central bank digital currency, why not embrace what's already working? Stablecoins are also a big source of demand for the growing U.S. debt. In less than a decade, stablecoins have become a top 20 holder of U.S. treasuries. This is ahead of entire countries like Germany.

Stablecoins are especially useful in countries with rampant inflation. In Argentina, for

example, there's a direct negative correlation between the purchasing power of the Argentine peso and the country's stablecoin trading. These people are using stablecoins to protect their assets.

We also wanted to show the consolidation of power happening across the U.S. economy. The number of U.S. banks is in steep decline, with the top five now controlling close to half of all assets. Six tech companies are worth more than 50% of the Nasdaq 100.

This consolidation is worrisome, but crypto can help decentralize power. Now we can't talk about the state of crypto in 2024 without talking about all the infrastructure improvements that were made this year. There are still lots of unknowns when it comes to blockchain scaling, but I think one thing has become pretty clear.

The future of crypto is multi-chain. Blockchains are becoming more and more interoperable, and Ethereum is serving as a central hub for flows. Speaking of Ethereum, the Layer 2 vision is finally becoming a reality.

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For a long time now, we've been tracking the percentage of L1 fees paid by roll-ups, and that number was up only. That is, until earlier this year with EIP-4844, also called protodank sharding, which was an upgrade that significantly reduced costs for L2s. We also show the ETH-denominated value on L2, which indicates the drop is a result of cost reduction, not lack of L2 adoption.

But the important question to ask is how does this impact users? Let's look through the lens of trying to send US dollars internationally. Without crypto, you could use a wire transfer and pay about $44. In 2021, you could have used USDC on Ethereum and paid $12.

Today, you can use USDC on Ethereum and pay about $1, or you could use USDC on Base, a Layer 2, and pay less than a cent. This is a more than 99% cost reduction, and it's what infrastructure improvements are all about. Of course, Ethereum and the L2s are not the only way to scale blockchains.

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Other high-throughput blockchains like Solana, Tan, Sui, Aptos, and Near are gaining significant traction with users and developers. Another way to illustrate the progress is to look at the number of actual transactions processed per second on January 1, 2020, less than four years ago. Since then, we've more than 50xed the transaction throughput, which unlocks entirely new applications that are only now possible.

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Account abstraction, and I'd say better user experiences more generally, are a critical part of the infrastructure story. Using smart contract wallets can provide tremendous benefits for users. This includes things like social recovery options, sponsored gas fees, and more efficient bundling.

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In the last three months, 10% of user actions on Base were invoked by 4337 account abstraction. Zero-knowledge proofs are another key unlock for crypto infrastructure. It's potentially the endgame solution for scaling, privacy, and interoperability.

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We're seeing more and more ZK apps in production, the ZK rollups are finally coming online, and there are now over 250 active projects in the space. ZK also unlocks a whole new programming paradigm for developers. By pushing a lot of the complex logic off-chain and proving it on-chain, this can create a much richer design space for applications.

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For example, proving data from an existing Web2 service using something like ZKTLS or ZK email is extremely interesting. ZK tech has improved at a pace that I think few people would have imagined, but our research and engineering teams will be the first to tell you we still have a very long way to go. State-of-the-art ZK virtual machines have improved by roughly 10x in the last couple years, but we're still in the 1960s era on the classic Moore's Law chart for microprocessors.

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Humbling for our Jolt team. Staking, and more recently restaking, has been an important trend to watch since Ethereum transitioned to proof-of-stake in 2022. Currently, 29% of all ETH is staked and 5% is restaked, mostly into the eigenlayer protocol.

This creates billions of dollars in security for the network. Now, all these infrastructure improvements are for nothing if we don't have applications. So what are the key crypto apps that are emerging? We can look at the active addresses by different application categories and see that DeFi and stablecoins dominate activity today.

It's still early days for things like gaming and social, but there are some promising emerging behaviors which we'll talk about. One category that has found product market fit is stablecoins. The stablecoin supply is back to all-time highs and today it's largely a two-horse race between USDC and Tether.

The fact that we can even put stablecoins into a comparison against PayPal, Visa, ACH,

and the Fedwire is mind-blowing. It's becoming clear that stablecoins are a killer app for crypto. One criticism we've seen is that stablecoins are just used for crypto trading.

But the recent growth in stablecoins is actually uncorrelated with crypto market cycles. This shows that there is adoption beyond just trading use cases. Another significant area of development has been at the intersection of crypto and AI.

It's no secret that AI training takes a huge amount of compute resources and only the biggest tech companies have access to those resources. Therefore, AI is an extremely centralizing technology. Crypto can be a counterbalancing force, and there are a number of interesting ideas.

The AI industry will face extraordinary challenges. We're trending toward a world of endless deepfakes, but crypto can help us track the authenticity and origins of the things we see online. A good example is the C2PA standard for signed digital media and using ZK proofs to show that only certain modifications were made.

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We're also trending toward a world of growing compute costs and GPU shortages, but companies like Jensen can help democratize access to the long tail of otherwise idle resources. We know that trust in AI companies is falling, but crypto can make things more transparent and auditable. Blockchains like Near are doubling down, building the infrastructure to make this possible.

And finally, AI will be big, but creators and data contributors currently receive nothing. Companies like Story Protocol are using blockchains as a global coordination layer for data and IP. The crypto industry is clearly thinking about this.

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AI was the breakaway narrative among crypto social circles in 2024, and our web traffic data indicates that there may be a large overlap between crypto and AI users. As a result, we expect to see significant development at the intersection of these two technologies. The NFT market has not been quite as hot as AI.

We've seen a 90 plus percent decrease in trading volume, and creators have faced some very unique challenges around enforcing royalties. But the reality is that the NFT market is very much alive. However, behavior has shifted, and it's all driven by infrastructure developments.

If you look at the number of NFT collections with 50 plus mentors, the trend is very positive. What's happened here is that L2s unlocked cheaper fees, which shifted us from high-priced, high-volume speculative secondary markets to low-cost social collecting experiences. And this is only possible in a low-fee environment.

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A lot of the speculative NFT activity that we saw in prior years shifted in 2024 into meme coins. Over 10,000 meme coins are created daily, and Solana is the most popular trading venue. Chris Dixon argues in an op-ed that this type of speculative activity is proliferating because there are less regulatory hurdles compared to crypto with more productive use cases.

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Speculation still has its place in DeFi, but the space has matured quite a bit since that crazy summer of 2020. There are now thousands of protocols controlling billions of dollars. Staking and restaking, as we discussed earlier, captures a majority of TVL, and the category leaders are emerging.

Decentralized exchanges have grown their market share fairly steadily against centralized counterparts, and over 10% of spot trading now happens on DEXs. As DeFi security measures developed, we've seen that hackers may have turned their attention back to more centralized services. Most crypto theft now happens on centralized services, not DeFi platforms.

Prediction markets have been another hot area in 2024. Volume on Polymarket has skyrocketed ahead of the election, and its use as a forecasting tool has gotten mainstream attention. We expect to see more innovation in this pocket of crypto.

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For builders, DAO treasuries may be one of the more underappreciated sources of funding. DAOs hold $15 billion in liquid tokens today, which is more than the entire amount of VC investments into crypto companies in the last year. These war chests, if deployed effectively, can be used to fund ecosystem development for years to come.

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One of the most interesting emerging categories in crypto has to be Deepin. It's still early days, and there are some particularly hard challenges to solve, but there are promising attempts being made to decentralize critical physical infrastructure networks in the real world. Helium is a pioneer in this category with their decentralized LoRaWAN and 5G wireless networks, and we're now seeing innovation across new categories like mapping, weather, vehicle and mobility data, energy, and food delivery, to name a few.

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History has shown us that games have long been a key source of innovation in software. Now in the crypto space, on-chain games are pushing blockchain scaling to its limits. If

we look at a leaderboard of blockchain resources consumed, it's mostly gaming-focused chains.

Just like Web3 Gaming and Deepin, it's early days for decentralized social, but the DECO experiment is underway, and Farcaster is leading the charge. There are vibrant developer ecosystems emerging around these open protocols, and lots of smart developers are launching new products every day. We know that the heartbeat of the crypto industry is, of course, the builders.

A16z Crypto tracks thousands of companies through investment team research, crypto startup accelerator applications, and industry-wide tracking, and we now have some new tools that allow us to share aggregated data. Starting with blockchains, we ask builders what chains they're interested in building on. Ethereum and the L2s capture a majority mindshare, with BASE in particular being a breakout ecosystem in 2024.

But not all innovation is happening around Ethereum. In fact, Solana and Bitcoin saw some of the biggest increases in builder interest this year. We can also look across categories and see that DeFi, blockchain infrastructure, and Deepin are some of the highest growth areas in 2024.

Going one level deeper, looking at subcategories, we can see that areas like real-world assets and payments have been really popular among builders. We can also look at the intersection of applied technologies and project categorization. As you might expect, we saw a surging interest in AI, which is commonly used by Infra, DeFi, Deepin, and Picks and Troubles projects.

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Lastly, we can look at the geographic trends to see where crypto founders report being based. Crypto is clearly international, with the US, Europe, and Asia as the most significant markets. Getting more granular, New York and San Francisco are some of the fastest-growing crypto hubs.

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If you're interested in digging deeper, we released the Builder Energy dashboard. It includes some cool interactive visualizations around all this data, and you can check it out at builderenergy.a16zcrypto.com. So what's next for crypto? The way we think about crypto markets is that while they look chaotic from the outside, there's actually an underlying order to the madness. We call this the price innovation cycle.

The idea is that when prices go up, people get interested, developers build, and new products kickstart the next wave. We have seen this now four times since Bitcoin's inception. But the big question is, are we entering the fifth wave? While prices have gone up, it's admittedly hard to tell if it's driven by net new interest and innovation or more

external factors like the ETFs and political tailwinds.

Even if we're not in the fifth wave, the quality of builders and the product pipeline that we have visibility into is strong. As ChatGPT showed us, it only takes one product to shift an entire industry. If we take a step back and we look at the state of crypto in 2024, we should be proud of how far we've come, and I hope this report shows that.

Thank you.