

Deep Dive into NFT Market Transactions

An exploration of the growing NFT market

March 2022





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Foreword

Dear clients and friends,

The PwC Turkey Deal Analytics Team is proud to launch its first report covering NFT markets, one of the top trending topics in 2021 globally.

In our report we analyse big data between 1 April and 25 September 2021 comprising ERC-721 transactions. ERC-721 is the most common standard used in creating and trading NFTs on the Ethereum blockchain. In this document we share our observations of the markets with an aim of opening the door to further research and analysis in the future, the scope of which may range from enabling technologies to issues around environment and energy consumption to regulations. With NFT we have witnessed the very beginning of new markets stemming from cutting edge technologies such as blockchain, the use case of which has huge potential going forward.

The PwC Network recently launched two reports, *“Non-Fungible Tokens (NFTs): Legal, tax and accounting considerations you need to know” (December, 2021)* and *“2022 Global Cryptocurrency Mergers and Acquisitions and Fund Raising Report” (March 2022)*, both of which provide very good insights around NFTs, crypto M&As and funds raised, and we highly recommend reading them.

Deal making in today’s data-intensive business landscape requires the ability to analyse far more information than in the past. Utilizing the latest technology and analytics, together with a strong bench of professional talent focused on deals that is connected around the globe and has the relevant industry expertise, the PwC Turkey Deal Analytics Team will help you uncover insights and identify value in your M&A transactions.

More details are available on our Deal Analytics [web page](#) as well as at the back of this report.



Introduction to NFTs and the NFT Markets

NFTs and NFT markets

In most simple terms NFTs are unique digital assets stored on a blockchain, a form of digital ledger, that can be sold and traded. Types of NFTs may range from photos, videos, and audio.

In many ways, 2021 was the Year of NFTs. It was an unprecedented ascent that gave creators the ability to monetize their work easily and provided collectors with an efficient way to purchase. While NFTs seem to arrive out of nowhere, the concept of NFTs were first introduced back in 2012, when Meni Rosenfeld released a paper describing 'Colored Coins'¹. 'Colored Coins' introduces methods for proving ownership, managing and representing real-world assets on the Bitcoin blockchain. The first ever known NFT is 'Quantum' by Kevin McCoy minted on May 2014, 'Quantum' and sold for US\$1.4mn on November 2021¹.

Pioneer NFT projects played an important role in the development of the NFT ecosystem. Artblocks is a generative art type of NFT project, which generates original digital artwork pieces making use of an algorithm². Any research on NFTs would be left empty without mentioning the renowned 'Crypto Punks' generated by Larva Labs. 'Crypto Punks' were one of the initial 'Profile Picture'(PFP) type of NFT projects, which can be used as profile pictures on social media or in games³.

1. <https://www.altpress.com/meta/history-of-nfts->
2. <https://www.artblocks.io/>
3. <https://www.larvalabs.com/cryptopunks>



Today, creators are the main drivers of the NFT space. Every work of artists such as Pak and Beeple receives widespread attention. Prices more than justify popularity. Beeple's NFT artwork 'First 5000 days', which sold for \$69 million at world famous auction house Christie's, is just one of many examples⁴.

On many platforms the new aesthetics of NFTs as a form of art has been discussed intensely and NFT artworks have been criticized. Artist Manuel Rossner described NFTs as follows: "NFTs are to the web what normed containers are to physical logistics, plus all the digital advantages. The potential shift in power away from platform monopolies is why I'm all excited about NFTs and the blockchain." Everybody agrees that minting a digital file in the form of an NFT does not make it an artwork, but good NFT artworks also exist.

Ethereum blockchain leads the NFT market, however increasing NFT activity is seen on other blockchains such as Solana and Tezos, partly due to high Ethereum transaction fees⁵.

“

NFTs are game changers for creative content, art and how intellectual property is handled. Just as cryptocurrencies disrupt traditional finance by reducing the need for intermediaries, NFTs have the potential to shift the balance from intermediaries to creators.

4. <https://markets.businessinsider.com/news/currencies/ethereum-transaction-gas-fees-high-solana-avalanche-cardano-crypto-blockchain-2021-12>

5. <https://www.coindesk.com/markets/2021/11/03/loopring-surges-40-solana-replaces-cardano-as-5th-largest-coin-as-ethereum-fees-spike/>



Following Beeple's record sale with Christie's, Pak collaborated with Sotheby's and sold 'The Fungible' collection at Niftygateway, a marketplace specializing in the sale and auction of NFTs. The sale yielded a total of \$16.8m between April 12 and April 14⁶. Core to the collection is the open editions, which allowed collectors to purchase as many fungible cubes as they wished during the sale period for a fixed price.

Starting late February and early March 2021, we observed that established artists from the traditional art markets came to crypto art markets and minted their works. One example was SuperRare's (one of the major marketplaces that focuses on one edition NFTs) collaboration with Verisart (blockchain certification company) that launched a series of established artists. Sales were as follows for one edition NFTs of each artist: Neil Beloufa (\$44k), Petra Cortright (\$62k), Shepard Fairey (\$178k), AES+F (\$22k)⁷. Pace Gallery's artist John Gerrard has listed one edition of his iconic video art 'Western Flag' at Foundation (another major NFT Marketplace) for an initial price of 250ETH (~\$414k listing price, 2021)⁸. Non NFT editions of this video artwork were known to be in the well-known Francois Pinault and Ullens collections. Half of the funds raised in Western Flag's sales were contributed to an Irish foundation that works in the area of soil enrichment. These artists played an important role in bringing collectors in traditional art markets to the NFT markets.

One of the most remarkable NFT projects, was the sale of 'The Merge' by Pak for \$91.8mn on December 6, 2021, which made him the living artist who generated most money with a single artwork⁹.

Since early 2021, the market has grown exponentially in one year, from \$100mn¹¹ in 2020, to \$2bn in the first half of 2021 and then to \$22bn¹⁰ in the first nine months of 2021.

The NFT markets were small at first in comparison to the traditional art markets which totalled approximately \$50bn in 2020 (down from \$64bn in 2019)¹¹, but the growth was extraordinary. NFT markets not only shifted supply from the traditional art markets but also created their own supply and demand, generating some revenue from the broader entertainment markets such as the gaming industry, which totals \$175bn dollars¹². The shift of supply and demand from traditional art markets to NFT markets was marginal compared to the expansion of the market itself.

Mario Kliengemann, a well known artist and coder, frequently refers to the attention economy, which is critical for understanding the growth story behind the markets. When analysing the figures and the transactions the hype is obvious.



6. <https://niftygateway.com/collections/paksothebysauction>

7. <https://superrare.com/>

8. <https://www.artfixdaily.com/artwire/release/5591-artist-john-gerrard-releases-nft-of-his-iconic-western-flag-in-su>

9. <https://nftnow.com/news/pak-merge-nifty-gateway-record-breaking-art-sale/>

10. <https://www.theguardian.com/technology/2021/dec/16/nfts-market-hits-22bn-as-craze-turns-digital-images-into-assets>

11. <https://www.statista.com/statistics/883755/global-art-market-value/>

12. <https://www.goldmansachs.com/insights/pages/gs-research/framing-the-future-of-web-3.0-metaverse-edition/report.pdf>

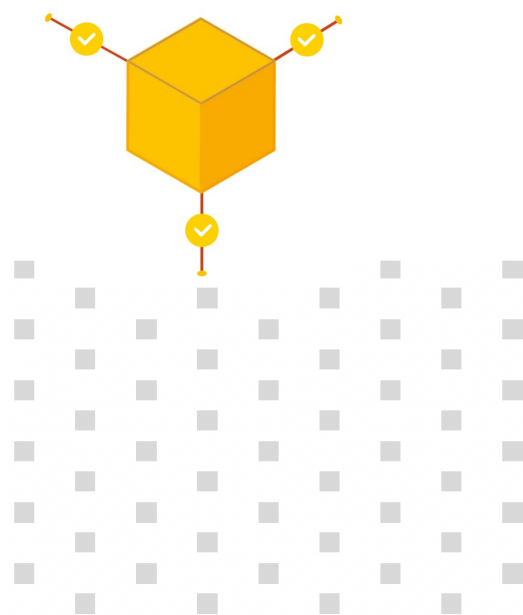
Secondary market sales and the following sales prices, which increased by 60% in \$ terms on average per our analysis, in particular prove the hype. Big collectors make large numbers of purchases, creating excitement in the markets and the perception that, by owning the NFT of a certain artist or from a certain series, significant profits can be made. This causes a FOMO (fear of missing out) effect, and small collectors start purchasing. Large crypto exchanges and NFT marketplaces airdrop their own crypto currencies (coins) to their collectors, increasing volume in the markets, again increasing the willingness of artists to create and mint NFTs and increase commission incomes. In this way crypto currencies and exchanges have expanded their own use cases.

The NFT hype may pass, but the technology behind them is incredible. The fact that artist royalty rights can be included in the smart contracts of an NFT is on its own a game changing development.

Understanding the technology and its potential implementations in the arts, the entertainment industry and the broader business world is very critical.

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The NFT hype may pass but the technology behind it is incredible.



Marketplaces

NFTs can be bought and traded on marketplaces such as OpenSea, SuperRare, Nifty Gateway, old HicEtNunc (new TEIA), snark.art and Foundation. The marketplaces take commissions for trading NFTs in a manner similar to traditional auction houses. Below we presented some of the market places.

NFT marketplaces

	 OpenSea
 ZORA	 teia
	 makersplace
	

Collectors

Crypto miners having a significant amount of cryptocurrencies in their wallets were the first buyers in these markets, together with gamers, who have accepted the new aesthetics in the NFT art markets before others. Among the buyers are well-known crypto billionaires such as Justin Sun (founder of Tron cryptocurrency) and Ethereum co-founder Taylor Gerring, who are known to have participated in the auction for *Abundance* that took place between 30 April and 2 May 2021.

Abundance was created by Beeple. We also observed that NFT funds have started to invest. Following established artists, collectors from traditional art markets also began purchasing NFTs.

NFT types and ERC-721

The types of digital assets sold in the NFT markets comprised artworks, collectibles, gaming accessories (skin, clothing for game player avatars) and music files.

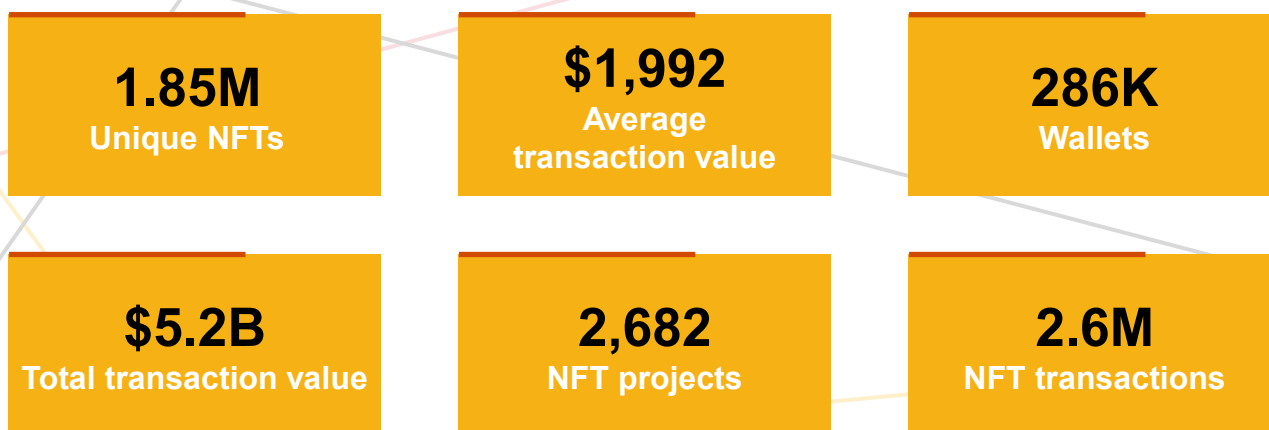
ERC-721 is an open standard that specifies how to create NFTs and unique tokens on the Ethereum blockchain¹³. Most tokens are fungible, meaning the same as every other token, but ERC-721 tokens are all one of a kind. As of today, most existing NFTs follow the ERC-721 proposal.



13. <http://erc721.org/>

Scope and process of our analysis

Research in numbers:



Research specifications

- The research is based on the Ethereum NFTs dataset accessible through Kaggle.com (For detailed reference information please refer to page 21).
- The data covers a 6 month period from April 1, 2021 to September 25, 2021.
- The Ethereum NFTs dataset is constructed purely from transactions on the Ethereum blockchain. Only the activity of the Ethereum non-fungible token market, which follows ERC-721 standards, is represented in the data.
- Alteryx and Tableau software tools were used in the preparation of the analysis.

Limitations

- Transactions with a value of \$0 were removed from the dataset, which is equal to 33% of the transaction volume in terms of the number of NFTs in the raw data. \$0 transactions may include on-chain transactions that were paid with off-chain assets or they may purely be a gift, since it is impossible to distinguish the underlying reason, \$0 transactions are left out.
- The research does not cover other Ethereum blockchain standards such as the ERC-20 standard, or other blockchains such as Solana or Tezos.
- Because of the time interval the research covers, some of the most widely known NFT works with record breaking transaction prices, such as Beeple's 'First 5000 days', were not covered in the dataset.
- The NFT transactions were priced and paid in ETH. Prices in ETH were converted to \$ by using the closing price of ETH for the given day.

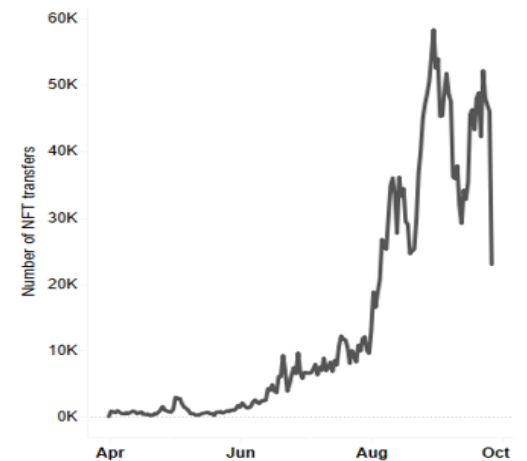


Key Takeaways

Takeaway #1

NFT market is growing at a considerable rate, prices of the top projects are increasing as well as the number of collectors joining the market. Total NFT market value increased in the 3rd quarter of 2021 and continued to grow in 2022 after slowing down slightly in the last quarter of 2021.

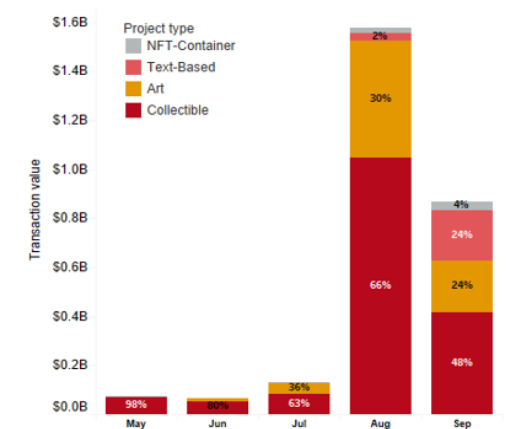
Daily number of NFT transfers



Takeaway #2

Collectibles and art NFTs are the main drivers of the market.

Transaction value by project

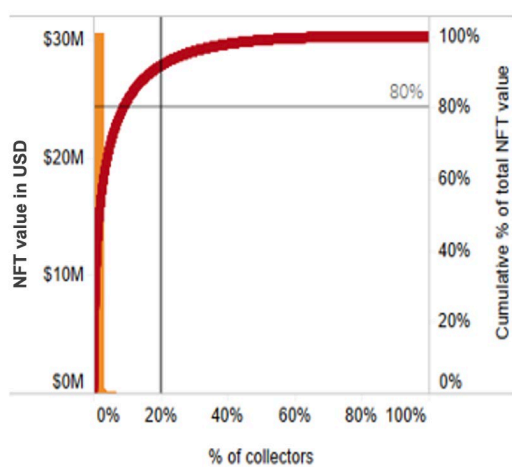




Takeaway #3

The top 20% of collectors own the vast majority of the market, both in terms of market value and number of NFTs (pareto principle). Big collectors dominate the market. 2% of the crypto wallets (collectors) own 50% of the NFTs. Concentration is high.

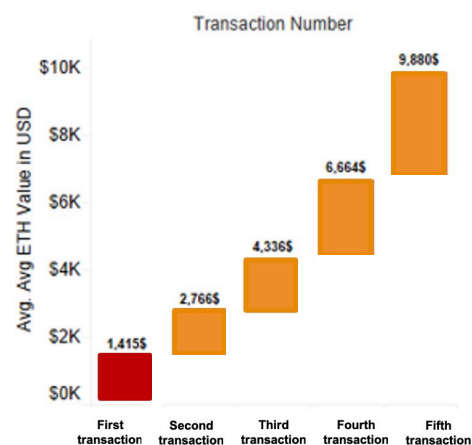
NFT value – pareto chart



Takeaway #4

When the initial 5 transactions were analysed, the average transaction value of an NFT increased by ~60% relative to the previous transaction.

Average transaction value of an NFT by transaction number

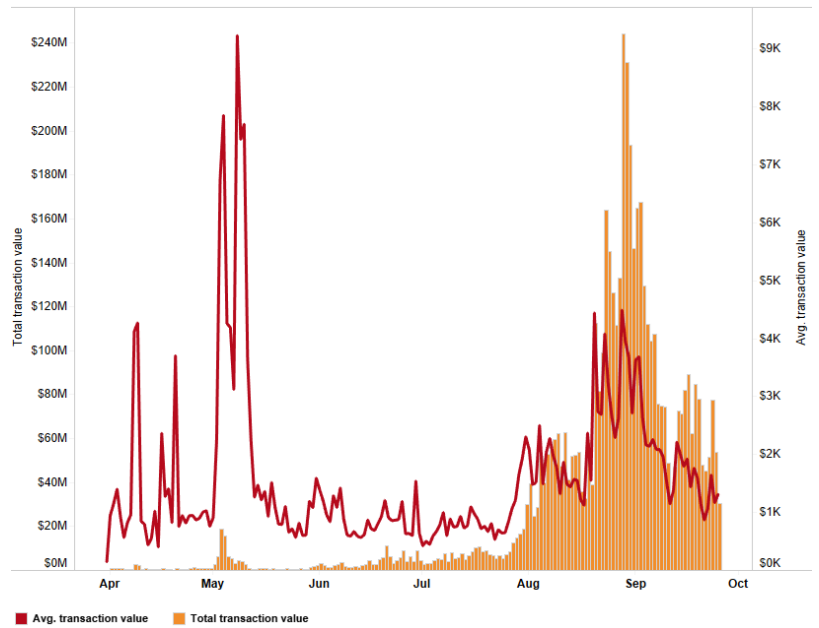


Considerable growth was observed

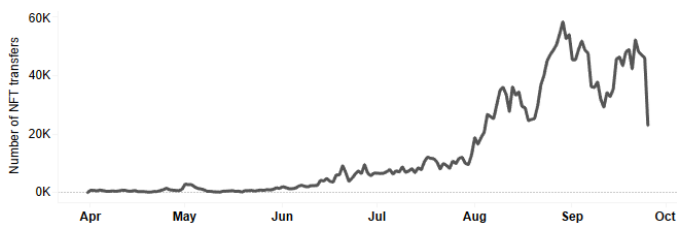
- During the period this analysis covers, the NFT market grew considerably from April to September both in terms of NFT transaction quantity and value. Number of new joiners in the market and the daily total transaction value have also increased significantly.
- After showing a slight downtrend in the last quarter of 2021, NFT total sales volume reached high levels in early 2022.¹⁴



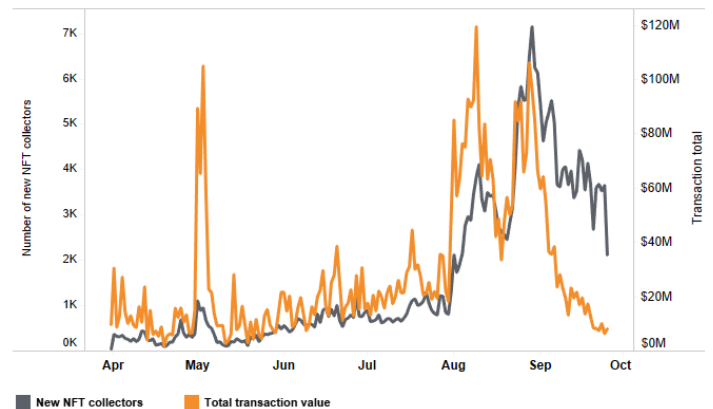
Daily transaction total and average transaction value



Daily total number of NFT transfer



Daily new NFT collectors and transaction total

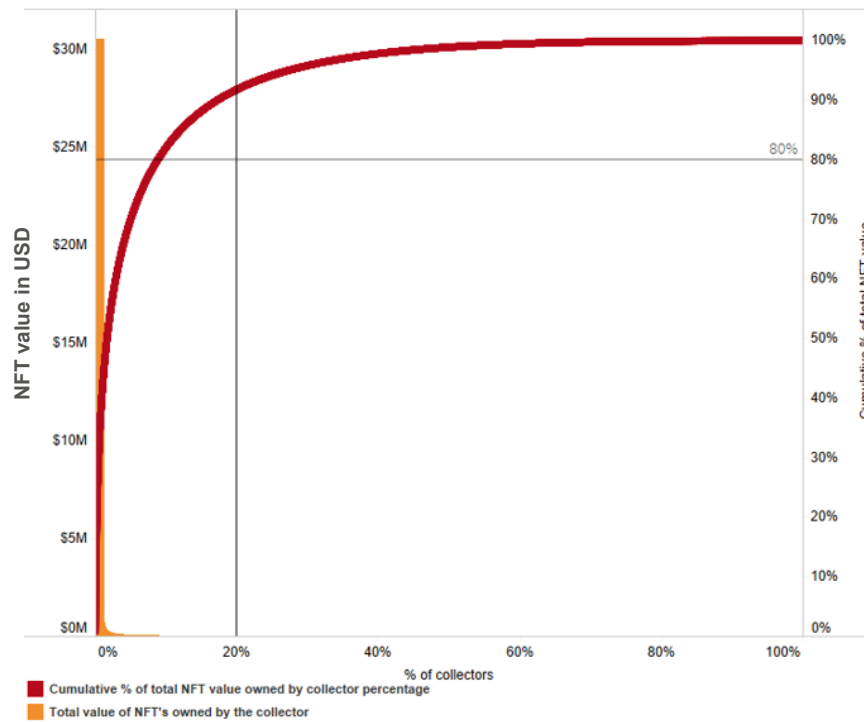


14. <https://www.theblockcrypto.com/data/nft-non-fungible-tokens/nft-overview>

Pareto principle – collector concentration

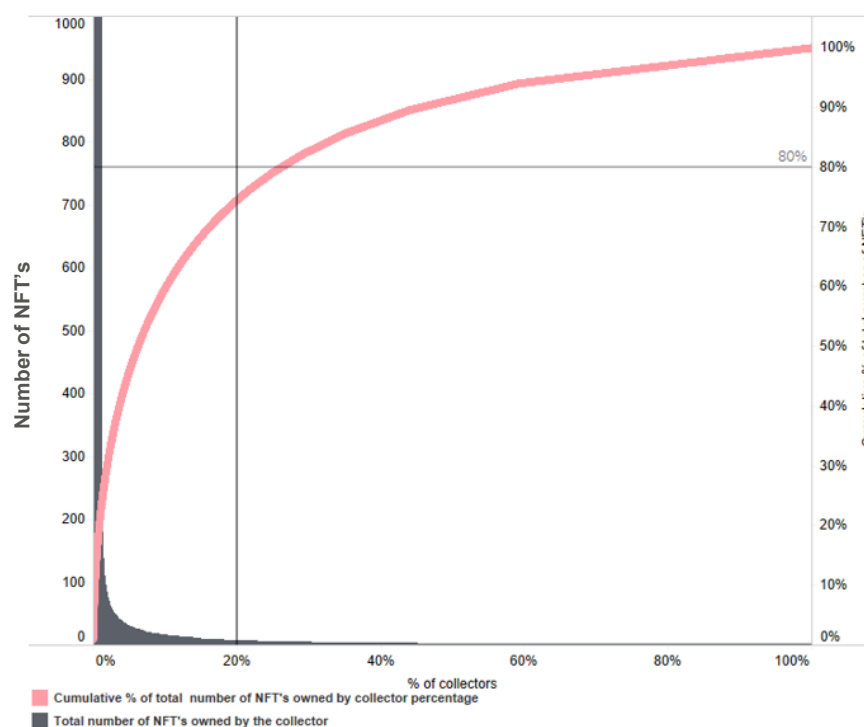
- More than 90% of total NFT value is owned by 20% of collectors.
- Around 2% of collectors own 50% of the transactional value.

NFT value – pareto chart



- Around 75% of NFTs (in terms of NFT volume) are owned by 20% of collectors.
- 1% of collectors own around 15% of the total number of traded NFTs.

NFT number – pareto chart



*Both of the above analyses are based on NFT value and number of snapshots taken as of **25 September**.

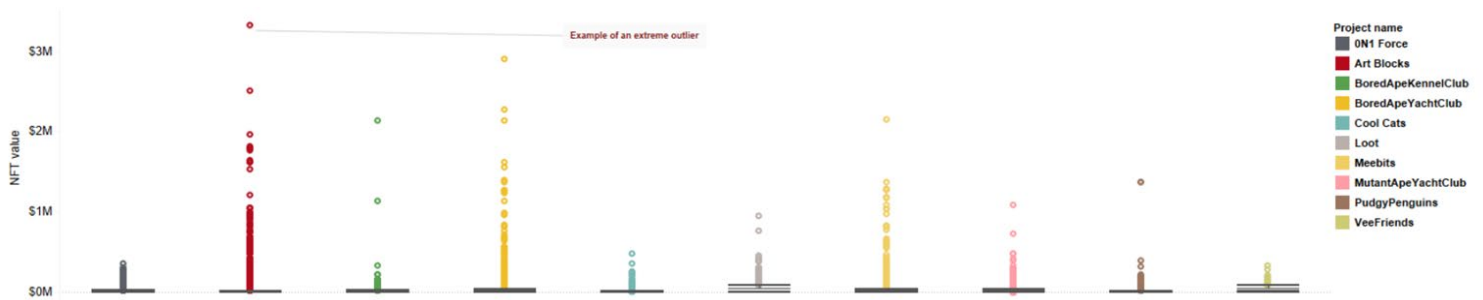


Transaction price volatility for the top 10 projects

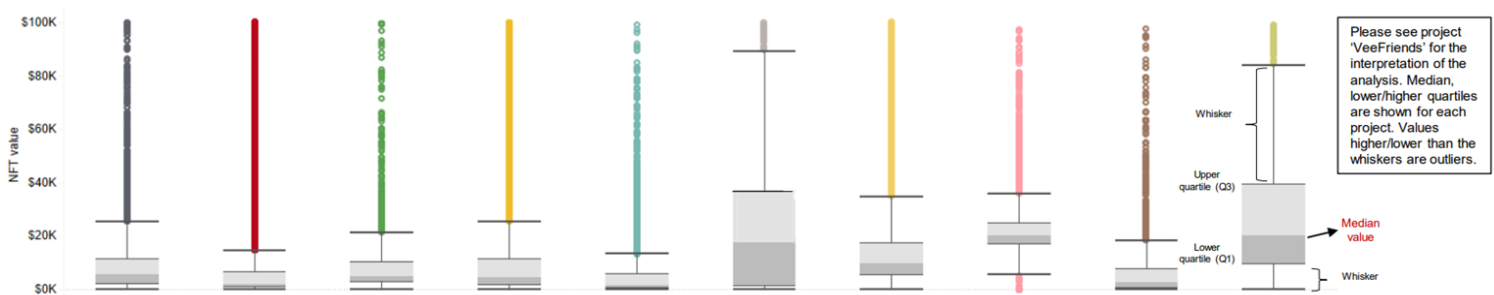


- NFT markets are volatile. Collectors may make trades based on the rarity of the NFT or simply due to the fear of missing out (FOMO).
- There are a high number of outliers in the data that impact the averages obtained. A few high priced NFTs skew the average price in the graphs. NFTs from the same project trade for very different prices.

NFT transaction value distribution by project



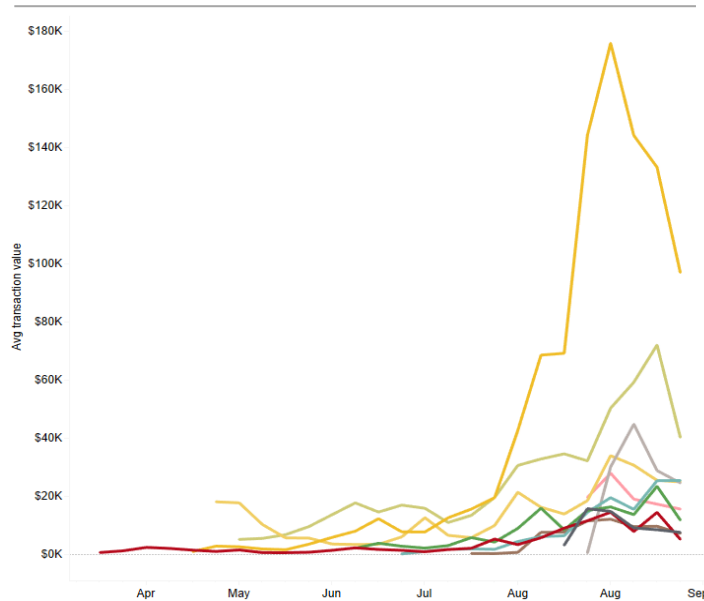
NFT transaction value distribution per project (zoomed in (0-100k \$ interval))



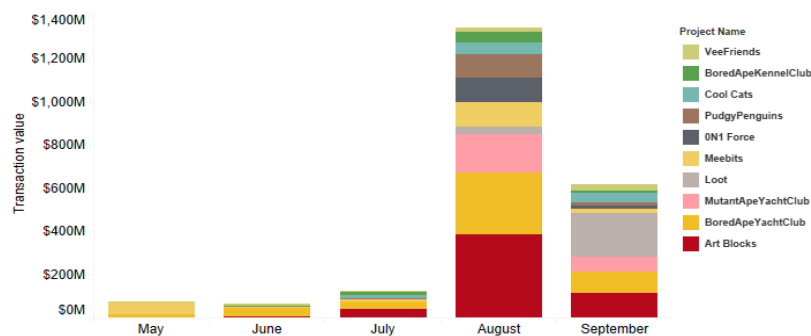
NFT market exploration for the top 10 projects

- Art Blocks was the project in the data set with the highest total transaction value
- BoredApe Yacht Club traded at a considerably higher price than the other projects.
- VeeFriends, Meebits and BoredApeKennelClub were the projects with the longest holding times before initial trade.

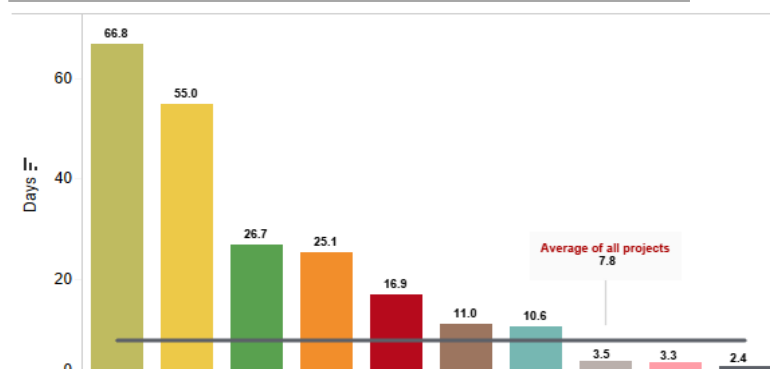
Monthly average transaction value by project



Monthly transaction value breakdown by project



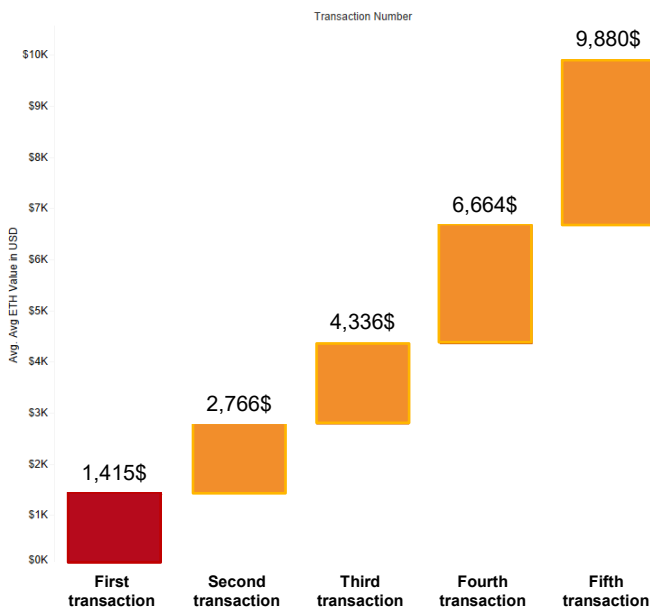
Average time between minting to initial transfer



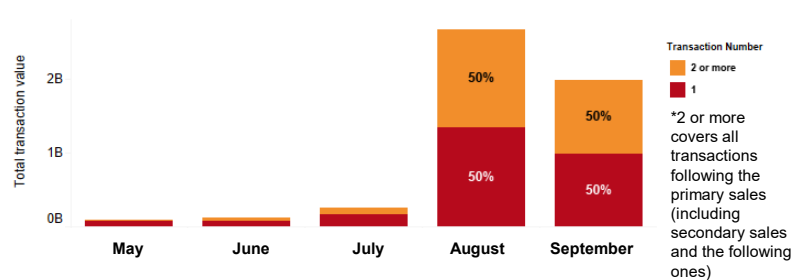
NFT market exploration by number of transactions

- The average transaction value for secondary sales and then the following sales increased significantly.
- After July, around 50% of the total transaction value stemmed from secondary sales, whereas secondary sales and following sales comprised around 70% of sales in terms of number of NFT transactions.

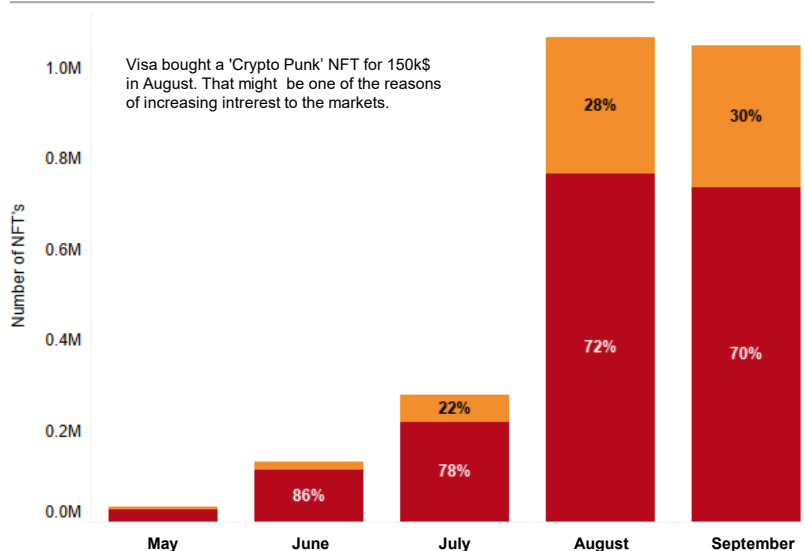
Average transaction value by transaction number



Monthly total transactions by transaction value



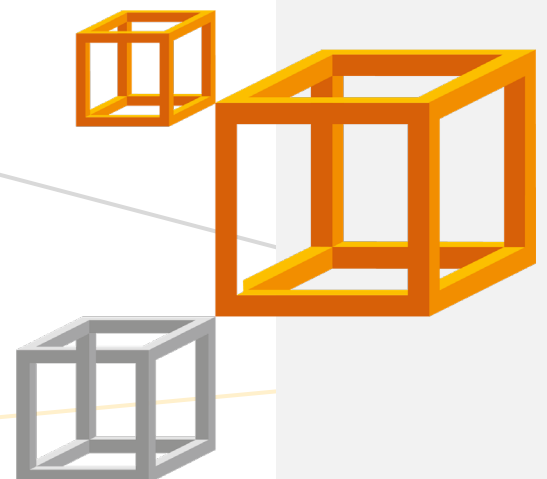
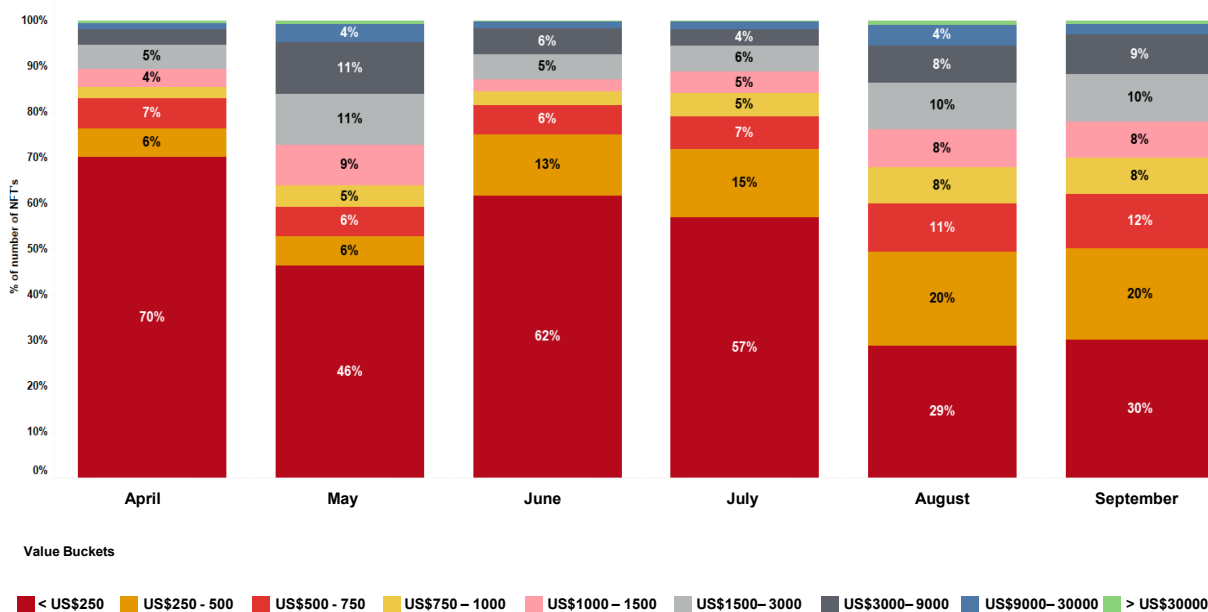
Monthly number of NFT transactions by transaction number



NFT market exploration by transaction value

- The percentage of transactions valued at more than \$250 increased in August and September to 70% from 36% (previous months' average). This was as a result of increased interest and increased secondary market transactions.

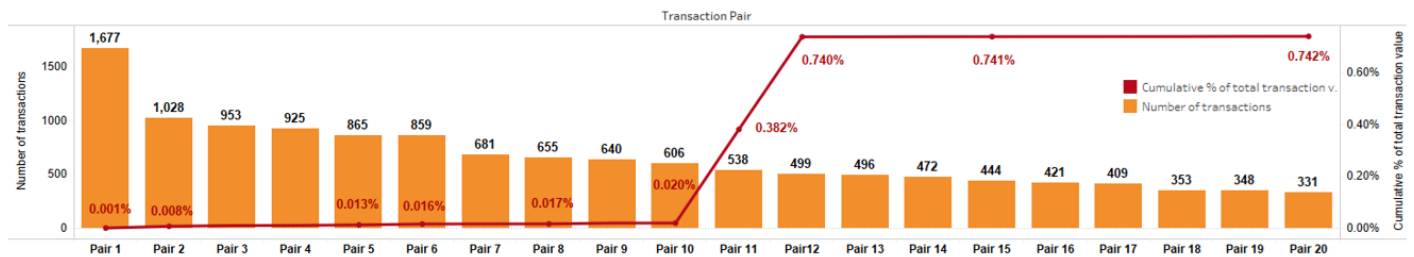
Number of NFT distribution per transaction value bucket



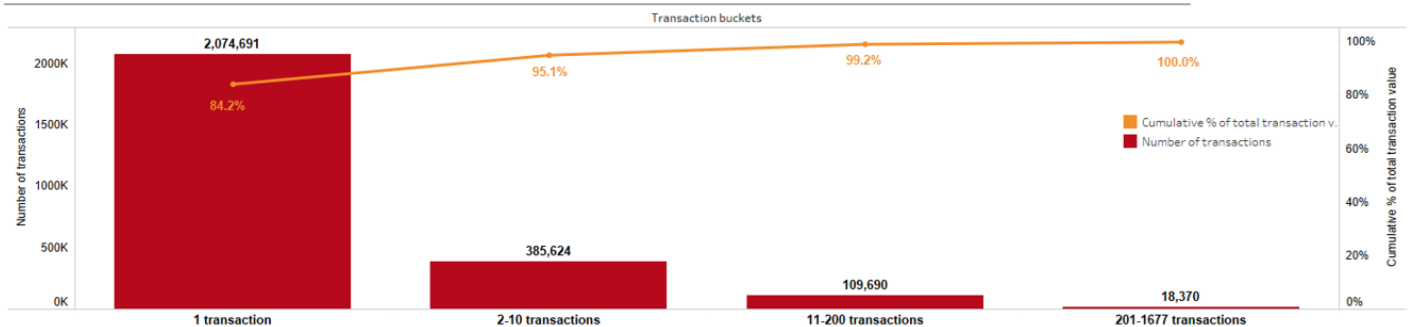
Transactions between pairs

- Even though there are pairs with a significant number of transactions between each other (the pair with the most has 1,677 transactions), the total transaction values are relatively small. Most pairs made a single transaction between each other, generating 84.2% of total transaction value.
- Pair refers to two NFT addresses that have made at least one transaction between each other, either by sending or receiving an NFT.

Top 20 pairs by numbers of transactions and cumulative % of total transaction value



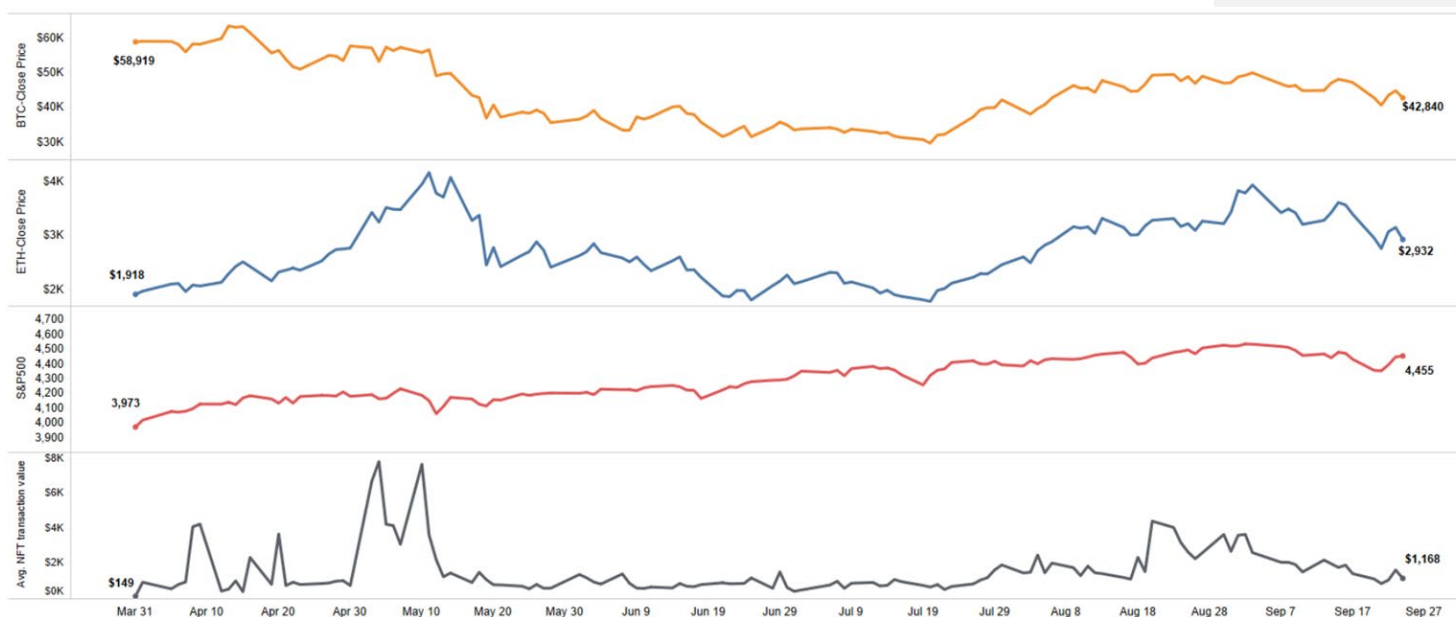
Transaction number buckets by number of transactions and cumulative % of total transaction value



Performance of digital assets, NFTs and S&P 500

(between April and end of September 2021)

Performance of assets



 **bitcoin**

Bitcoin

Bitcoin lost around 30% of its value from April to late September.

 **ethereum**

Ethereum

Ethereum gained around 50% in value.

S&P 500

S&P 500

The S&P 500 gained around 10% in value during this period.

NFT

NFTs

Average NFT trading values had highs and lows, however the average price of an NFT has risen by around a factor of 8.

Conclusion

NFT market showed significant growth in 2021. The public around the globe familiarized itself with Blockchain technology, thanks to NFTs. The percentage of people owning crypto wallets increased, leading to an increase in transactions volumes at crypto exchanges also.

Overall 2021 became a year to remember following 2020, when we initially faced Covid-19 pandemic, and relied more on technology during the lockdowns. Pandemic certainly caused NFTs use cases to expand in 2021. Sale of NFT collectibles and artworks remain to be the drivers of this technology, but NFTs offer much more use cases such as shared ownership of physical assets, certification services of physical assets such as art or land.

There is a lot to research and improve around the energy consumption of blockchain and the environmental issues it causes. The regulations need to catch up with this developing technology as well.

Following the NFT hype, metaverse, which is an element of Web3, became the most searched word in the last quarter of 2021. This was caused by the listing of Roblox in March 2021 followed by Facebook changing its group name to Meta on 28 October.

Web2 shift from desktop computing to mobile computing, from local to cloud, took approximately 15 years. Web3 and metaverse are deemed as not revolution but evolution and it may take another 10 years for the Web3 and its elements like metaverse to develop and be a part of our lives. It is expected that the industry trends will shift. Web3 will be more local, more niche and targeted, increasingly decentralized (possible breakdown of mobile operating system/app store distribution model over next 5-10 years), more flexible on payment mechanisms.

Digital transformation and adopting to the new technologies are critical for individuals, for companies, for public and for states, PwC is ready to help its clients and the society to invent, to adopt, to understand the developments, to lead the world for a better future.

Contacts

About the PwC Deal Analytics Team

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 156 countries with over 295,000 people who are committed to delivering quality in assurance, advisory and tax services.

In your M&A projects, both during deal-making and post deal value creation, the PwC Turkey Deal Analytics Team is ready to provide insight into today's data-intensive business landscape together with industry experts who are well-connected around the globe and utilizing the latest technology and analytics.



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The data analysis at, "NFT Market Deep Dive to Transactions", is derived from the dataset "Ethereum NFTs" found on Kaggle.com (Link: <https://www.kaggle.com/simiotic/ethereum-nfts>, Sophia Arakelyan <i>et al.</i>., "Ethereum NFTs." Kaggle, 2021, doi: 10.34740/KAGGLE/DSV/2698517.), used under Creative Commons License CC BY 4.0. (License attribution: <https://creativecommons.org/licenses/by/4.0/>)

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