

# THE RISE OF NFTs

## A DATA-DRIVEN OVERVIEW OF NON-FUNGIBLE TOKENS

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By Nate Maddrey, Kyle Waters and the Coin Metrics Team

A large, vibrant collage of digital art styles and NFT-related images. The collage is composed of various rectangular and triangular sections. It includes pixel art characters, anime-style characters, abstract designs, and images of physical NFT collectibles. The colors are bright and varied, creating a dynamic and visually engaging composition. The collage is arranged in a grid-like pattern, with some sections overlapping others. The overall theme is digital art and NFTs.

# THE RISE OF NFTs

## A DATA-DRIVEN OVERVIEW OF NON-FUNGIBLE TOKENS

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NFTs have become one of the most vibrant sectors of the burgeoning cryptoeconomy. With thousands of different NFT projects and more launching every day, NFTs now represent a material percentage of all activity on Ethereum.

In this special report we take a data-driven look at the rise of NFTs, covering the following topics:

1. Introduction to NFTs
2. NFT Adoption on Ethereum
3. Institutional Interest in NFTs
4. NFT Analytics
5. Future of NFTs
6. Conclusion

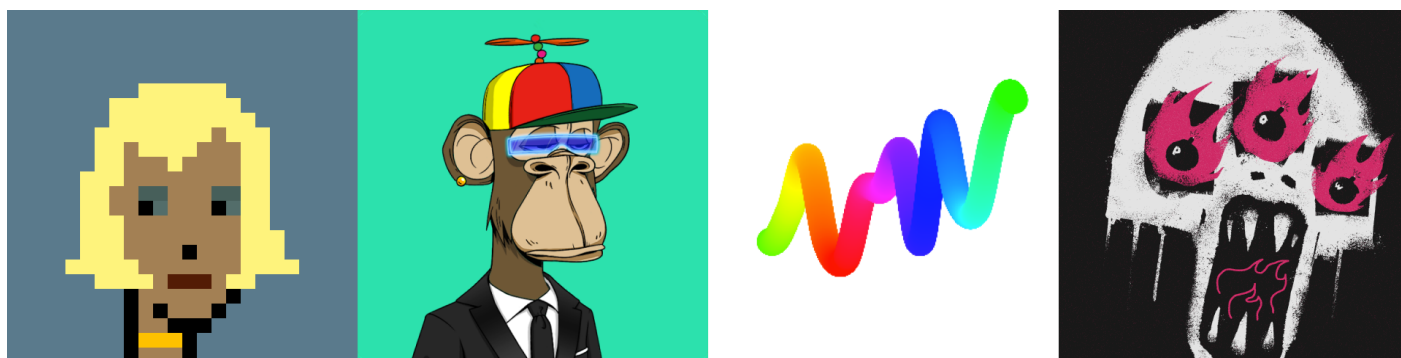
# 1 INTRODUCTION TO NFTs

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Since the dawn of the Internet people have been creating content and sharing it online. From videos, to music, to memes, the web is full of digital objects. But for most of the Internet's history there hasn't been a way to truly own and re-sell this digital content.

Non-fungible tokens (NFTs) introduce a way to manage and track the ownership of unique digital assets. Similar to fungible cryptoassets like BTC & ETH, NFTs are secured by an underlying blockchain, meaning ownership records are immutable and do not require a trusted third-party. NFT transaction and ownership history is publicly viewable and verifiable.

Although they're now most commonly known as punks and apes, NFTs can be used to represent almost anything. At their core, NFTs are unique tokens that are tied to a piece of metadata. NFTs are minted (aka created) using smart contracts. NFT smart contracts dictate functionality like transferability, maximum supply, and ownership management. The metadata portion can represent a URL, image, video, set of attributes, or any other piece of arbitrary data.



From left to right: [CryptoPunk #9052](#), [Bored Ape Yacht Club #8580](#), [Chromie Squiggle #4008](#), [XCOPY's Proof of War](#)

In order to ensure composability, NFTs are typically built on top of a smart contract standard. [ERC-721](#), Ethereum's first NFT standard, introduced "a minimum interface a smart contract must implement to allow unique tokens to be managed, owned, and traded." Although ERC-721 is still the most commonly used, other standards like [ERC-1155](#) have also gained popularity. NFTs created using

the ERC-721 standard are interoperable - they can be moved across different decentralized applications (dapps) and sold on third-party marketplaces, as long as they support common standards.

OpenSea is by far the largest Ethereum NFT marketplace by volume. So far in 2021 there have been over 3M sales on OpenSea, with just over 60% of all sales occurring after August 1st. But other marketplaces include Rarible, which serves as a secondary-marketplace for any NFT, and SuperRare, Foundation, and Makersplace, which focus on 1/1 cryptoart. Some projects, like CryptoPunks, also have their own dedicated on-chain marketplaces.

Some of the biggest projects (measured by all-time sales volume) include:

- [CryptoPunks](#): One of the earliest NFT projects, CryptoPunks are 10,000 unique pixelated characters created by [Larva Labs](#). They're commonly used as social media profile pictures and inspired a wave of hundreds of other profile picture NFT projects. CryptoPunks are the largest NFT collection in terms of all-time sales volume, and have had large sales both on-chain and at traditional auction houses. A set of nine CryptoPunks were [auctioned off at Christie's](#) in early May.
- [Bored Ape Yacht Club](#): Set of 10,000 unique ape avatars also commonly used as profile pictures. Auctioned at [Sotheby's](#) on September 9th and [Christie's](#) on September 17th, and popular with athletes such as Dez Bryant and Stephen Curry.
- [Art Blocks Curated](#): Art Blocks is a platform that lets artists create sets of generative art. Curated collections are hand selected by the [Art Blocks curation board](#), although Art Blocks also offers a "Playground" and "Factory" version of the platform with less stringent standards for inclusion. Popular Art Blocks Curated collections include [Fidenza](#), [Ringers](#), and [Chromie Squiggles](#).
- [SuperRare](#): SuperRare is a curated marketplace that features unique 1/1 pieces of art created by artists such as [XCOPY](#), [FEWOCiOUS](#), and [Pak](#). SuperRare recently [released a token](#) as a step towards decentralizing the platform.
- [Decentraland](#): Another relatively early NFT project, Decentraland is a virtual world built on the Ethereum blockchain. Each parcel of Decentraland land is its own NFT which lets its owner build structures and experiences within Decentraland.

- [Meebits](#): Meebits are 20,000 unique 3D voxel avatars created by Larva Labs (who also created CryptoPunks). 11,000 Meebits were initially available to CryptoPunk owners who could mint Meebits for free proportional to the amount CryptoPunks held.
- [Mutant Ape Yacht Club](#): Similar to Meebits, Mutant Ape Yacht Club is a set of 20,000 avatars launched as a complimentary collection for Bored Ape Yacht Club owners.
- [Loot](#): Launched on August 27, 2021, Loot tokens consist of a list of words (stored on-chain) that can represent different characteristics and items. Collectors and builders are left to create games on top of the Loot tokens. Loot can be [thought of as a “bottom-up” approach](#) to building a game or metaverse, while a project like Decentraland represents more of a “top-down” approach.

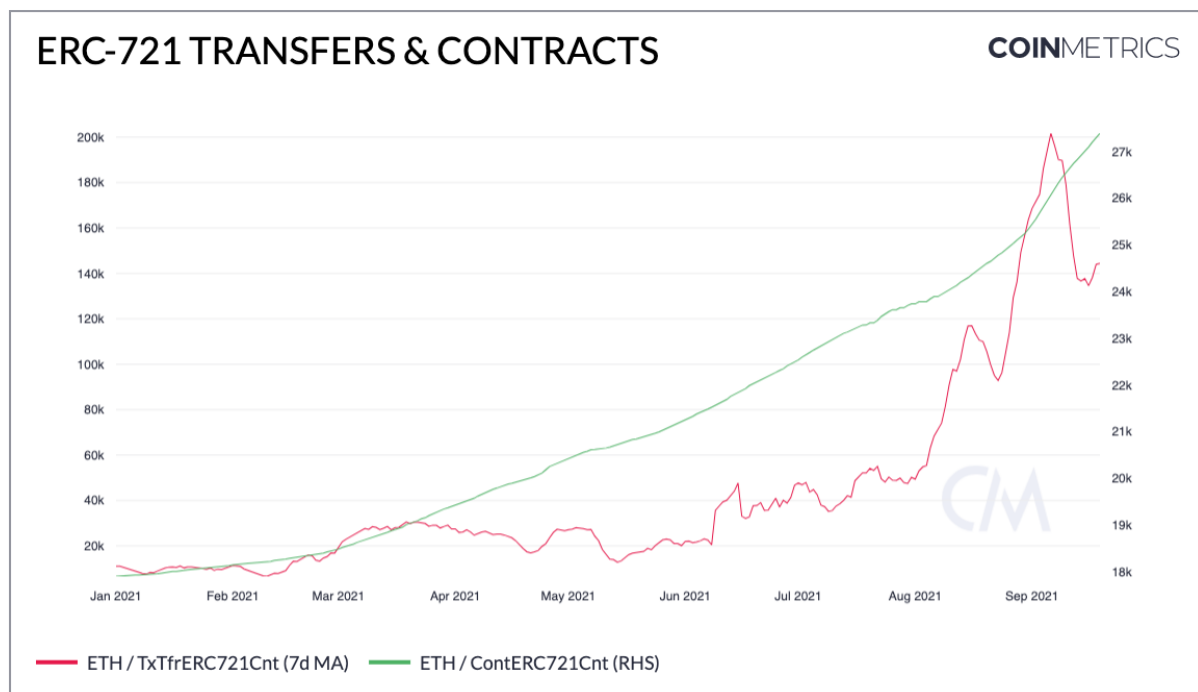
In the following sections we dive into NFT data, and analyze the rise of NFTs on Ethereum.

# 2 NFT ADOPTION ON ETHEREUM

## MARCO-LEVEL STATISTICS

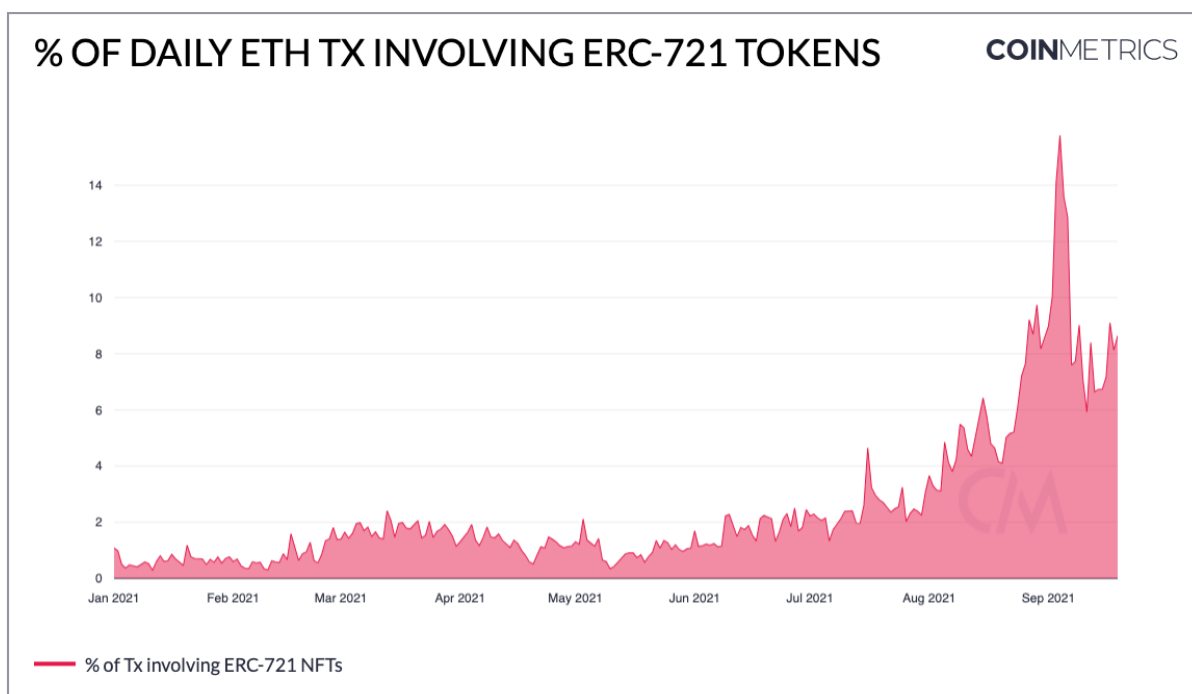
While NFT adoption is also growing on other chains, Ethereum has been the center of NFT activity to date. At the macro level, there has been massive growth in NFT-related activity on Ethereum.

The daily number of ERC-721 transfers has grown from 11K at the beginning of 2021 to 144K today, despite a recent pullback in activity. The number of smart contracts on Ethereum implementing the ERC-721 standard has also increased from ~18K to ~27K today. This is a small fraction of the 20M smart contracts on Ethereum but the percentage of contracts that are ERC-721 compliant is rising overall.



Source: [Coin Metrics Network Data Pro](#)

NFTs now represent a material percentage of all transactions on Ethereum. At the start of 2021, NFT-related transactions (limited to transfers of ERC-721 tokens) typically made up less than 1% of all daily transactions. During the early 2021 NFT mania that peaked in March this percentage increased slightly but only reached as high as 2.5% of all daily transactions. In recent weeks though, NFT transactions have made up as much as ~16% of all daily transactions on the network and this percentage has consistently been above 5% over the last 30 days.<sup>1</sup>



Source: [Coin Metrics Network Data Pro](#)

To give a better sense of how this activity is broken down we selected a universe of NFT-related projects<sup>2</sup> to study. The universe includes all relevant contract addresses for NFT marketplaces, projects in crypto art, avatar picture projects (sometimes called PFPs or profile pictures), and other digital collectibles.

<sup>1</sup> While high, this percentage is likely much smaller when considering the total value of transfers given the significant amount of value transferred via stablecoins and other assets daily on Ethereum.

<sup>2</sup> Projects include: Async, Art Blocks, Foundation, KnownOrigin, MakersPlace, NiftyGateway (GUSD cashout), OpenSea, Rarible (excluding RARI ERC-20 token), SuperRare (excluding RARE ERC-20 token), Zora, Pudgy Penguins, Bored Ape Yacht Club, CryptoKitties, Decentraland, Meebits, Ethereum Name Service (ENS), CryptoPunks, and Loot (for Adventurers).

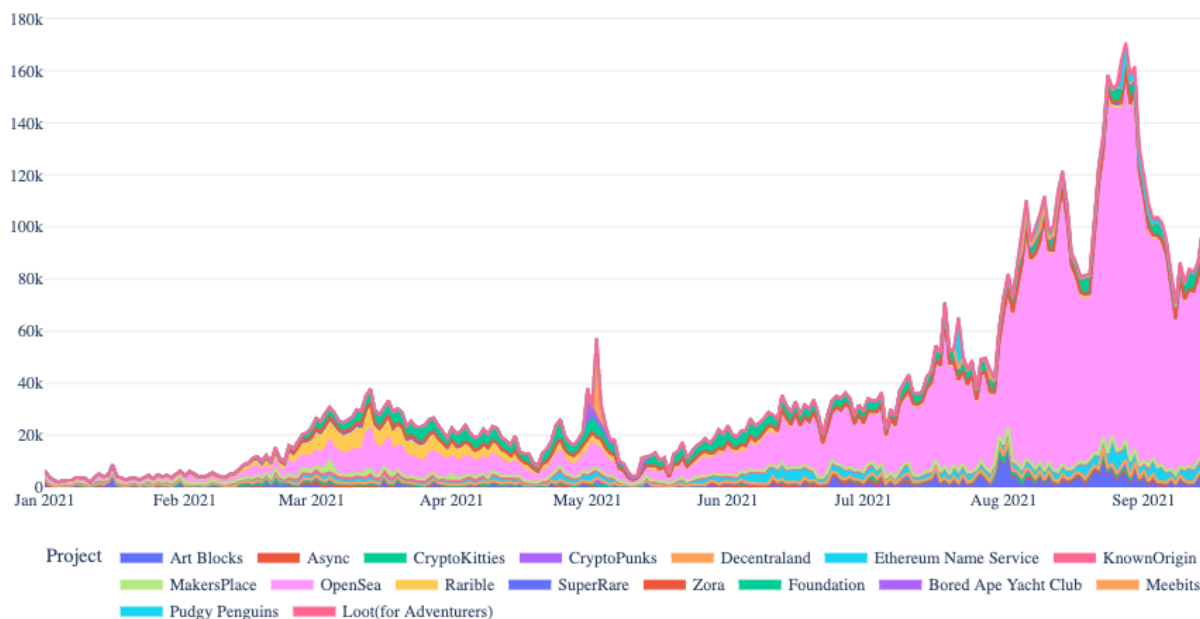


For each project, we found the total number of daily transactions involving that project's relevant addresses.<sup>3</sup> Looking at the daily number of transactions by project it is apparent that most of the increased activity can be attributed to the rise of OpenSea as the top marketplace to buy, sell, and mint NFTs. Other projects have also seen noticeable increases such as the growth in popularity of generative art project Art Blocks in August 2021. Also, the spike in activity around the end of April can largely be attributed to the launch of the avatar projects Bored Ape Yacht Club and Meebits which launched on April 30th and May 3rd, respectively.

## Number of Transactions by Day by NFT Project



Source: Coin Metrics



<sup>3</sup> Includes each time that address is involved in a transaction's event log. Note in a few cases two or more contract addresses may be included in the same event log (e.g. sale of a CryptoPunk on OpenSea). But as many of the projects above have their own marketplaces this impact should be minimal.



# OPENSEA'S GROWTH

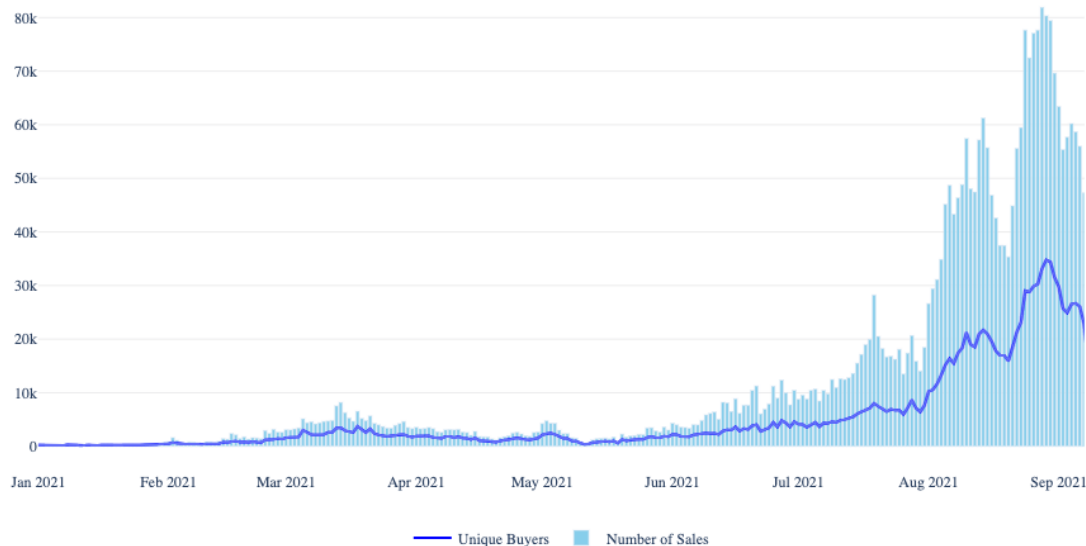
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OpenSea has been the economic hub of NFT activity this year on Ethereum. The marketplace has grown at a staggering pace in 2021 attracting new users while facilitating the creation and exchange of NFTs. In August 2021, OpenSea registered over [\\$3B in total volume](#), topping all historical sales volume combined in a single month. The number of unique buyers on OpenSea far eclipsed March 2021 highs in summer 2021, pointing to new widespread adoption.

While the number of unique buyers has fallen somewhat from an August 2021 high of ~35K unique addresses, there are still around ~20K unique addresses buying NFTs every day on OpenSea, about 6X more than the peak in March 2021. The number of daily sales on OpenSea also reached a high of ~80K in late August, more than 8X the high achieved in March.

Daily Number of Sales and Unique Buyers on OpenSea

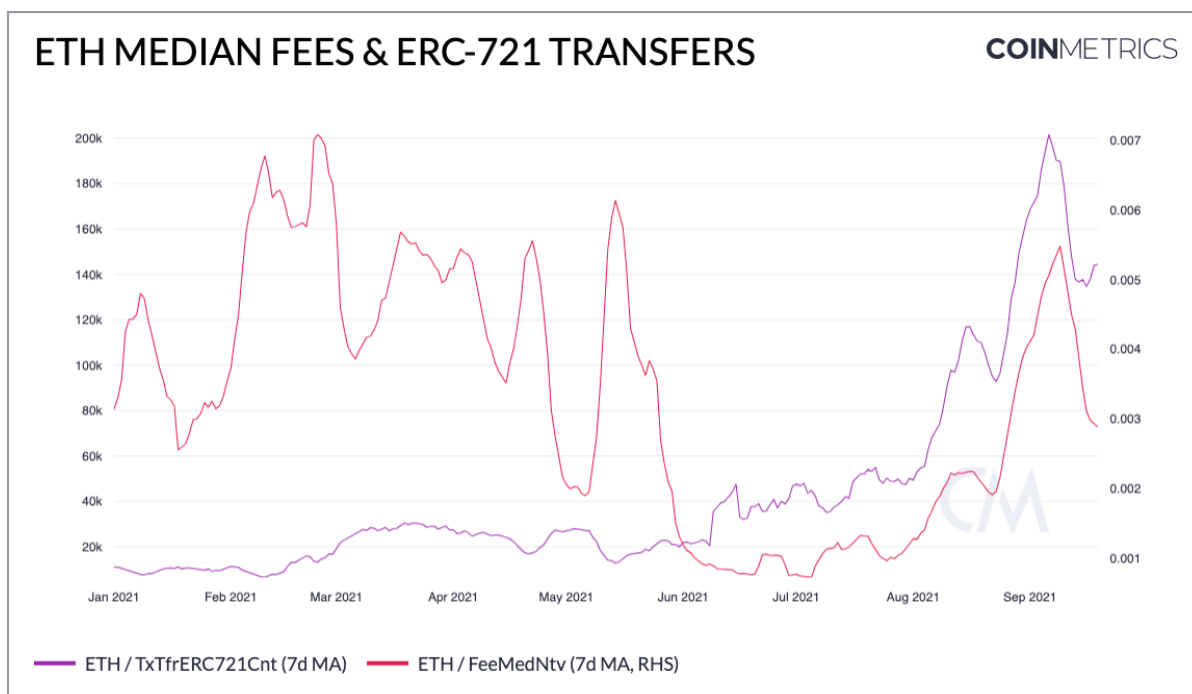
Source: Coin Metrics



# NFTs & ETH GAS FEES

While NFTs have attracted new users and generated vibrant economic activity on Ethereum, they have also contributed to periods of network congestion and high fees. Fees on Ethereum are commonly referred to as “gas” which are effectively units that measure the computational effort needed to execute operations on Ethereum. For more on Ethereum’s fee dynamics, see Coin Metrics’ [Ethereum Gas Report](#).

Zooming out, rising NFT activity has been highly correlated with median gas fees on Ethereum over the last few months. A simple Pearson correlation coefficient between daily ERC-721 transfers and median gas fee is 0.89 over the last 90 days.



Source: [Coin Metrics Network Data Pro](#)

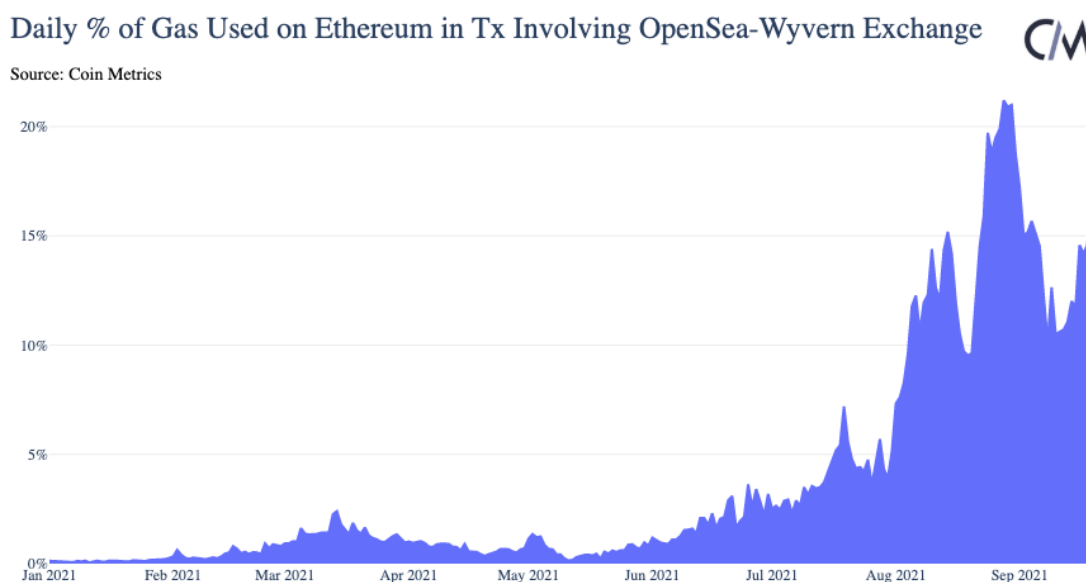
But simply observing these patterns does not confirm causal relationships. Ultimately, Ethereum is a complex network with significant daily activity in areas outside NFTs such as stablecoins and DeFi. Furthermore, the introduction of EIP-1559<sup>4</sup> in August fundamentally changed Ethereum’s fee

<sup>4</sup> For more details on EIP-1559 see the Network Highlights from our [State of the Network Weekly Newsletter, Issue 114](#).

mechanism, complicating broader analyses. Attempting to draw causal links at the macro level between NFTs and the general market price for Ethereum blockspace should be a careful exercise.

While it is difficult to draw broad causal links, OpenSea has been one of the largest sources of gas consumption on Ethereum in the last couple of months. In late August, around one fifth of all daily gas used on Ethereum involved transactions interacting with the OpenSea Wyvern Exchange contract.<sup>5</sup>

Since EIP-1559 launched in early August, OpenSea has been the leading decentralized application (dapp) in terms of total ETH burned. As of September 20, 2021 [over 46K ETH has been burned from transactions on OpenSea](#) since EIP-1559 went live. This is even more remarkable considering that OpenSea conducts most of its features [off-chain](#) such as listing an NFT for sale or bidding on the marketplace.

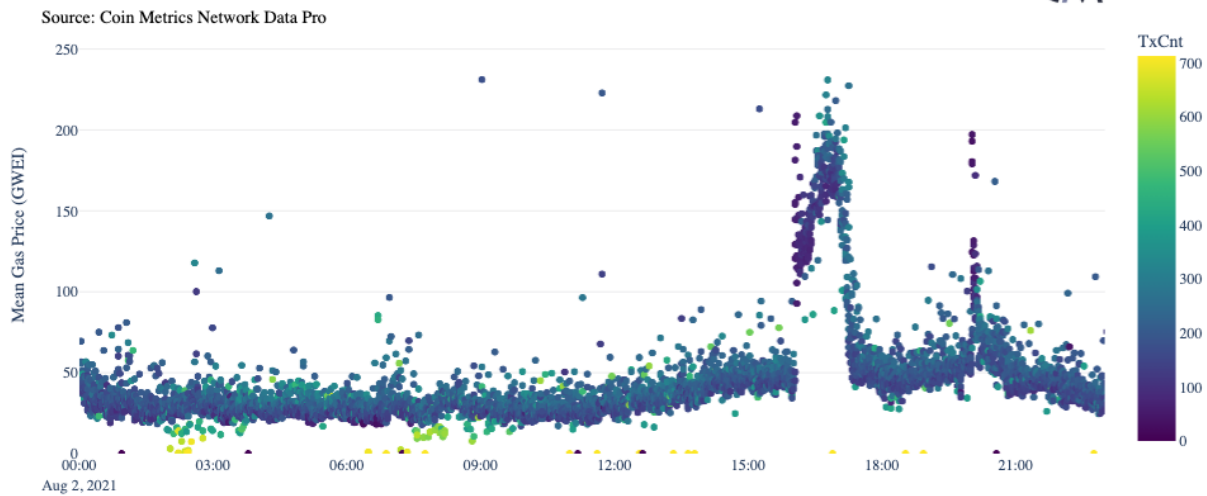


The impact of NFTs on gas fees is best analyzed at a more granular level after isolating idiosyncratic events. Specifically, new NFT project launches (often referred to as “drops”) can result in rapid but short-lived spikes in gas fees as users rush to mint or claim NFTs. For example, on August 2, a new collection titled [“Flowers”](#) launched on the generative art platform Art Blocks Factory at 4pm UTC. The chart below shows that the mean gas price per block on August 2nd spiked immediately at 4pm as many clamored to mint the new NFTs.

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<sup>5</sup> Includes any transaction where the OpenSea-Wyvern Exchange Contract Address (0x7be8076f4ea4a4ad08075c2508e481d6c946d12b) is referenced in an Ethereum event log.

## Mean Gas Price Per Block: August 2, 2021 (UTC)



More recently (and post EIP-1559), spin-offs of the popular NFT project Loot have led to [short-term spikes in gas prices](#). While the introduction of EIP-1559 has changed fee dynamics on Ethereum, network congestion and high fees will ultimately be addressed via scalability solutions. Until then, popular NFT drops can cause short-term aberrations in gas fees on the network.

# 3 INSTITUTIONAL INTEREST IN NFTs

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There have been a few notable events this year indicating that institutional capital is starting to be deployed to NFTs and well-established firms are ready to explore the emerging space. In this section we lay out some of the early institutional players in the NFT market and provide some reasons why institutional investors might be interested in NFTs.

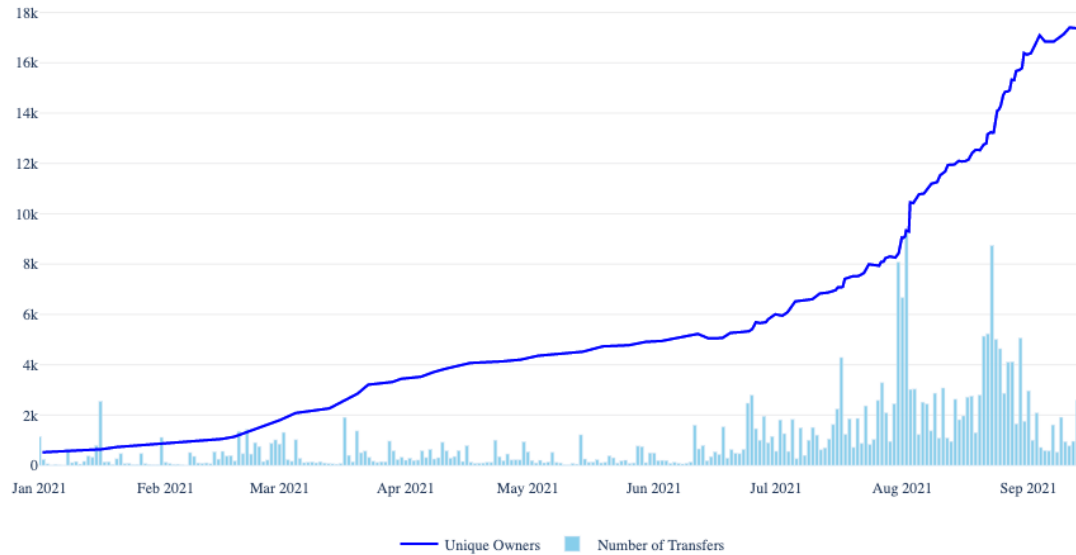
## INSTITUTIONS & JPEGs

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2021 has brought on the emergence of everything from NFT funds to an S&P 500 component purchasing an NFT for over \$100K. Although NFT-focused funds have mostly been contained to existing crypto “native” investors, there has been some intriguing activity. In August, the Singapore-based hedge fund [Three Arrows Capital deployed thousands of ETH](#) to buy NFTs on the Art Blocks market. Daily transfers and unique Art Blocks owners took off around this time.

## Art Blocks: Number of Daily Transfers and Unique Owners

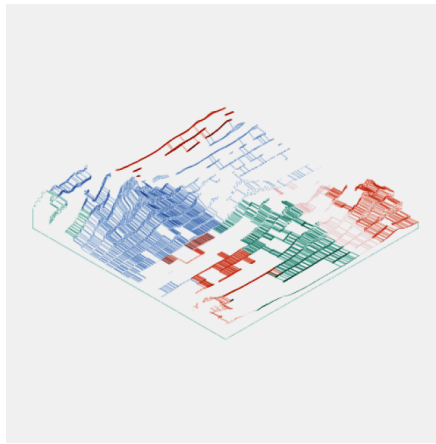
Source: Coin Metrics



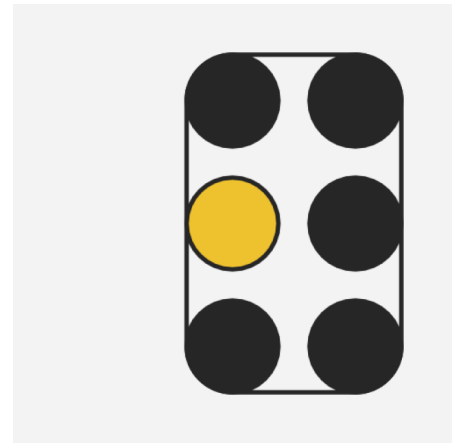
Later that month, institutional interest in Art Blocks continued with the quantitative trading firm [Alameda Research purchasing a Fidenza on the platform](#) for 326 ETH, a Ringer for 220 ETH, and a Subscrape for 68 ETH (over \$2M altogether).



[Fidenza #326](#)



[Subscrapes #456](#)



[Ringers #664](#)

August concluded with the announcement that Three Arrows Capital would team up with the pseudonymous NFT collector [VincentVanDough](#) to [launch a \\$100M NFT fund called Starry Night Capital](#).

There have also been signs of increased sophistication in NFT investing. On July 30, an anonymous buyer spent \$7M to acquire 104 CryptoPunks [in a single block](#). They selectively bought the 104 least expensive CryptoPunks on the market, significantly raising the floor (“floor” price refers to the price of the cheapest available NFT within a collection). The floor sweep sparked a surge of other purchases and led to a new all-time high in daily CryptoPunks sales volume.

They [went on to explain](#) that they view CryptoPunks as a long-term store of value and targeted the floor Punks as part of their strategy to optimize liquidity and diversification. The owner later fractionalized the 104 CryptoPunks into a [more easily traded ERC-20 token](#), aptly named FLOOR.



Finally, influential firms outside of the immediate crypto-sphere have been showing increased interest in NFTs. The top auction houses Christie’s and Sotheby’s have both featured NFTs at auction and Christie’s has announced they will [conduct an auction of Art Blocks Curated live in ETH](#), a first for any of the large auction houses.

But the event that arguably capped summer ‘21 NFT mania was the announcement that global payments powerhouse [Visa purchased a CryptoPunk](#) for \$150K and released a [report](#) on NFT commerce in late August.



# WHY MIGHT INSTITUTIONS BE INTERESTED?

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We believe institutions might be attracted to NFTs for the investment benefits of provable digital scarcity and as a scalable vehicle for social signaling.

NFTs as an asset class might be compared best to the fine art market right now. While the traditional art market is a more niche area of investment, there is precedent for institutional activity. Many institutions and banks [have long amassed large corporate art collections](#). For example, UBS and Bank of America have curated collections of around 30,000 and 50,000 works, respectively. Art serves a dual purpose of being both an uncorrelated investment<sup>6</sup> and as a means of cultural engagement. While at the surface it may appear perplexing to purchase 24x24 pixel images for hundreds of thousands of dollars, NFTs share some of these benefits while having powerful advantages to the traditional art market.

From an investment perspective, NFTs offer unprecedented transparency and rich data for analytics, as well as the financial tools for price discovery and liquidity. By living on-chain, it is trivial to verify their ownership and provenance. Also, Decentralized Finance (DeFi) tools are already starting to be applied to NFTs, such as the project [Fractional](#) which allows 1/1 NFTs to be fractionalized into tokenized pieces, like the CryptoPunks example explored above.

More data is needed but it may also be reasonable to assume some NFTs will exhibit uncorrelated returns making them an attractive alternative asset to diversify portfolios. And while a physical artwork may only be placed in a corporate lobby or conference room to maximize its visibility, NFTs are scalable vehicles to show artistic appreciation. By being programmable and digital in nature, NFTs can be viewed more easily across social media, webpages, and other areas on the internet. Institutional interest in NFTs is still at an early stage but might pick up as more tools, buyers, collectibles, and capital enter the market.

Lastly, even if institutions do not buy NFTs directly, they might look to other assets to gain exposure to the space. This may include NFT platform tokens (for example, Rarible's RARI token and SuperRare's RARE token) or simply investing in the native network token (e.g. ETH) as NFTs play a larger role in crypto adoption cycles.

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<sup>6</sup> In a report released in late 2020, Citi found flat or low correlations of broad art market returns to other major asset classes, <https://www.privatebank.citibank.com/ivc/docs/Citi-GPS-Art-report-Dec2020.pdf>

# 4 NFT ANALYTICS

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As NFTs' share of economic activity in the crypto ecosystem grows, it is becoming increasingly important to track key metrics on the users and projects behind the proliferation of these digital goods.

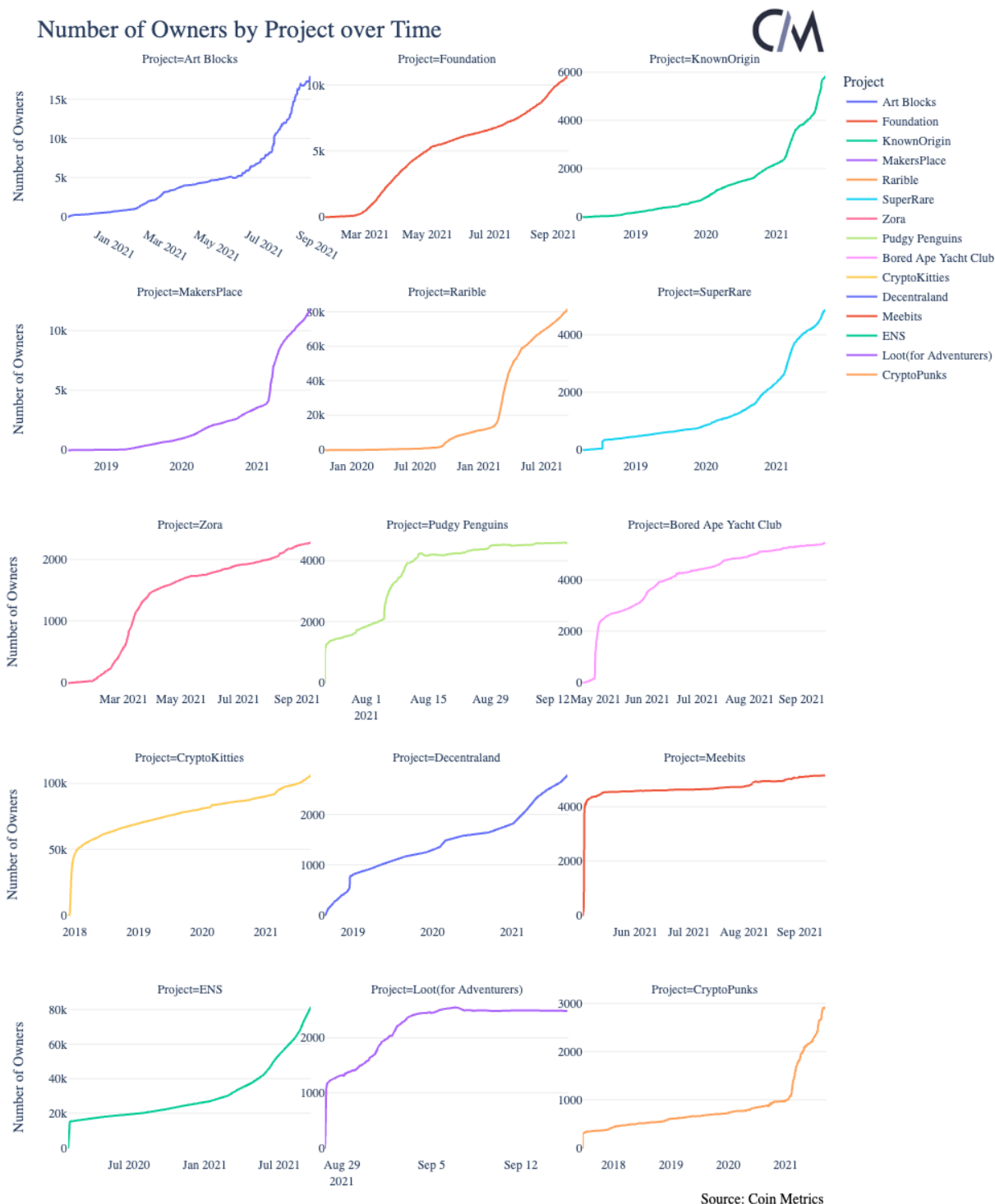
There are many ways to gauge the significance of individual NFT projects, but below we present some measures over time on the number of unique owners and ownership concentration for a selected universe of NFT projects. While NFTs do require new thought around metrics, we also consider how our existing frameworks of active supply and realized cap can be applied to measure the total economic weight of a specific NFT collection or project.

## NFT OWNERSHIP & SUPPLY CONCENTRATION

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Throughout 2021, the number of unique ETH addresses owning NFTs has increased along with the supply of NFTs across popular platforms (those without pre-set collection sizes). The charts below show the unique number of owners for each project over time.

Total unique owners is an important metric because NFT projects, like crypto networks in general, can benefit from network effects. A larger network of owners can command more cultural influence by having a broader set of supporters that are incentivized to promote the project or platform.

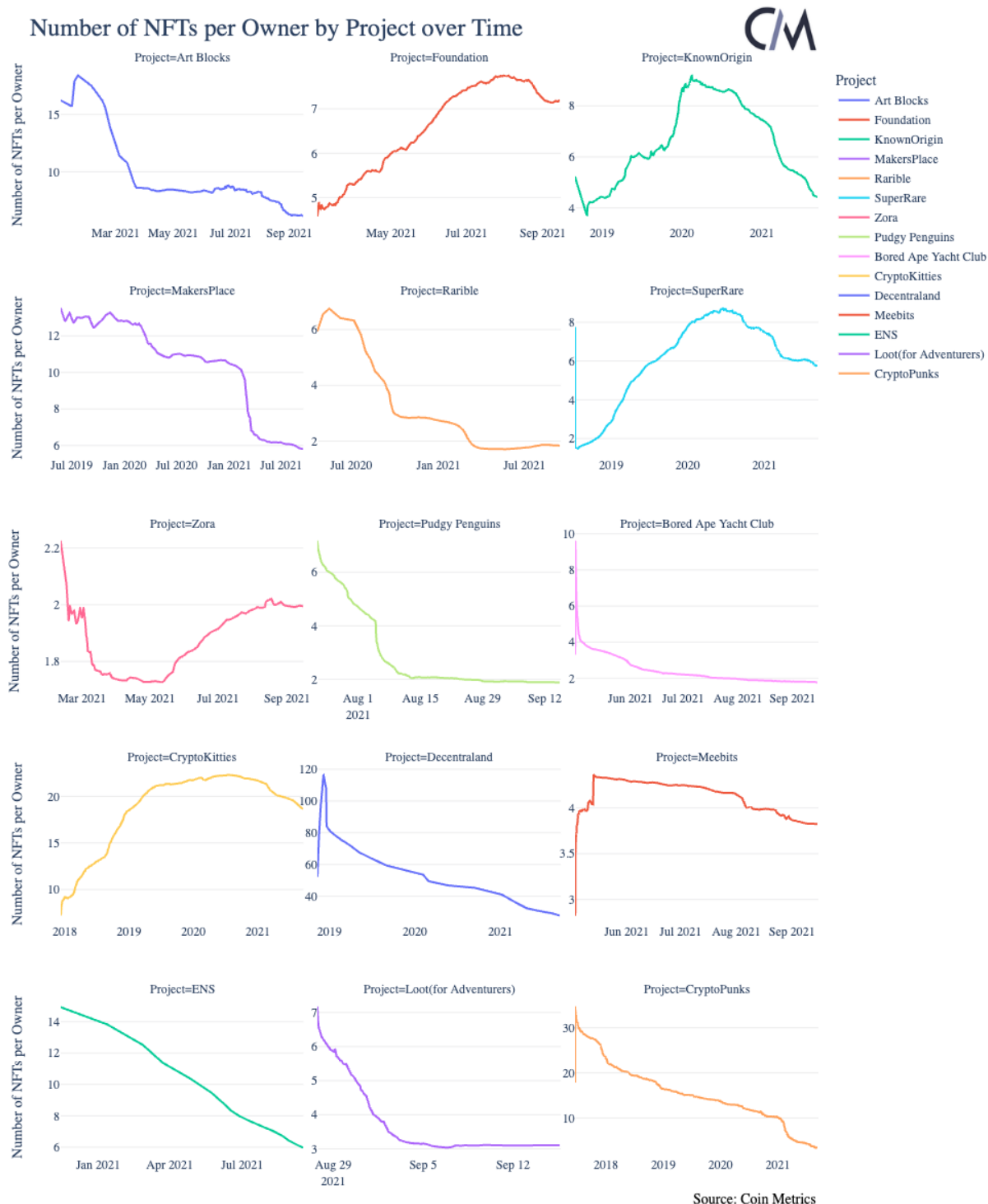


Some of the largest NFT projects by unique owners include CryptoKitties and Ethereum Name Service (ENS). CryptoKitties was one of the earliest NFT projects on Ethereum and now counts over 100K unique owners. ENS, which allows ETH users to purchase NFTs that can uniquely represent their 42-character hexadecimal ETH address as a human-readable name (e.g. name.eth), has over 80K unique owners. Digital art platforms such as SuperRare, Foundation, MakersPlace, and KnownOrigin have also seen total unique owners increase dramatically in 2021.

There are very helpful measures but there are some important limitations to keep in mind. First, unique owners should not directly be interpreted as unique individuals since an owner can use multiple ETH addresses. Some projects also have special contracts that hold NFTs in escrow to facilitate auctions. Finally, if fractional ownership of 1/1 NFTs starts to pick up, this might require new thought for measuring the number of unique owners. For example, there are [~1,500 owners](#) of the FLOOR token described earlier which fractionalized 104 CryptoPunks.

When taken together, total owners and total supply allow for the creation of supply concentration metrics. The charts below infer ownership concentration by taking the total number of NFTs divided by the total number of owners at each point in time. Higher figures suggest a more lopsided ownership distribution while lower numbers indicate a more distributed owner base across more addresses.

For example, there were 1,000 unique owners of CryptoPunks at the start of 2021 giving a supply concentration of 10 Punks per unique owner (10,000 total supply / 1,000 owners). Notably, this number has increased drastically in 2021. Up until this year, the number of CryptoPunk owners increased since they were freely claimed at launch in 2017 but remained below 1,000. But as CryptoPunks' average price and volume skyrocketed this year the owner base is now more distributed with around 3,000 unique owners in September 2021.



Looking at other projects, Bored Ape Yacht Club has a fairly distributed owner base today with ~1.8 BYAC per owner. On the other hand, crypto art platform SuperRare has ~6 NFTs per owner now, but this is expected given the existence of large crypto art collectors/galleries on the platform. Many of the projects we tracked have increased their owner base through time as new unique buyers enter the ecosystem.

# ACTIVE SUPPLY

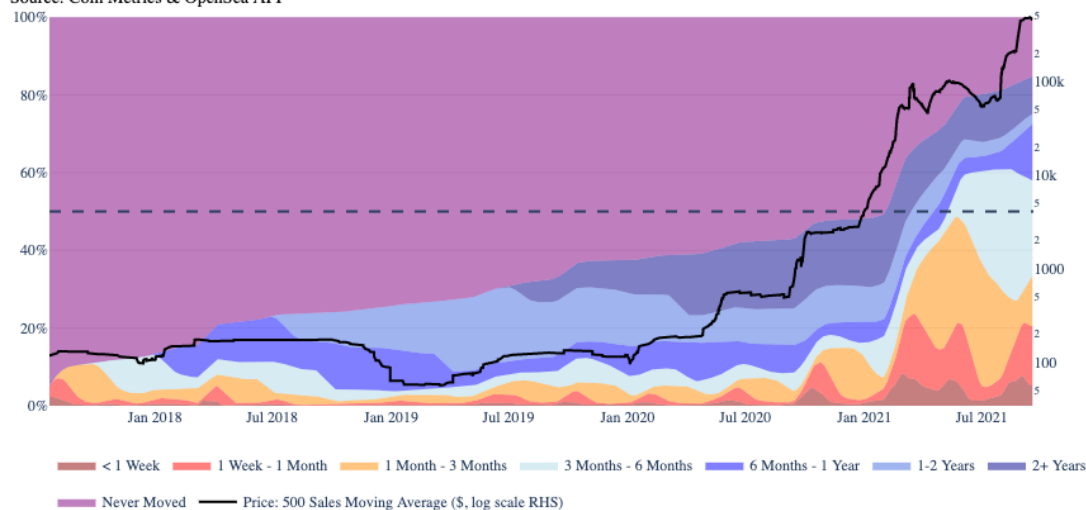
Crypto data analysts will often use on-chain data to measure the fraction of a given coin's supply that has recently moved to better understand how often the coin is changing hands. Coins that have remained dormant for long periods of time tend to point to holding behavior and might even be used to estimate lost supply. On the other hand, observing large fractions of the supply that have recently moved suggests high turnover. Similarly for NFTs, this is an important metric to give a sense if owners of the NFTs in a project view the assets as long-term holds or short-term trades.

One of the best ways to visualize active supply is by grouping coins into time bands indicating when they last moved (e.g. % of supply that moved in last week). These bands are often referred to as "HODL Waves". For more on HODL waves, check out our [primer](#) covering On-Chain Indicators.

Below are the HODL waves for the CryptoPunks collection. Each colored band indicates the percentage of the CryptoPunks supply that moved (transferred, not necessarily sold) in that time period. The supply of CryptoPunks has been the most active it has ever been in 2021. At the end of May, about 50% of the 10K CryptoPunks had moved within the last 3 months (yellow+red+dark red bands) - corroborating the growth in unique Punk owners above. However, recently the 6-12 month band has been growing which could be a sign that buyers from earlier this year view CryptoPunks as assets to hold.

## CryptoPunks HODL Waves

Source: Coin Metrics & OpenSea API



Although it has decreased in 2021, ~15% of the supply still has never moved from the wallets that first claimed the Punks. An even higher number of Punks have been transferred before but never sold. This has important implications for creating sound analytics, especially market capitalizations.

## MEASURING MARKET CAP

As the price tags for individual NFTs have become more eye-catching, there is a growing desire to measure the aggregate value of collections and compare market capitalizations for NFT projects. This is not a straightforward task however, even when compared to the challenges of finding market capitalizations of cryptocurrencies. The challenge for NFTs is in the name itself: each token is non-fungible or generally unique in some way with its own theoretical market price. On top of this, a singular item in a collection may sell infrequently or may have never been sold at all.

One way to estimate the market value of an NFT collection is by applying the “realized cap” methodology, first [introduced and implemented to cryptocurrencies by Coin Metrics in 2018](#). A realized cap for NFTs would simply aggregate the last sale price for each NFT in the collection at each point in time it is calculated.

### MOST RECENT SALE PRICE / SALE DATE AS OF:

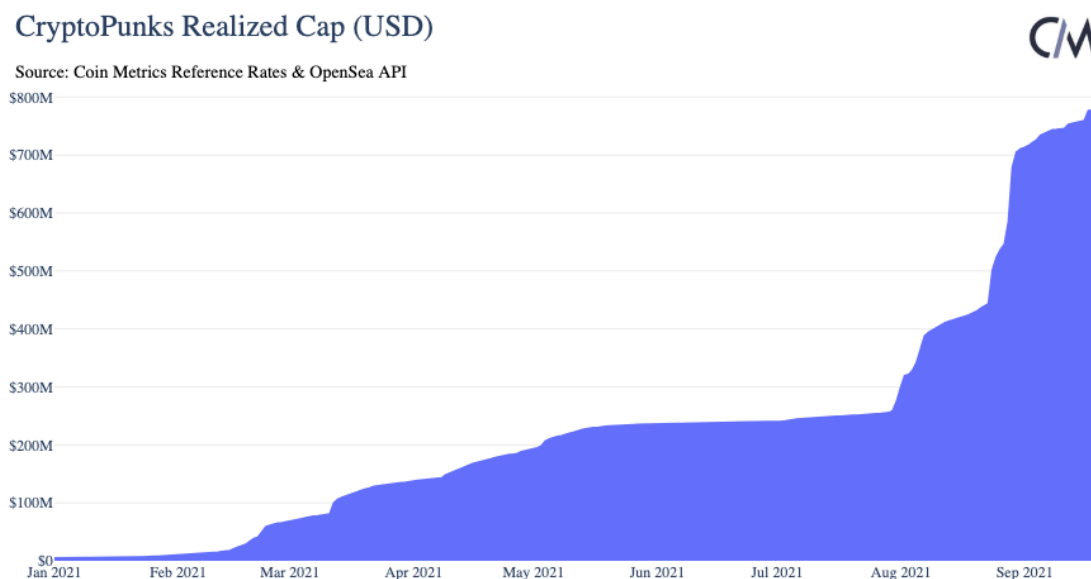
CRYPTOPUNK ID	JAN 1, 2019	JAN 1, 2021	SEP 1, 2021
 <a href="#">Punk #1000</a>	\$565 Dec 26, 2017	\$3,535 Sep 6, 2020	\$482,415 Aug 29, 2021
 <a href="#">Punk #4156</a>	\$645 Sep 17, 2018	\$645 Sep 17, 2018	\$1.25M Feb 18, 2021
 <a href="#">Punk #4956</a>	\$60 Jun 08, 2018	\$1,838 Oct 17, 2020	\$551,859 Aug 29, 2021
Realized Cap of Sample	\$1,270	\$6,018	\$2,284,274

The table above illustrates how we calculate CryptoPunks' realized cap for a few given points in time. To find the realized cap on January 1, 2019, for example, we aggregate the last sale price (if any) for each CryptoPunk before that date. From the perspective of January 1st, 2019, Punk #1000 had most



recently sold for \$565 on December 26, 2017. Punk #4156 had last sold for \$645 on September 17, 2018, Punk #4956 for \$60, and so on for each of the 10K Punks in the collection. The last sale price for each punk is then added together to get the total realized cap at that point in time.

As of September 20, 2021, the realized cap of CryptoPunks is ~\$780M.



The realized cap captures this summer's NFT market boom and has tripled from \$250M at the start of August. The average price of a CryptoPunk has increased from ~\$100K at the start of August to ~\$455K today (last 500 sales). The total value of all CryptoPunks sales to date is just over \$1.3B, half of which has occurred since August 6, 2021.

## CryptoPunks Average Price (USD): Last 500 Sales Moving Average

Source: Coin Metrics Reference Rates & OpenSea API



CryptoPunks is an interesting case study because it demonstrates the challenge in finding a reasonable market cap methodology for NFTs. As mentioned above, the difficulty with CryptoPunks is that only about 63.5% of all punks in the collection have ever sold. So the simple realized cap calculated above would exclude these CryptoPunks because they lack a most recent sale. However, these NFTs would clearly have a market price were they to be listed and sold.

One could attempt to value the unsold Punks with a simple moving average sales price but this might introduce error given that some Punks have more uncommon features than others. Furthermore, it is possible that some Punks are forever lost in wallets that are now inaccessible by their original owners. Excluding unsold NFTs is therefore a conservative approach. There are other potential approaches to NFT market caps and this is an area that merits further thought.

# 5 FUTURE OF NFTS

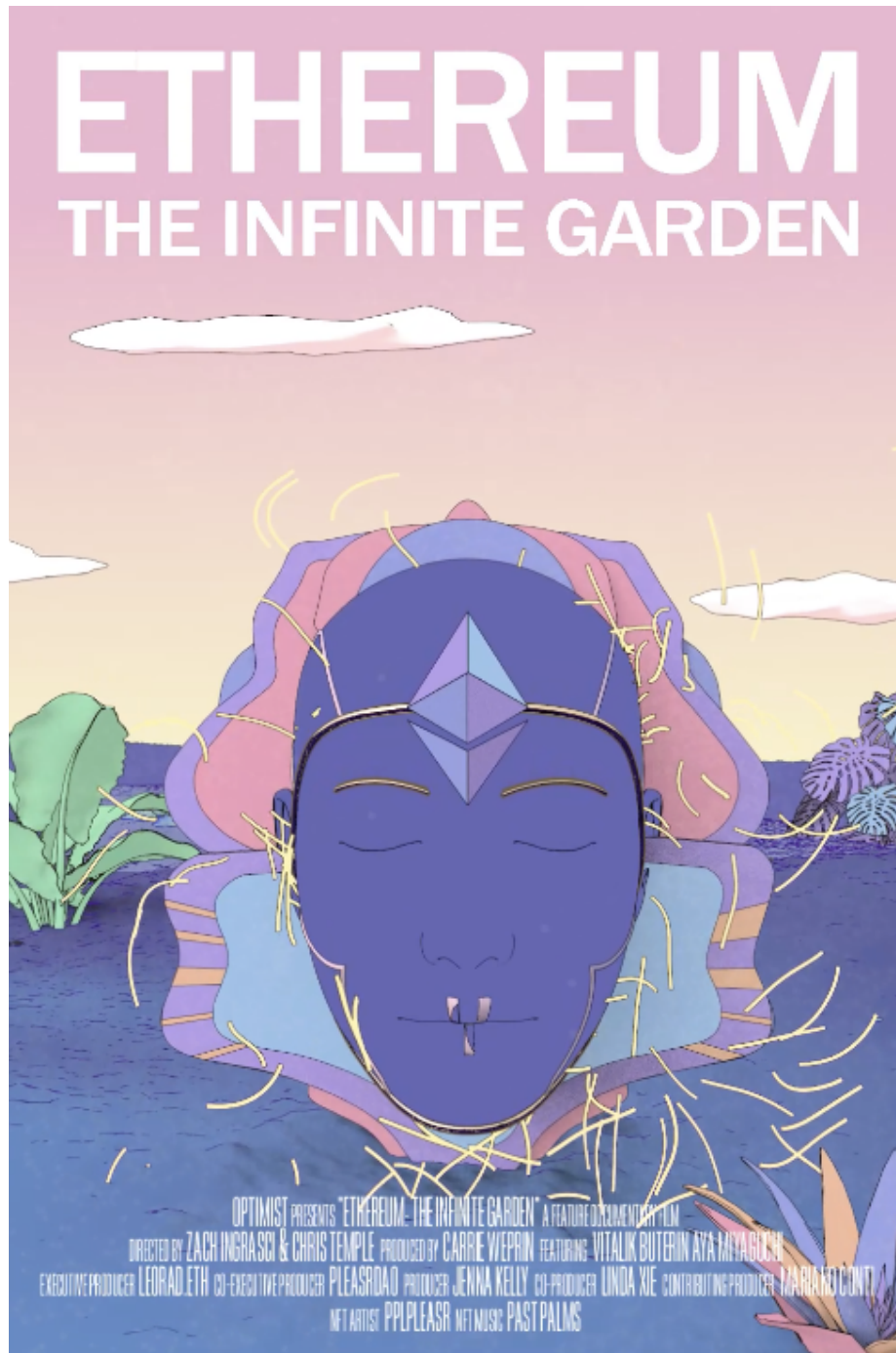
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NFTs are a young technology and there is still much to explore in the space. In this section, we offer some thoughts on the future of NFTs highlighting some interesting use cases and areas for further exploration.

Although NFTs are arguably best associated with scarce digital art right now they have much broader applications. One promising use case is gaming. NFTs are well suited for gaming because they allow for provable ownership and scarcity of in-game digital goods that can be interoperable between games.

This is still an area of experimentation but there are already projects that have found success combining NFTs and gaming. One such project is [Axie Infinity](#), a Pokémon-like gaming universe with in-game NFTs that now runs on Ronin, an Ethereum sidechain. Axie Infinity has experienced incredible growth in 2021. There are [1.5M daily active players](#) as of September 2021, rising from ~16K at the beginning of the year. But NFTs have only just scratched at the surface of the [\\$175B global gaming market](#).

Another interesting use case is crowdfunding. An early example was the [crowdfunding for the production of an upcoming Ethereum documentary](#) titled Ethereum: The Infinite Garden. The highest contributors received exclusive NFTs for supporting the project. The top contributor—who donated 140 ETH—received an NFT that is also doubling as the film poster.



[executive gardener](#), pplpleasr, 2021

Other potential use cases might include sports collectibles, royalties for music or other media, ticketing, and rewards/coupons. Finally, NFTs might even be used to represent real world assets as digital deeds.

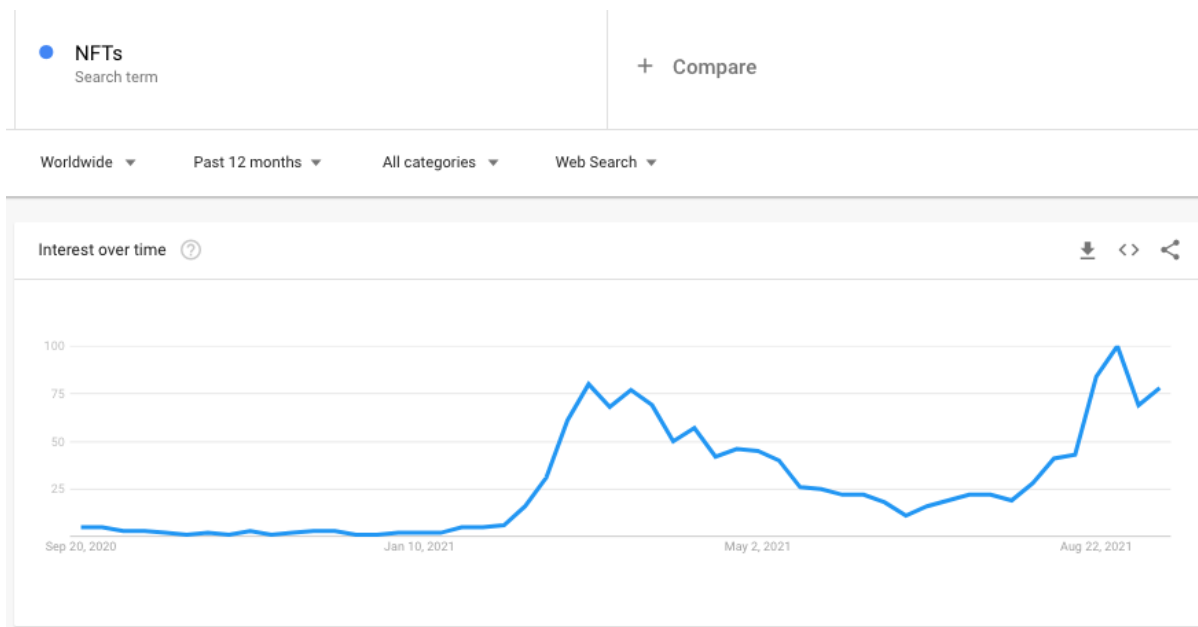
As the NFT ecosystem continues to expand, scaling solutions will likely start to grow as well. To date, high fees on Ethereum have priced out some users and lower-cost NFT projects. The rollout of layer 2 (L2) and other scaling solutions for Ethereum should introduce more favorable fee structures for these types of applications and users. Likely as a result of lower fees, [over a quarter of NFT creators on OpenSea have recently chosen to mint on Polygon](#), a Proof of Stake chain with interoperability with Ethereum, rising from 4% at the beginning of August. While we anticipate that Ethereum will continue to foster the largest NFT ecosystem in the short to medium term, other layer 1 (L1) chains like Tezos and Solana also have growing NFT user bases and projects.

# 6 CONCLUSION

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NFTs have become yet another gateway for crypto adoption. As new projects launch and existing platforms attract more interest, the need for NFT analytics is growing. Institutional interest in NFTs is still in its infancy but has been picking up as more investors acknowledge the inherent benefits of NFTs as digital property.

NFTs were catapulted into the everyday vernacular in 2021 but there is much left to build. Like most of crypto, NFTs are fast moving and in less than a year NFT interest boomed, deflated, but then rose again, outpacing many previous all-time highs from just March.



Source: [Google Trends](#)

This breakneck pace creates a need for good data to draw insights. As explored in this report, [Coin Metrics Network Data Pro](#) already includes some macro-level measures of NFT activity on Ethereum. On top of this, Coin Metrics will continue exploring NFT analytics that best elucidate this growing sector of the digital economy.

Ultimately, an NFT is simply a generalizable way to represent ownership of a unique digital good. As the world becomes increasingly digitized, NFTs can help digital economies thrive. While we can make educated guesses for the best future use cases, it's likely that creative developers will think up use cases we haven't yet imagined. Add in the general composability of open source smart contracts and this makes NFTs one of the most exciting areas to watch in crypto today.



# THE RISE OF NFTs

## A DATA-DRIVEN OVERVIEW OF NON-FUNGIBLE TOKENS

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