INTEGRAL

CRYPTOEQ

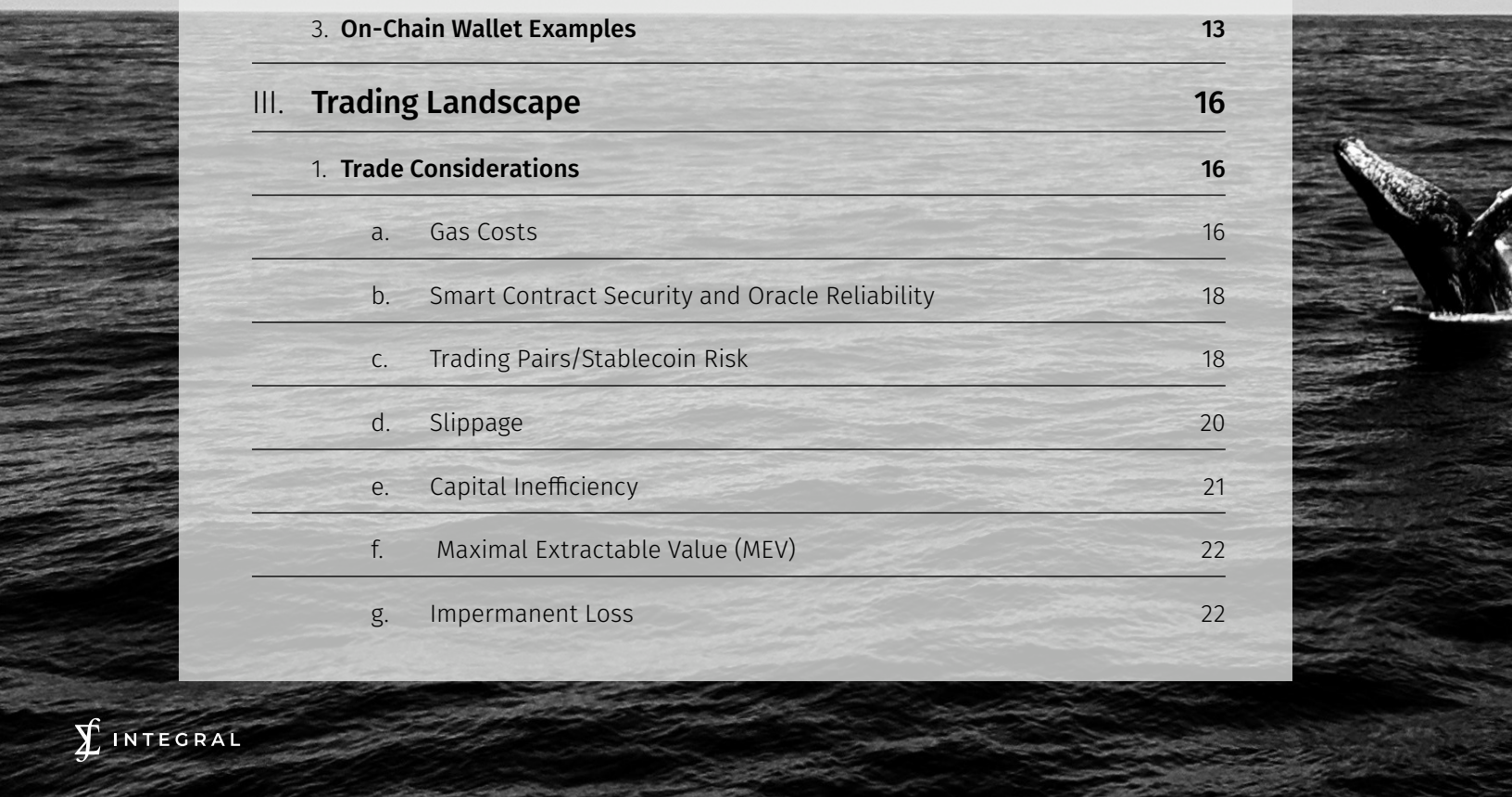
Crypto Whale Watching 2022

CryptoEQ CORE+ Series.

The Tools and Landscape Used by Cryptocurrency's Biggest Players

Crypto Whale Watching 2022

by the CryptoEQ Fundamentals Team and special contributions from Vladimir Belik



I. Why Whales Matter

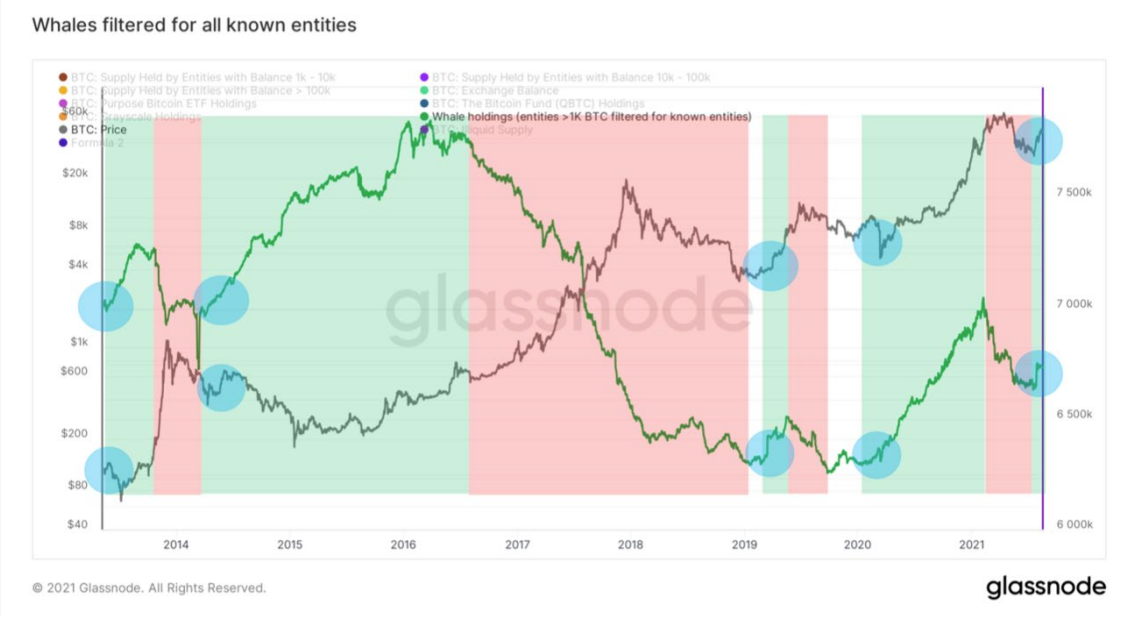
Cryptocurrency markets are infamous for their volatility—a well-deserved reputation. However, despite the 1,000%+ gains and 99% losses, the crypto market is simply that: a market. At a high level, crypto price swings are simply a tug of war between buyers and sellers, demonstrating the core economic principles of supply and demand.

While one of the breakthroughs in cryptocurrencies is its true peer-to-peer (p2p) nature, trillions (in USD value) are traded annually via intermediaries. In the case of crypto, the market consists of millions of different traders, investors, HODLers, etc. across the globe, trading 24/7/365, expressing their intentions to buy/sell on a minute-by-minute time frame. A crypto exchange like Coinbase, Binance, FTX, and others provides a central platform where buyers and sellers can come together to trade.

Within these centralized exchanges (CEX) that operate an order book structure, for a trade to execute, there must be a buyer, seller, and an agreed-upon price. This means, in its simplest form, if there are more buyers than sellers, the price of the cryptocurrency will go up. Alternatively, if there are more sellers than buyers, the price goes down. That's how the price of Bitcoin is determined to be $65,000 one month and $35,000 the next.

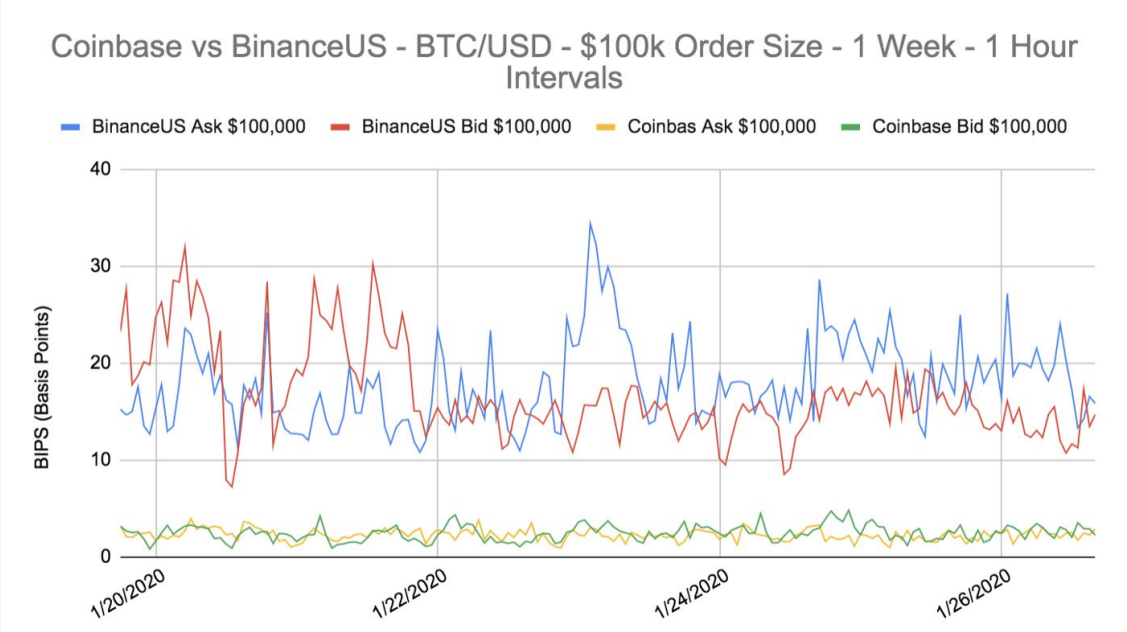
However, beyond this simple framing are countless other factors that influence how the trading price of an asset is determined. One aspect that impacts the crypto markets more so than in traditional markets is the presence of "whales."

Whales are individuals and/or institutions who hold such a large percentage of a cryptoasset that they can single-handedly move the markets based on their buy and sell orders. Obviously, because these actors can manipulate or "move" the market to varying degrees, their actions are incredibly relevant to other token holders. Crypto whales can have magnified impacts on the market, especially due to some crypto assets' thin liquidity, scant exchange listings, and unsophisticated trading infrastructure. Because of this, on-chain whale activities are ruthlessly monitored and analyzed by users and entire data analytic companies!



Identifying whales in your crypto market is important, but equally so is understanding the size, liquidity, and market depth of your cryptoasset. Market depth refers to a market's sensitivity to relatively large market orders. Beyond that, market depth encapsulates the breadth of open orders and is calculated from order book data. The more money it takes to move the overall token price, the greater the market depth. Because Bitcoin's market cap is ~$600B, a $10M sale would not substantially affect the overall price. However, a $10M sale could affect the price of a smaller alt coin—therefore, Bitcoin has greater market depth/less slippage.

Slippage is the difference between the expected price of a trade and the price at which the trade is executed. Slippage can occur for two reasons: A change in the bid/ask spread in between the time a trade is placed and the trade is filled, or insufficient market depth.



Examples of slippage across Coinbase and Binance BTC markets in 2020. Kaiko

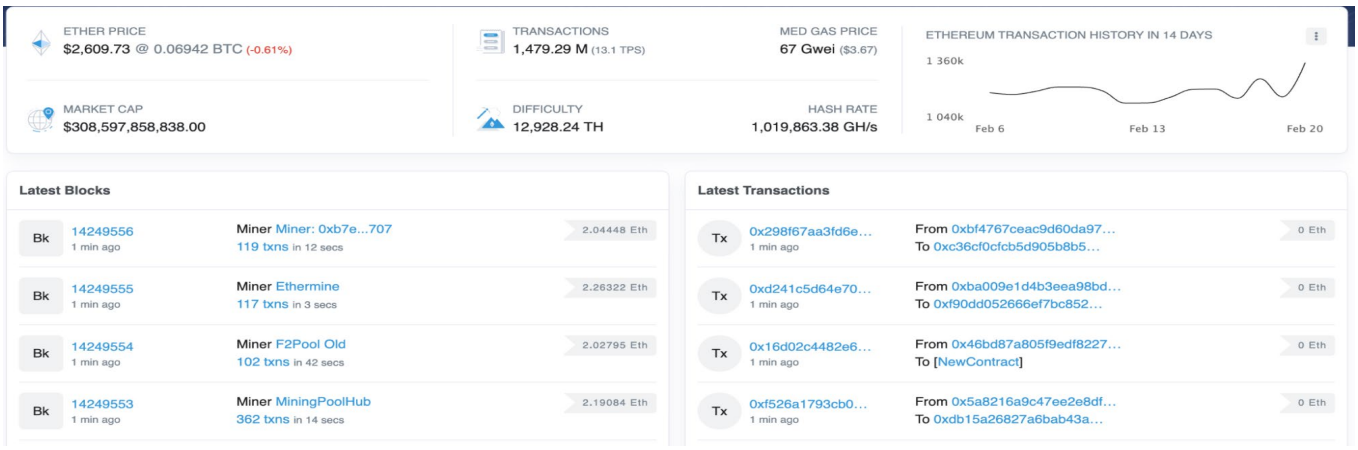
Crypto whales can use their capital (and the power it provides) to their advantage, much like if there was one poker player with $1M playing vs. 10 others that only had $100 each. One tactic often seen in the crypto market is the “sell wall”—when a whale lists an oversized sell order on the exchange’s order book lower than current sell positions. The intent is for other traders to see this huge “negative” position and influence them into also selling, creating volatility and falling prices (like a snowball down a hill). Whales profit from this by creating panic, dropping the price down to a level where they can eventually buy back, and profit/accumulate more coins.

Whales remain one of the bigger factors for investing in cryptocurrencies, especially in newer/smaller projects outside of Bitcoin and Ethereum. Whales can be entities who wish to see the project prosper, like the project’s foundation, team members, or early investors. In these instances, whales are less likely to do anything to harm the project or its market, but still hold a tremendous amount of power and sway. This dynamic, ambivalent as it may seem, still introduces a certain level of trust that a new user of the protocol must take into account.

Conversely, whales can also be entities whose incentives are not aligned with the project. They can be competitors of sorts—like in the case of Justin Sun of Tron being an ETH whale, or Roger Ver of Bitcoin Cash being a Bitcoin whale. Whales can also be profit-maximizing mercenaries like some venture capitalists (VC) firms. In these situations, VCs obtain a large portion of the token and, rather than looking to help the project succeed, they simply look to make the highest ROI on their investment, sometimes at the detriment of the project or project’s users.

In either case, it’s now evident that whales cannot be ignored in the crypto markets. Luckily, due to the transparent properties of public blockchains, whales and their movements can be tracked through on-chain analysis. This real-time transparency is not available in most traditional markets. Anyone can gain insights into a token’s supply, distribution, transaction volume, wallet concentration, and more while also following its biggest holders’ movements. Understanding whale movements can provide an edge over the broader market and help avoid catastrophic downside risk in a worst-case scenario.

While there are many on-chain data analytic tools available, the starting point for all analysis is the blockchain’s explorer. Blockchain explorers track every transaction on the chain, but also allow users to filter based on address, token, and more. As the industry and its tooling have matured over the years, explorers have added new helpful features, like labeling exchange wallets, labeling the transaction type, and providing their own analytics.



Etherscan.io home page

Whales are also often used as a gauge of market sentiment. Whether right or wrong, whales are often assumed to be “smart money” or sophisticated market participants. Because of this, market participants look to them for signals. If whales are HODLing or buying, this is often interpreted as a bullish indicator and vice versa. This is analogous to the traditional markets when a high-profile investor like Warren Buffett or Cathie Wood makes a trade/position public. If a famous investor comes out as bullish on a certain stock, retail investors (sometimes) follow, driving up the stock price. The issue with this is that the whales know the market is watching their moves and will use that information to their advantage.

Home > Markets

Whales Continue to Buy Bitcoin at All-time Highs

January 11, 2022 in **Markets**

Example headline of how whale action can be used to gauge market sentiment.

Aside from buying and selling, whales can/do often affect token prices simply by doing nothing! HODLing such a large portion of the token supply reduces the liquid/tradable supply, thus providing a “floor” for the token price.

Supply on exchanges indicates intent to sell, supply off-exchange signals intent to hold, and a few clever maneuvers can also make it possible to identify wallets of coin founders, rich individuals, and institutions to preempt buying and selling behavior.

Multiple kinds of whale movements matter in cryptocurrency investing—let’s examine a few common patterns.

Wallet to Exchange

When cryptocurrencies are sent from regular wallets to exchanges on a blockchain explorer, it usually means the person wants to sell it. It doesn’t matter for smaller transactions, but a magnitude of hundreds of millions will create sell pressure and depress the price. On the other side, if millions of dollars of a cryptocurrency are sent from an exchange to private wallet, they’re less likely to be sold soon.

Exchange to Exchange

Exchange-to-exchange movements are all about arbitrage, e.g. whales taking advantage of a small difference in price between two exchanges, and because they have so much capital, that small difference offers a sizable return in fiat.

Wallet to Wallet

Finally, there are wallet-to-wallet movements which are very misconstrued. Many large investors don’t use exchanges—they go OTC (over the counter). The size of whale investments could otherwise stir up markets and fluctuate prices. When you see hundreds of millions of dollars go between wallets, they are generally OTC trades, and it’s never clear whether it’s a buy or a sell.

1. Over-the-Counter (OTC)

Obviously, being a whale in a market comes with many advantages, but buying and selling such large quantities can also be a double-edged sword. Trading large amounts of crypto can also be a burden if the market is immature or there are no exchanges with deep liquidity available. If a whale wanted to purchase 5,000 BTC, it may not be possible to find an exchange or seller who is willing to sell that much Bitcoin all at once and/or at the price they want. If a whale attempted to market buy from an exchange, the price may meaningfully appreciate (making it more expensive for the buyer) because executing such a large amount will take time and market volatility will influence the price.

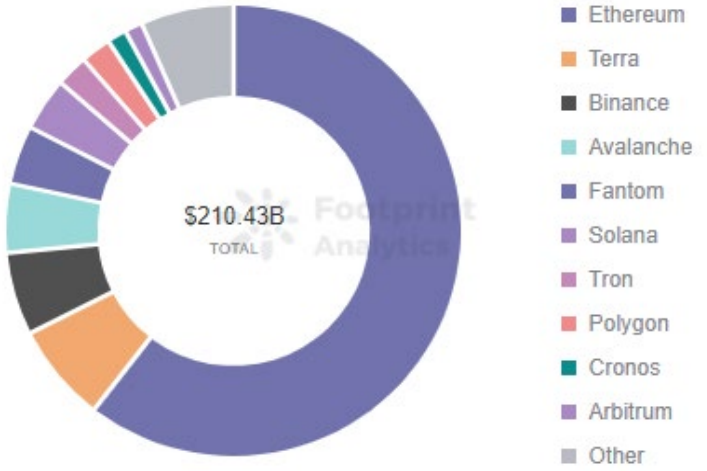
Because of this, many institutions and whales trade over the counter (OTC). OTC trades are executed directly between counter parties without being listed on an exchange. The primary benefit of OTC trades for a whale is guaranteed liquidity. As previously discussed, crypto exchanges often have insufficient market depth for whales and therefore cannot execute a large order all at once. Instead, the exchange breaks the order into small pieces. OTC desks and services can minimize the risk of price spikes and slippage because they're purpose-built to handle large buys and sells. Another advantage of an OTC desk versus centralized or decentralized exchanges is the confidentiality and additional financial privacy provided. OTC trades are one-to-one, removing the need for any additional middlemen or third parties, making trades more private and discreet.

II. Who Are Whales?

There's no exact definition of how much of a particular cryptocurrency a wallet must hold in order to be considered a crypto whale. Remember, a whale is anyone who holds enough of the supply that he/she/they can move/manipulate the market price. For this article, considering its focus on the Ethereum ecosystem, whales should be considered anyone executing trades >~ $500,000.

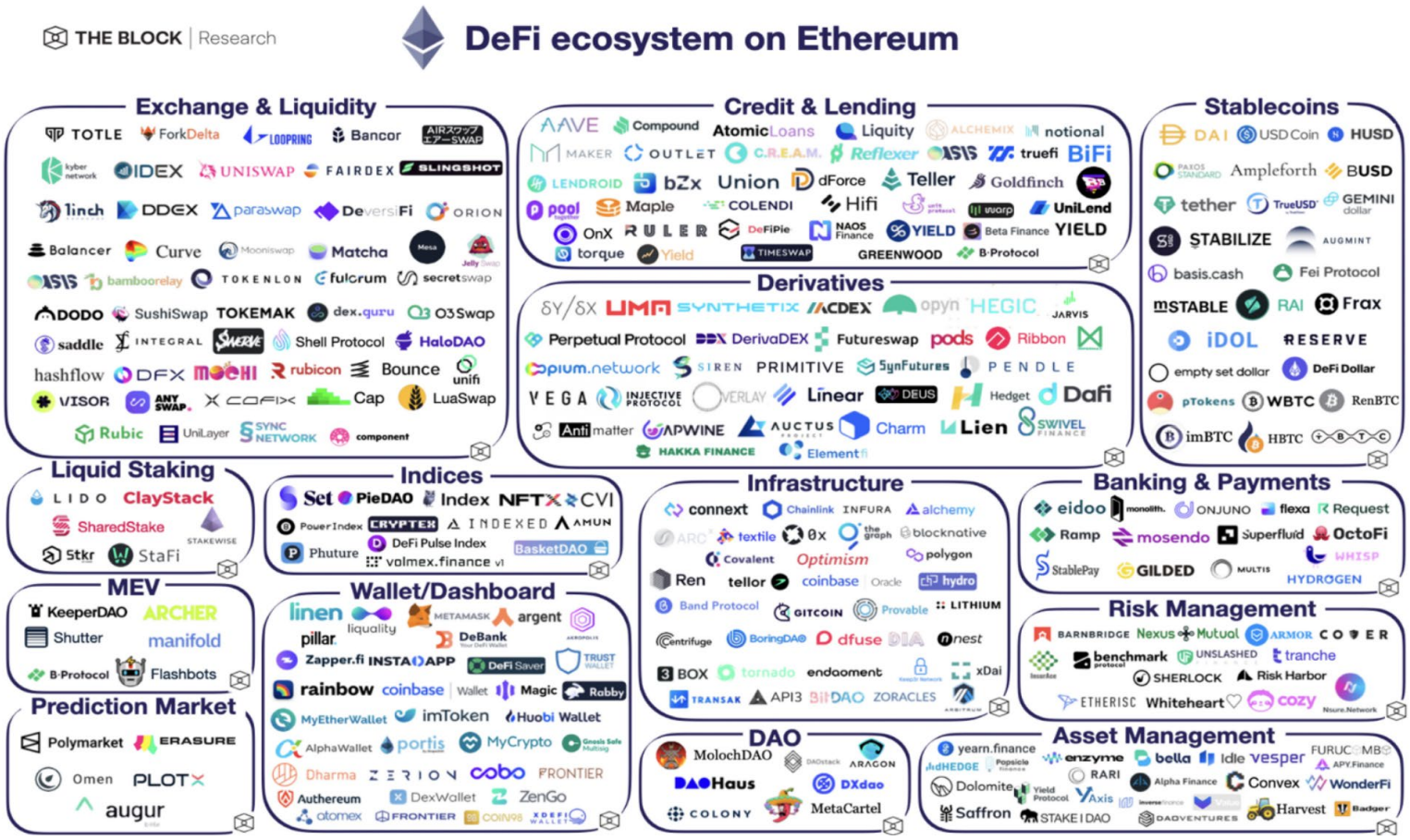
Generally, whales fall into one of these categories: professional traders, retail traders (degens), long-term crypto investors/ OGs, crypto angels / VCs, crypto funds & institutions, crypto trading desks, DAOs, or arbitrage bots.

Ethereum is home to the largest, most expansive, and active Decentralized Finance (DeFi) ecosystem is the world with ~$130B in total value locked (TVL). DeFi is a catch-all term for many financial activities including borrowing and lending, insurance, yield farming, and, of course, trading. Rather than centralized middlemen and financial institutions, DeFi utilizes smart contracts to execute financial transactions, e.g. a user-to-code relationship rather than user-to-entity. Trading in DeFi is dominated by DEXs utilizing an Automated Market Makers (AMM) structure, discussed later in greater detail.



Ethereum's market share of the DeFi world is ~61%, followed by Terra and Binance. Ethereum is also home to the most DeFi whale activity. Uniswap, an Ethereum DEX, had an average transaction size of ~$53,000, while PancakeSwap (a BNB DEX) was less than $900. Meanwhile, Curve, an Ethereum stablecoin-focused DEX, had an average transaction size of $500,000 in Q4 2021. It's for these reasons, that this article will almost exclusively focus on Ethereum dApps and metrics.

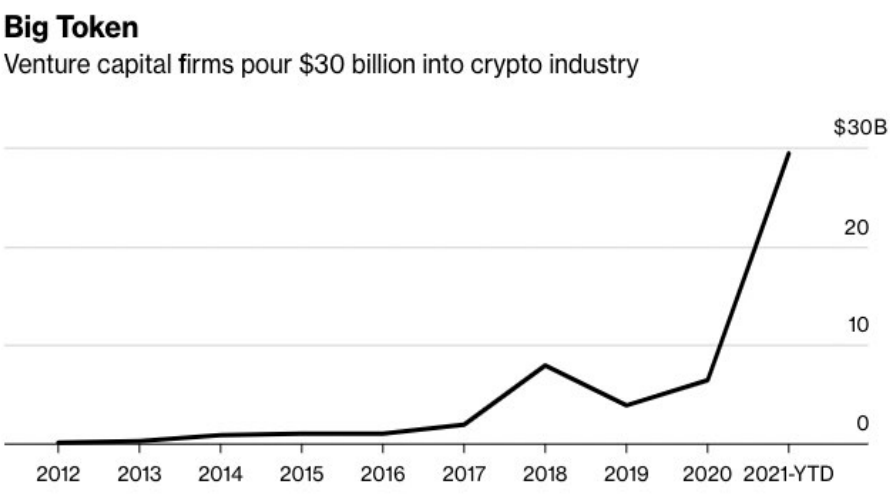
Footprint Analytics



Ethereum DeFi ecosystem. Source: TheBlock

1. Venture Capital (VC)

One of the fastest-growing “buckets” of crypto whales are venture capital (VC) firms as traditional finance bleeds over into the cryptocurrency space. In 2021 alone, VCs raised ~$30 billion to invest in crypto. This is more than in all previous years combined and nearly 4x the previous high of $8 billion in 2018.

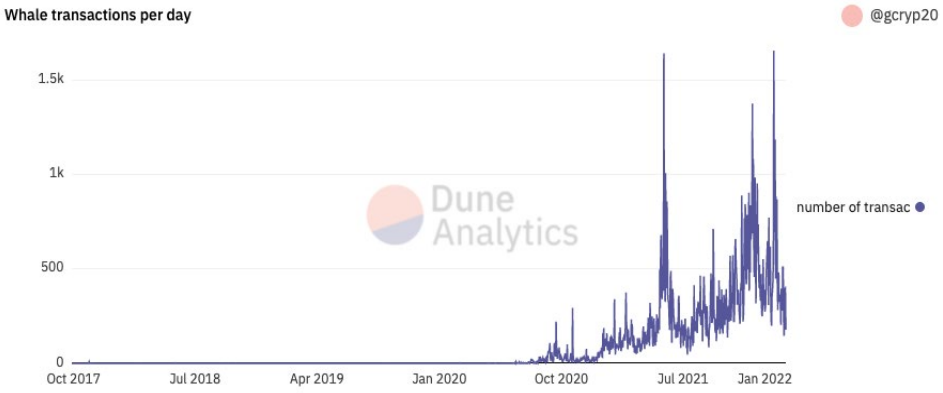


Crypto VC Shops in U.S.

Firms	Deals
Coinbase Ventures	68
Digital Currency Group	53
Polychain Capital	44
Pantera Capital	43
Andreessen Horowitz	40
CMT Digital	39
Electric Capital	31
Blockchain Capital	29
Galaxy Digital Holdings	24
Slow Ventures	20

SOURCE: Pitch Book

Beginning around 2020, some VCs began taking a more active role in the projects and tokens in which they invest. This means these new whales are not simply HODLing tokens, but managing risk by trading in and out of positions. This represents a new, powerful market participant that did not previously exist while also helping to legitimize the sector. Based on data provided by Nansen (second chart), the overwhelming majority of whale activity on Ethereum is transacted in ETH, WETH (wrapped ETH), wBTC (wrapped Bitcoin), and stablecoins USDC, USDT, and DAI.



SOURCE: Dune Analytics

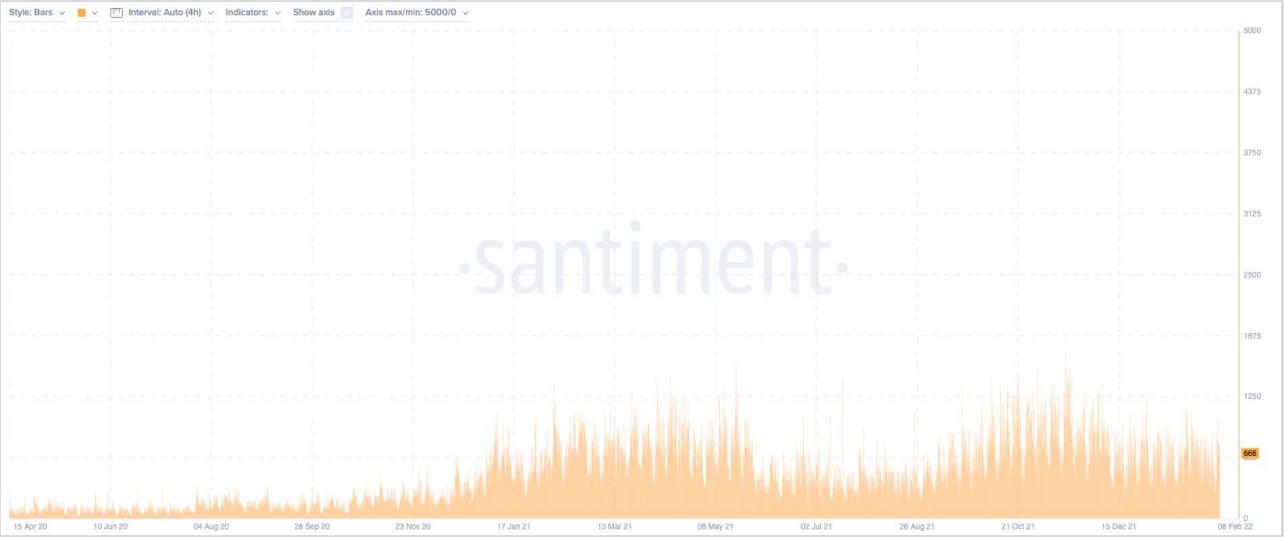
Top volume DEX markets traded by smart money — 1h ago

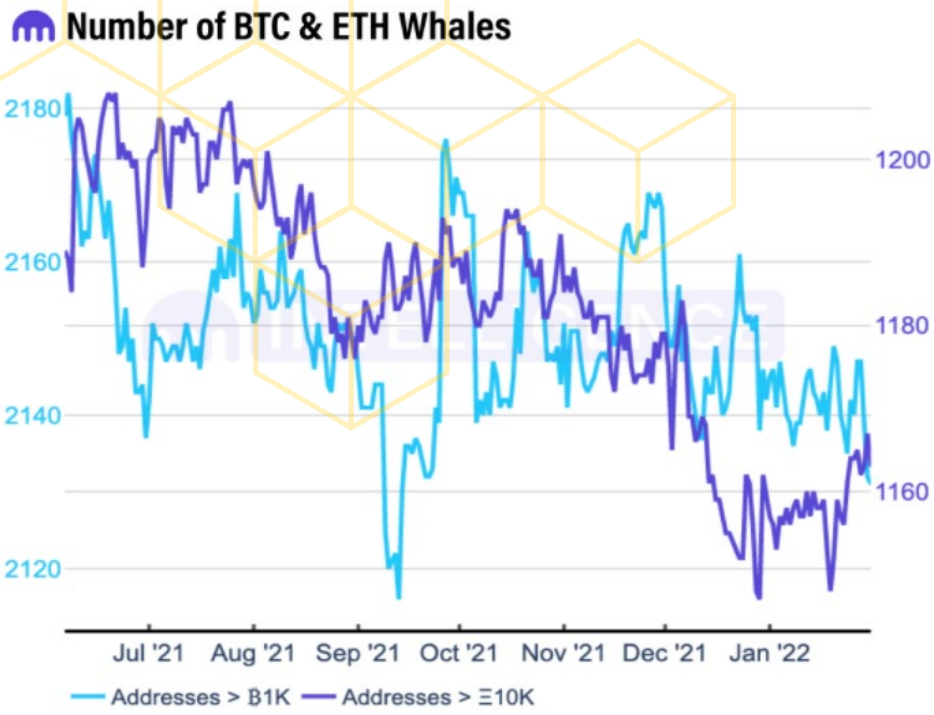
Taker token	Maker token	Volume (1D)	Volume (7D)	Volume (30D)	Token Overlap
WETH	USDC	$19,505,506	$41,735,206	$354,155,423	
WETH	USDT	$15,527,008	$25,995,475	$136,307,099	
WETH	WBTC	$12,683,638	$38,973,339	$231,733,521	
USDC	WETH	$11,615,925	$53,167,249	$380,634,088	
WBTC	WETH	$11,389,904	$47,743,728	$200,253,794	
WETH	DAI	$8,167,726	$12,570,504	$69,949,081	
USDT	USDC	$5,472,047	$10,703,066	$27,886,760	
USDT	WETH	$4,766,175	$21,902,329	$160,236,489	
WBTC	USDC	$4,363,941	$15,911,828	$56,992,587	
UNI	WETH	$2,727,099	$3,895,035	$17,850,786	

2. Arbitrage Bots

Contributing to the rise in whale transactions are arbitrage bots, programs run by code seeking to arbitrage across DEXs. Arbitrage is the process of buying and selling assets from different markets to profit from price differences. Arbitrageurs (and their bots) provide a very important service to the market by helping converge prices across different markets to create a collective “market price.” By doing so, they’re also able to profit on the price discrepancies.

As arbitrage opportunities have gotten more lucrative, bots and their strategies have become more sophisticated. Flash loans are a new primitive in the crypto economy in which a purpose-built smart contract can borrow (nearly) any sum of money, attempt to execute multiple trades across the market, and be guaranteed that either the arbitrage trade is successful or the transaction fails and the original loan is paid back. All of this happens in one block! This means the arbitrageur’s only risk is the cost of gas on a failed transaction. It’s an incredible new tool for DeFi bots.





SOURCE: Kraken Intelligence, CoinMetrics and Glassnode

While the number of whale transactions has steadily increased over the last ~two years, the quantity of BTC and ETH whales is down noticeably since mid-2021 (first chart). On top of that, the amount of ETH controlled by whales has begun to decline in the beginning of 2022 (second chart).

However, many of these mega-firms and investment institutions typically choose to trade OTC for the reasons discussed above. Whales interacting with CEXs—and especially DEXs—are usually individuals or smaller hedge funds.

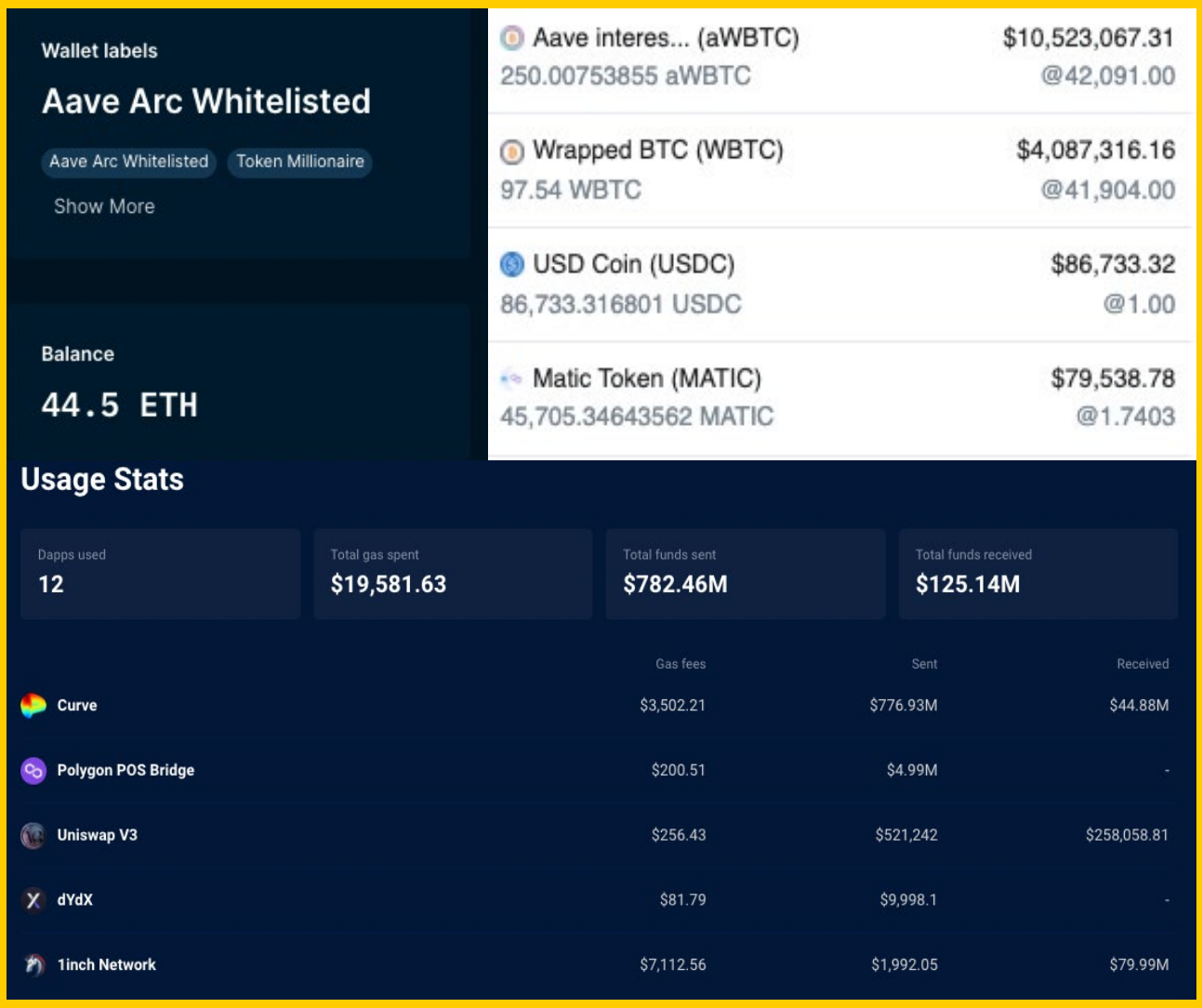
3. On-chain Whale Wallet Examples

Using wallets found from top 1inch traders and cross-referencing them with Etherscan and Nansen's Wallet Profiler tool, we can get an idea of patterns, assets, and dApps certain whales prefer. Below are several examples simply to get a peak into the on-chain activity of some market whales.

Example 1

Address: 0x7344e478574acbe6dac9de1077430139e17eec3d

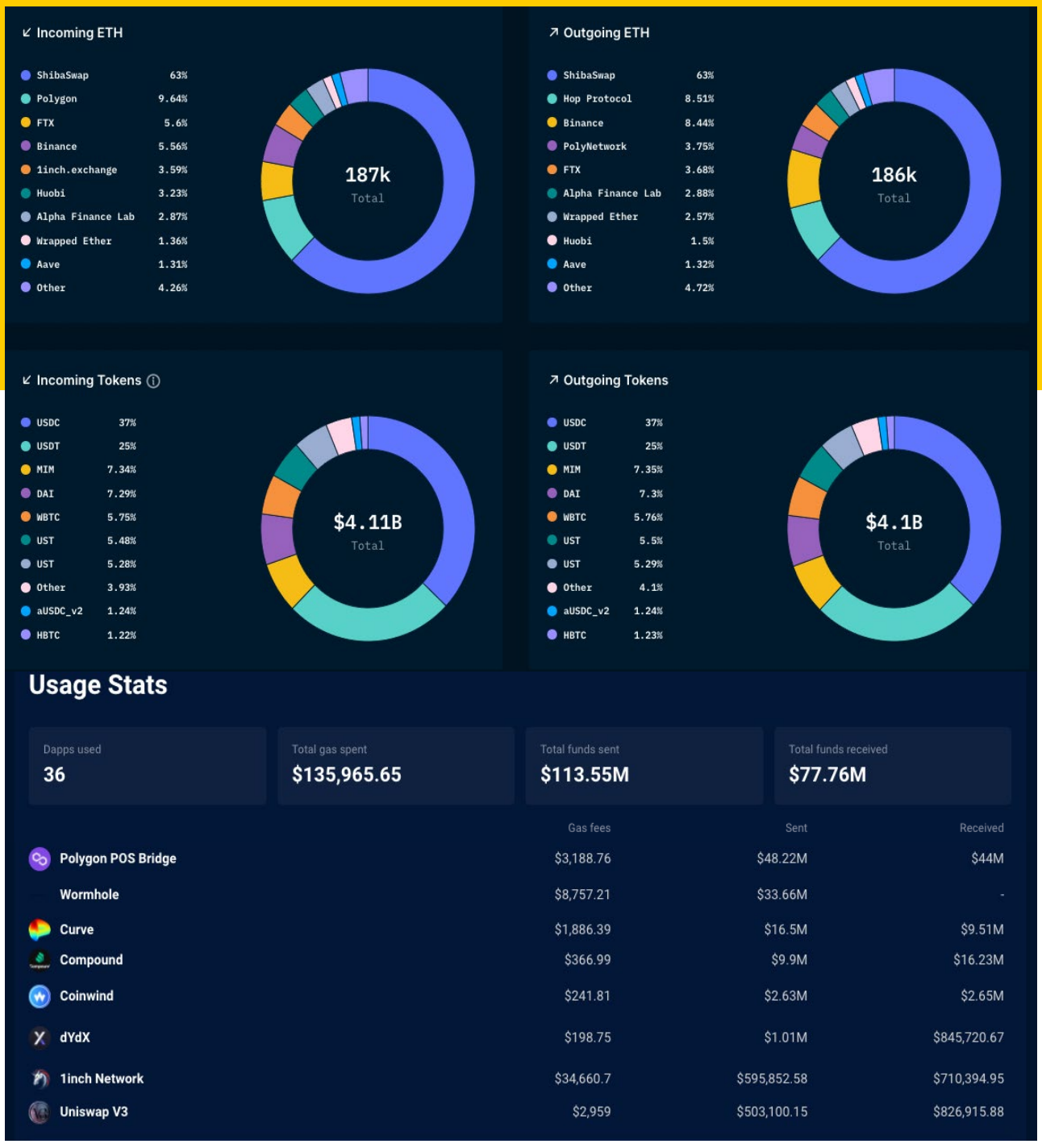
This address has been marked as an Aave Arc whitelisted account, a regulated, verified Aave service for institutional investors. As we can see by the assets held in the wallet, this is a Bitcoin whale that has come to Ethereum (Aave specifically) looking to use their BTC in the DeFi world. The last image demonstrates this particular whale has interacted with 12 dApps in total, a non-trivial amount! However, the majority of the value transacted has been on the three leaders in the DEX/aggregator space: Curve, Uniswap v3, and 1inch.



Example 2

Address: 0x66b870ddf78c975af5cd8edc6de25eca81791de1

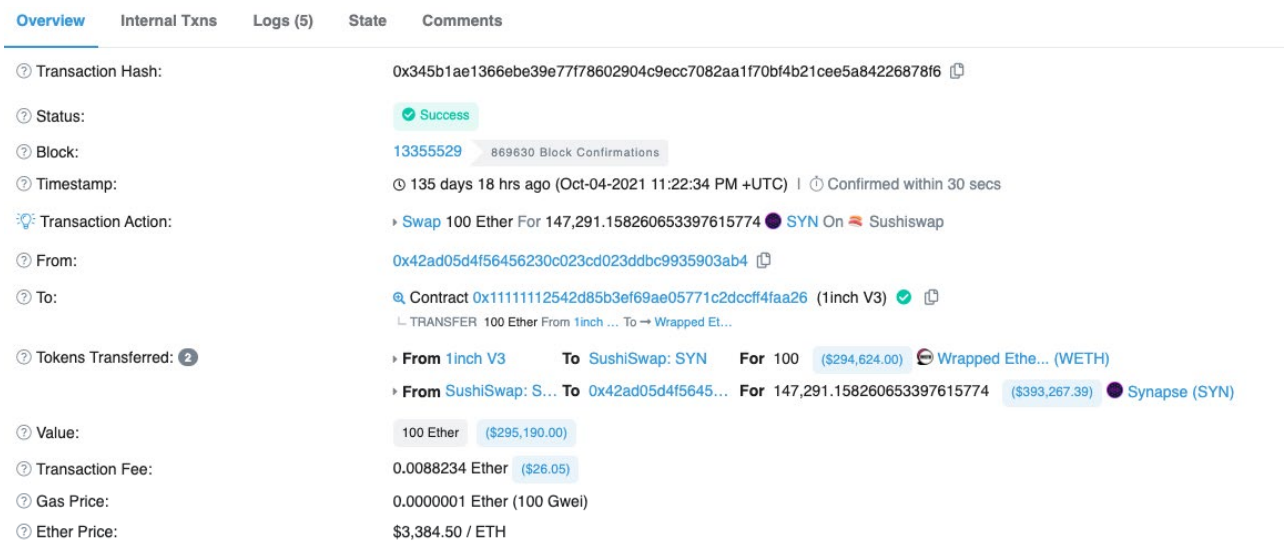
This address has been tied to Oapital, a Chinese “alternative asset management” fund. As the incoming and outgoing transaction pie charts (first image) show, this fund has dealt primarily with stablecoins including well-known USDC, USDT, and DAI, but also more niche stablecoins like MIM and UST. Interestingly, Oapital’s website states, “[a]s faithful Bitcoin maximalists, we have vertical integration from incubator to exchange.” However, as seen just by the second image, they have interacted with 36 non-Bitcoin dApps. You can’t lie on-chain!



Example 3

Address: 0xf9a95708b4c7fc077677c0b4cb0f4c00a69f68c4

Finally, a whale address with no doxxed real-world information. As we can see in the first image, this address manages a significant amount of capital across a wide, fairly-evenly distributed set of tokens. This whale does not seem to be partial to any one particular dApp (65 in total) and, as can be seen in the second Etherscan image, they execute sophisticated transactions often involving multiple long-tail assets. The wide range of dApps and niche tokens used imply that this could be a DeFi degen. Because of the altcoins, this whale is looking to trade, some DEX solutions like Integral or Curve (discussed later) may not support all of this whale's activity.



III. Trading Landscape

1. Trade Considerations

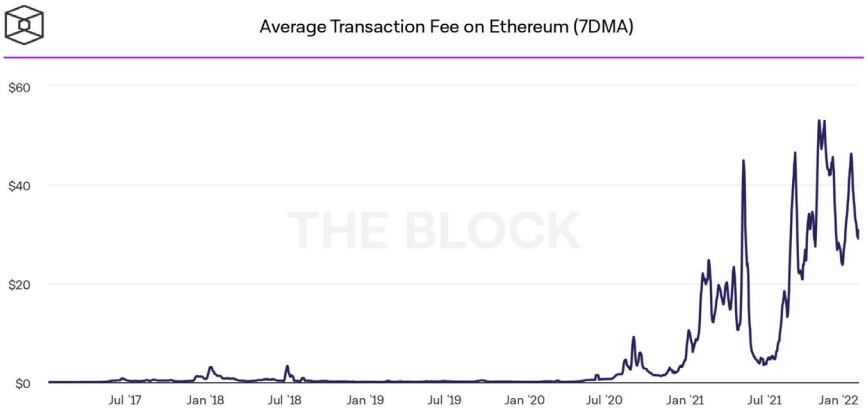
a. Gas costs

Ether is digital money on the Ethereum network and is required when a user interacts with the network to pay network fees in the form of "gas." Gas is the allocated internal pricing mechanism in Ethereum used in transactions. It's a derivative of Ether designed to mitigate spam attacks on the network and efficiently allocate computational resources.

Gas prices (and transaction fees) can reach quite high price levels during periods of network congestion. This is because blocks and block space on the execution layer of a chain are scarce. There are only so many blocks that can be verified and added to the chain each second/minute. Once demand outstrips this finite resource, the only recourse users have left to ensure their transaction gets into a block (and executed) is to pay more than the market rate for transaction fees.

Gas The fee paid to a blockchain's miners incentivizes them to run a node, thereby providing computing power to secure the blockchain. The protocol determines the amount of gas to be awarded for the creation of each block. This security of the blockchain gives the cryptocurrency value because it is constantly and verifiably secure, which then creates an infinite feedback loop.

As an example, "gas" is the postage required to send a letter (transaction) in the mail. There is a minimum amount, which is dictated by the market, but is relatively stable and updates in real time.



SOURCE: theblock.crypto

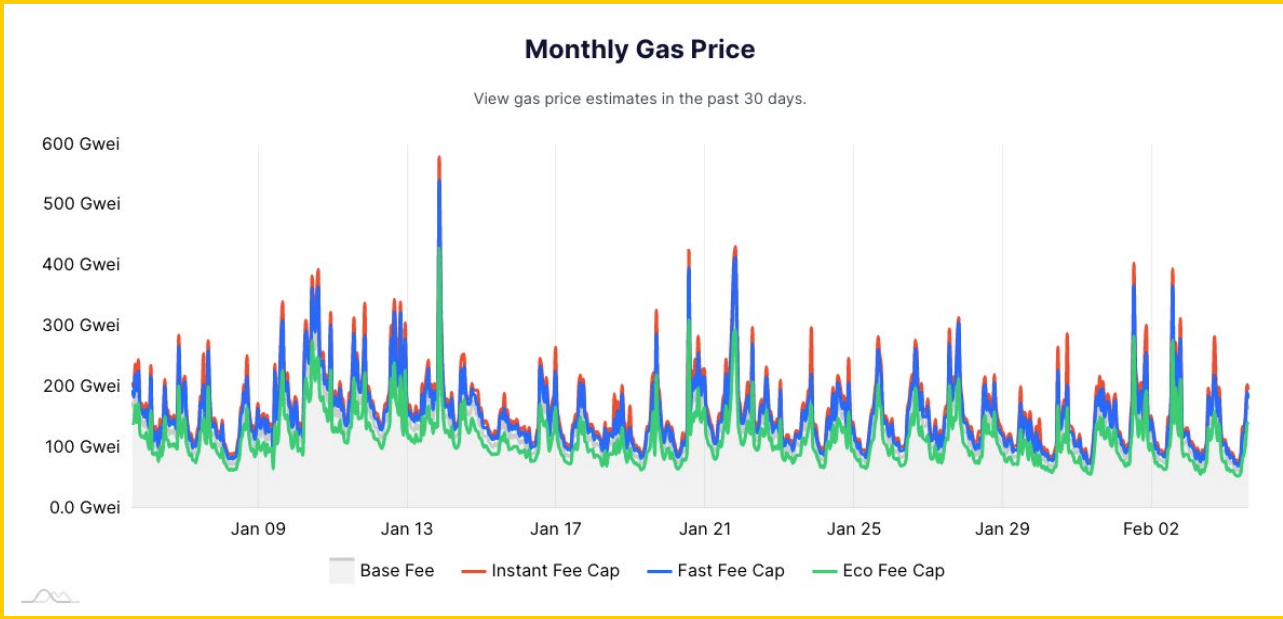
Ethereum's scalability on the base layer is limited by the block gas limit rather than the block size. There is an upper threshold on the amount of gas that can be expended in a block with 30 million gas being the absolute maximum.

Users pay different amounts of gas depending on the type of transactions they're looking to execute. The more complex the transaction, the more gas is required. Sending one ETH to a friend (an ETH transfer) is far simpler (computationally-speaking) than making a trade on a DEX. Thus, trading on a DEX requires more gas and is more expensive. Below is a monthly chart of ETH gas fees.

While Ethereum gas costs may be prohibitively expensive for the everyday user, whales are far less price-sensitive due to their high-value transaction size. A $50 transaction fee is outrageous for a $100 trade but negligible for a $1M trade. Therefore, whales transacting on Ethereum do so because Ethereum has the best security, liquidity, and DeFi optionality of any cryptocurrency ecosystem.

Below is a breakdown of the average gas used and average fees paid for some of Ethereum's top DEXs. Despite the architectural intricacies of each DEX, the difference paid in gas fees from one to the next is ~$20. This means traders and whales can feel confident transacting on their preferred DEX knowing that the opportunity cost could be as little as $10 (all else being equal).

However, things are never equal from one DEX to the other. Traders and whales that choose a DEX must account for several factors, such as liquidity and market depth (previously discussed), tooling and UI/UX features, fees, trading pairs, regulations, exchange reliability, and more discussed in the following sections.



SOURCE: gasprice.io

b. Smart Contract Security and Oracle Reliability

Above all else, whales (and everyone) want to ensure their funds are safe when interacting with a dApp/smart contract. DeFi and DEXs are fairly new innovations that are still constantly evolving. Risks are abundant! Token pairs and liquidity mean nothing if your trading venue is insecure.

	Protocol	Fee	Avg Gas Use	Gas Fee (ETH/USD)	
☆	Crypto.com DeFi Swap	0.3%	161,639	0.015032	$41.93
1	Curve	0.04%	112,845	0.010495	$29.27
2	SushiSwap	0.3%	140,556	0.013072	$36.46
3	Mooniswap	0.3%	149,767	0.013928	$38.85
4	Uniswap V2	0.3%	151,112	0.014053	$39.20
5	DODO	0%	157,185	0.014618	$40.77
6	Balancer	Variable	206,765	0.019229	$53.64

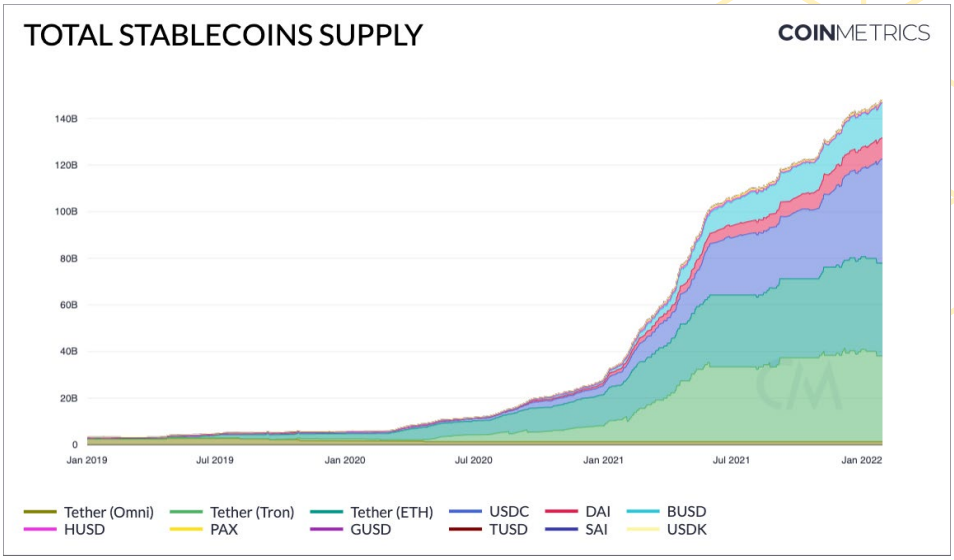
SOURCE: crypto.com

Methods for traders to judge a DEX's security:

- Reputation and time in the market (mature protocol vs. new one)
- Investigating the code
- Vetting the team
- Checking and verifying any third-party audits
- Investigating the oracle price feeds used
- Using services like defisafety.com

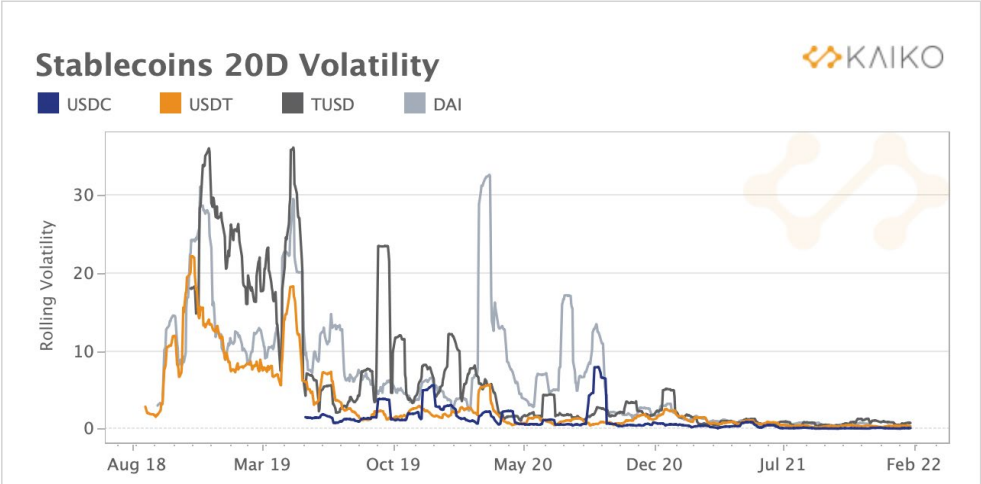
c. Trading Pairs/Stablecoin Risk

As mentioned in a previous section, stablecoins have become a critical part of the DeFi ecosystem and remain part of the most dominant and liquid trading pairs. The stablecoin market really began to grow in 2020 when the proliferation of DeFi dApps and yield farming opportunities exploded within the Ethereum ecosystem, dubbed "DeFi Summer." The two charts below illustrate both stablecoin supply and total DeFi users began to reach inflection points in Q2 2020. As of Q1 2022, ~25% of all spot crypto instruments listed on centralized exchanges are denominated in stablecoins.



As stablecoin adoption and usage have become more ubiquitous, their role and the risks associated with them have also grown. Traders and whales need a reliable, ultra-liquid stablecoin for maneuvering in and out of their positions. However, stablecoins can deviate from their $1 target peg, especially in times of high market volatility.

Current volatility for stablecoins on centralized exchanges has never been better thanks to increased liquidity, more robust trading infrastructure, and arbitrage opportunities. Below is a chart of the 20-day rolling volatility for four of the largest stablecoins using USD-denominated pairs trading on crypto-to-fiat exchanges. Pre-2020, volatility among the stablecoins oscillated between 10%-35%. Since then, it has declined significantly, down to its current rate of ~5%. Interestingly, despite Tether being a few years older, having a larger supply, and more liquidity, Tether's USDT is slightly more volatile than the U.S.-compliant USDC stablecoin.



Source: Kaiko volatility data

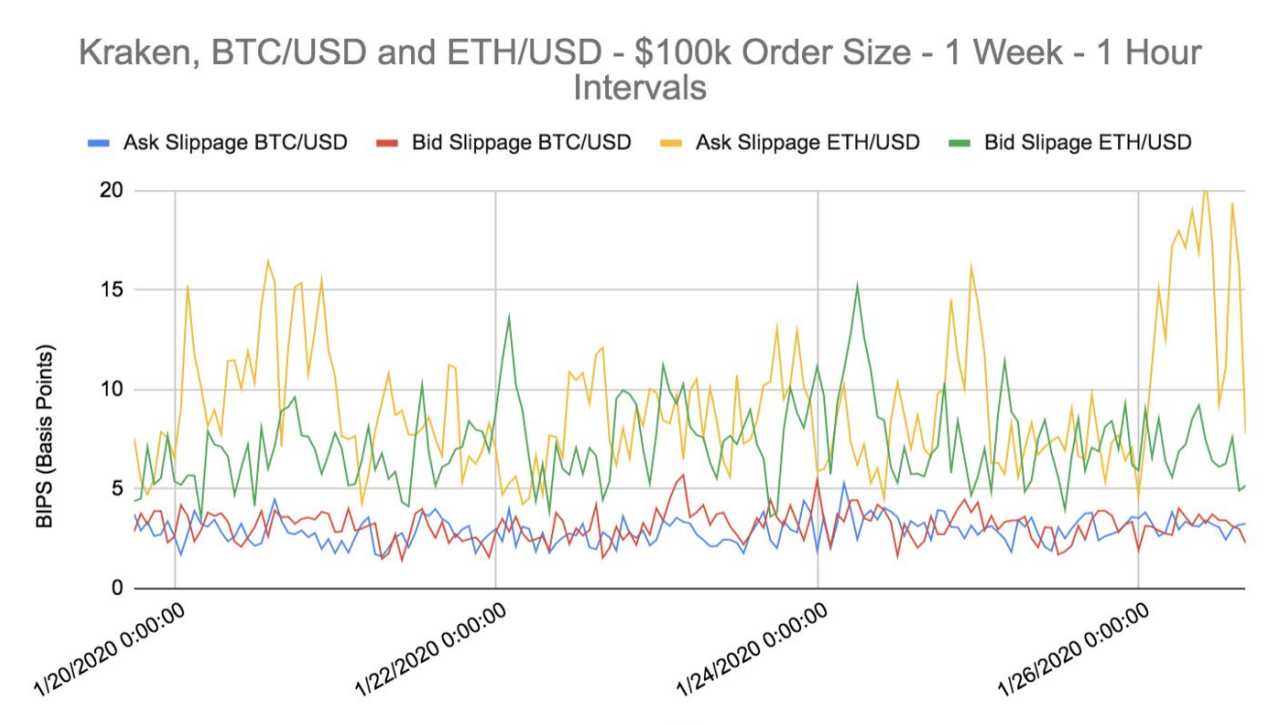
d. Slippage

Price slippage, as mentioned previously, is the difference between the expected price of a trade and the price at which the trade is executed. When a trader places a market order on an exchange, they expect that order to be filled at the current price. However, this is not always the case, especially for large orders or illiquid markets. Slippage can occur for two reasons: A change in the bid/ask spread in between the time a trade is placed and the trade is filled, or insufficient market depth.

In times of high market volatility, the best bid and ask for a crypto asset can meaningfully change between the time the trade is placed and the time it's executed. If the ultimate execution price is less than the expected execution price, the net result is positive slippage (advantageous result). Conversely, if the final execution price is greater than the expected execution price, the trader is subjected to negative slippage, a less favorable trade.

In less liquid markets, slippage can also result from insufficient market depth. For a CEX with a traditional order book, depth is calculated from the number of bids and asks on either side of the mid price. The "deeper" the order book, the less sensitive the price to large whale orders. However, if the order book is "thin" (less liquidity), a large whale market order may move the price due to what is known as "order splitting." When an order is too large to be filled at one price, it's divided into multiple orders at different price levels. This is how slippage is realized.

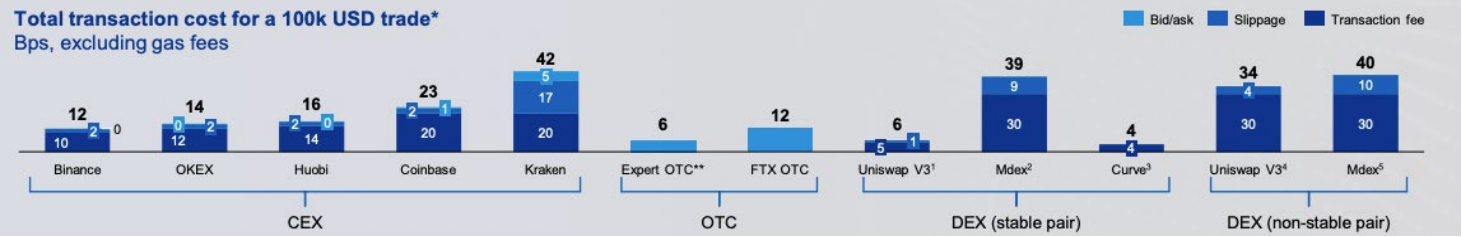
Below is an example of the slippage experienced on the CEX Kraken when attempting to execute a $100,000 BTC and ETH order in 2020. Note that ETH slippage (green and yellow) is more volatile and higher on an absolute basis due to the inferior market depth of ETH vs. BTC. While this example is dated, the relationship between slippage and illiquid altcoins remains valid.



ETH slippage is greater than BTC slippage due to less market depth.

SOURCE: ????

Below is a more recent analysis conducted by KMPG on total cost and slippage across different markets. Unsurprisingly, the OTC options provided the least amount of total cost across all markets (crypto-to-fiat and crypto-to-stablecoin). However, DEXs (specifically Curve and Uniswap v3) have really begun to shine in the stablecoin-to-stablecoin category, even producing less slippage than their centralized counterparts. This data is just another example of how DEXs are maturing in a short amount of time and may soon rival CEXs for most trading pairs.



SOURCE: KPMG

e. Capital inefficiency

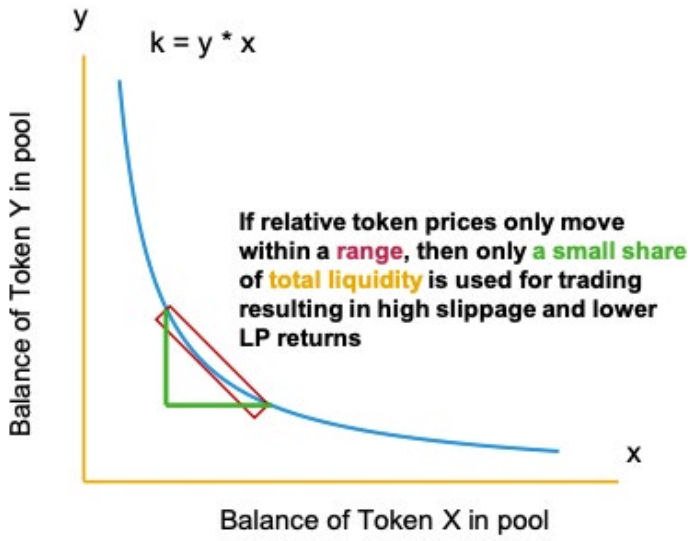
Capital efficiency (CE) refers to the amount of trading volume that's executed against the amount of liquidity provided (trading volume/TVL). The more trading volume that can be executed with the same liquidity pool TVL, the higher the CE. Simply put, CE means facilitating more trading with less locked-up capital. Liquidity providers (LPs) want high CE because it means they can earn more on fees/LP rewards while locking up less capital. Traders and whales prefer high CE because it results in less slippage given the TVL.

Why does it occur?

— CPMMs in their base configuration provide **equal** amounts of liquidity along **every point of the curve**

— This means that, if prices move only within a certain segment of the curve, theoretically only a fraction of the tokens in the pool are ever traded

— This can mean that other tokens that could have been used to mitigate a sharp price increase/decrease are not utilised, decreasing LP rewards and resulting in prices moving in directions they otherwise may not have moved.



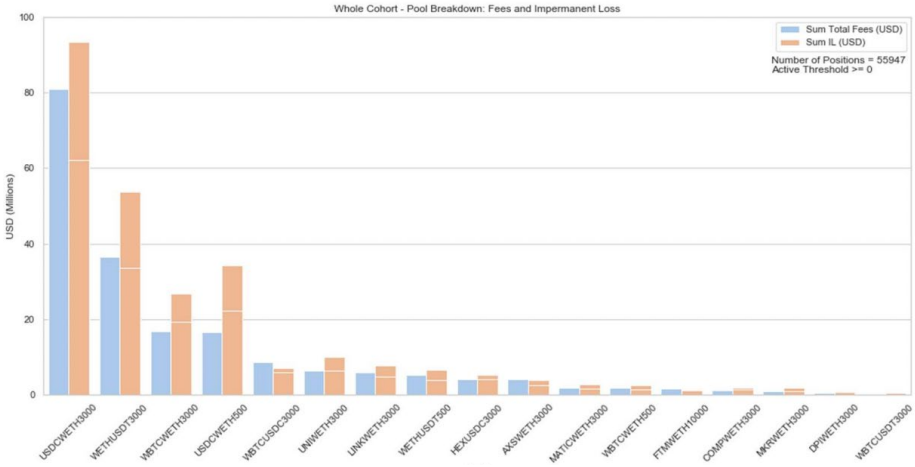
f. Maximal Extractable Value (MEV)

Miners play a significant role in DEX trading environments. Transaction ordering—the way miners decide whose transactions get processed first—is a function of the gas price paid for those transactions. The more you pay in gas, the more likely a miner is to confirm your transaction first. DEX traders are also susceptible to front-running from miners or other third parties. When traders submit transactions to the network, other traders or the miners themselves may take advantage of the knowledge they obtain from these pending transactions and submit their own trades to be processed first.

Impermanent loss

Impermanent Loss (IL) is an opportunity cost that liquidity providers (LPs) can suffer if their staked token pair loses value compared to simply holding the tokens. Therefore, IL is not a concern for whales that exclusively trade and don't provide liquidity to trading pairs. However, as many do, it's important to understand.

IL is a product of the design of Constant Product Market Makers (CFMMs). Because most liquidity pools force stakers to lock up equal USD amounts of the trading pair (e.g. ETH-USDC), a pool may begin with $1M in ETH and $1M in USDC. However, the ratio of ETH to USDC in the pool can shift when the market demand for one asset significantly outweighs the other. Losses can be temporary and mitigated if the token prices (relative to each other) return to the level they were at when the stake in the pool was acquired. Oftentimes, IL can outweigh the fees generated (as shown in the chart below), providing a lower ROI than if the user simply just held the base asset (ETH).



Fees v. Actual and Minimal Impermanent Loss (Whole Cohort) **SOURCE**: Bancor

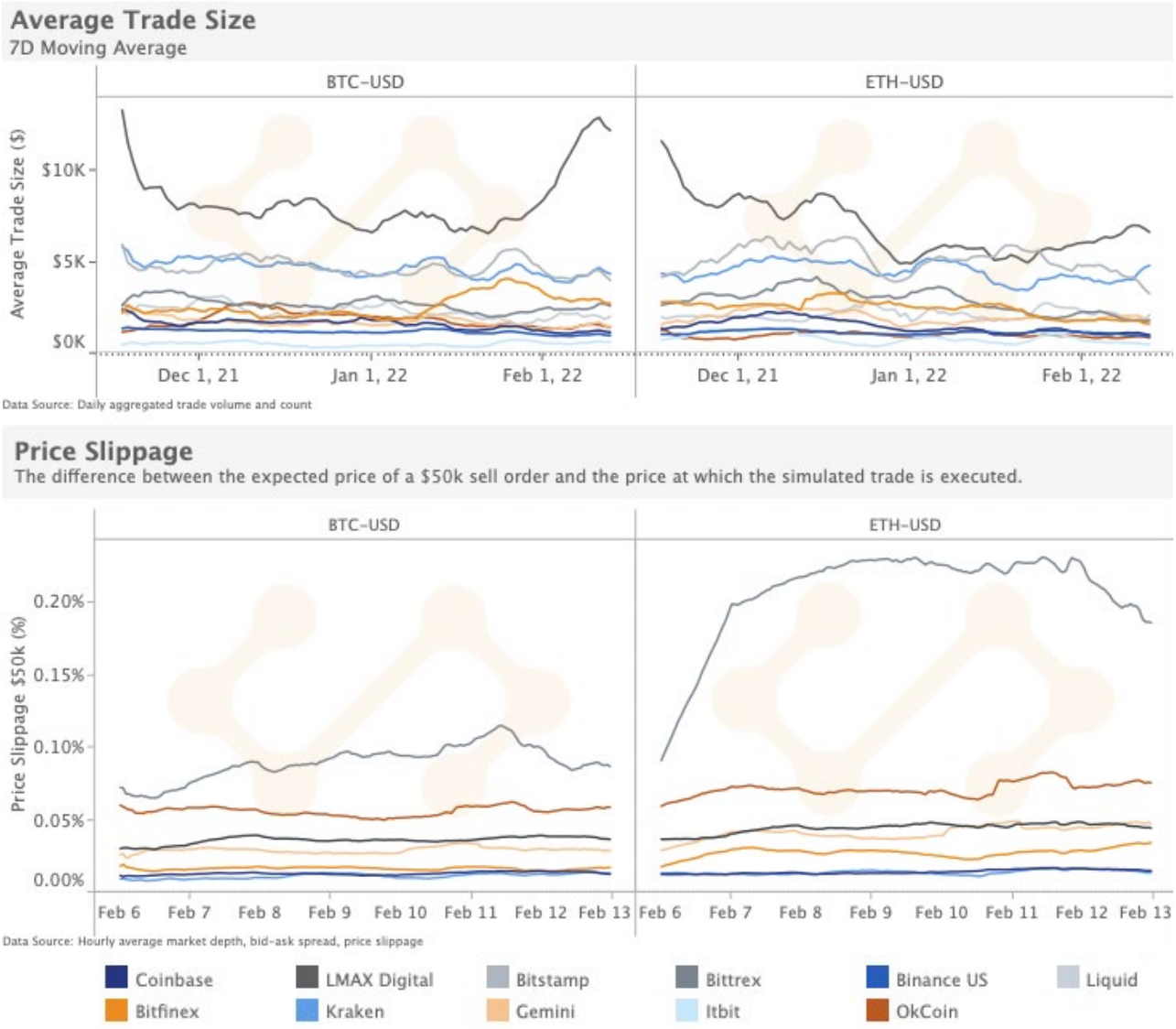
Some DEXs, like Kyber's Dynamic Market Maker (DMM), are working to reduce IL through dynamic fees based on volume. A DMM operates like an AMM during periods of normal market conditions but will raise fees when transaction volume spikes (usually during periods of increased volatility). When trading volumes are lower than usual, the DMM reduces its fees.

2. Centralized Exchanges (CEXs)

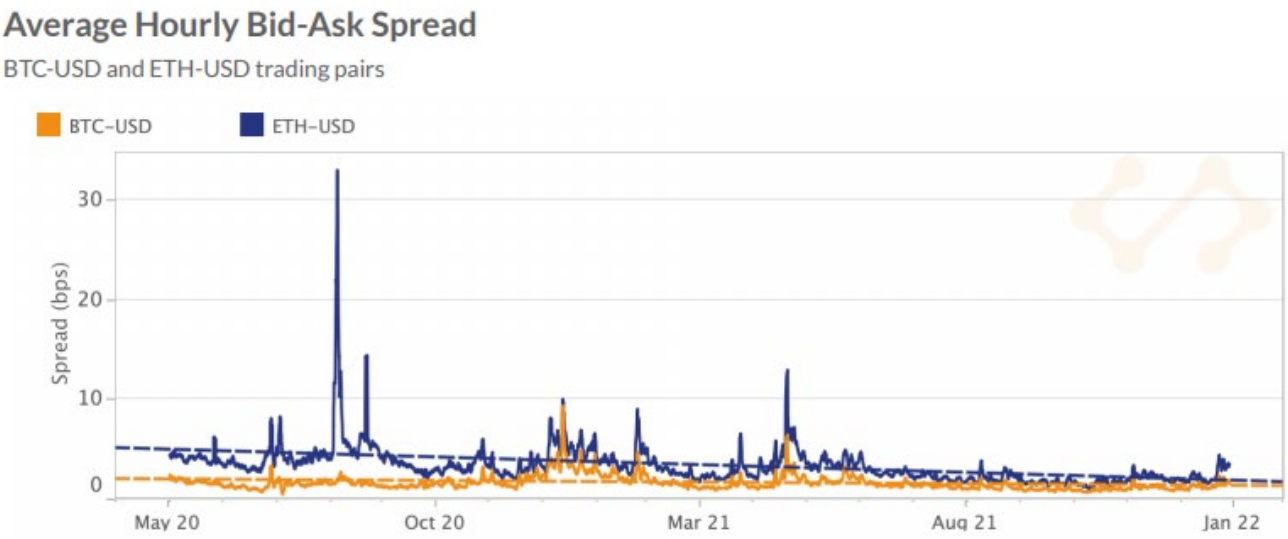
A centralized exchange (CEX) is a traditional business with a centralized/closed marketplace where traders can register with the exchange and then begin buying and selling crypto assets within the rules and walled garden set by the business. Orders placed on a CEX are executed off-chain on their internal infrastructure behind the scenes. The most popular CEXs based on volume include Binance, Coinbase, FTX, Kraken, Huobi, and KuCoin.

CEXs currently remain the primary trading destination for crypto traders due to their familiarity with traditional brokerages, easy fiat on-ramps, legal clarity, and DEXs' overall nascency. CEXs execute ~80% of all crypto trades, however, their users generally skew towards less-sophisticated retail users as seen in the average trade size chart (over $5,000).

However, centralization comes with some advantages as slippage on CEXs is generally quite low (less than 0.1%) as seen in the second chart.



Ethereum market liquidity, as measured by the bid-ask spread, has improved relative to Bitcoin over the past two years. The bid-ask spread represents the difference between the buy and sell price of an asset. A tighter bid-ask spread indicates greater liquidity. The chart below tracks the bid-ask spread for six CEXs. Note that Bitcoin's spread remains tighter, but Ethereum's has improved from four basis points to two.



SOURCE: Kaiko Research

3. Decentralized Exchanges (DEXs)

Decentralized exchanges (DEXs) are (typically) open-source, permissionless protocols that allow users to create liquidity pools for ERC-20 trading pairs and enables trustless token swaps executed from smart contracts for small fees. DEXs come in two main types: order book-based and liquidity pool-based DEXs. Liquidity pool-based DEXs currently dominate the Ethereum DEX landscape and will be the focus of this article.

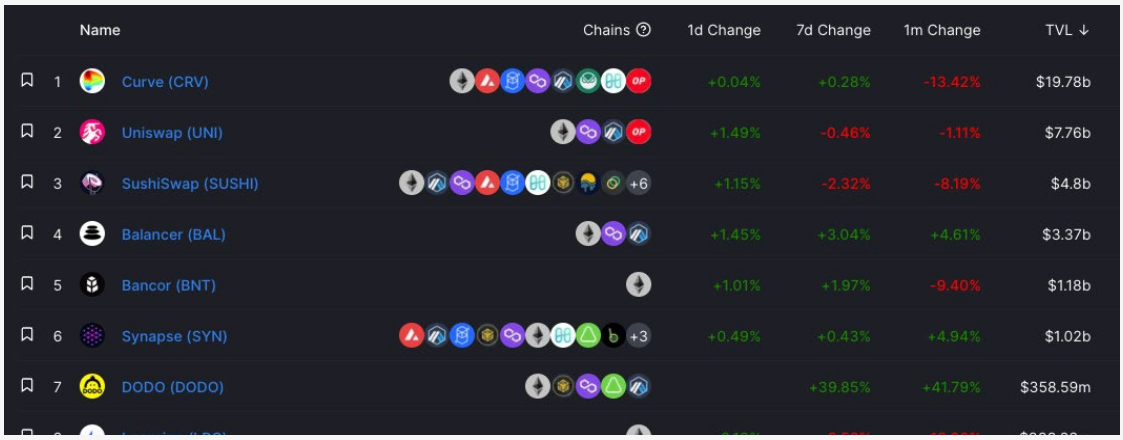
DEXs provide traders a trustless trading experience with no counterparty risk and, oftentimes, no Know-Your-Customer (KYC) requirements. DEXs also provide DeFi users the opportunity to yield farm, e.g. locking up their tokens into a liquidity pool and earning trading fees/rewards for providing liquidity. The liquidity provided is used to make the market for a trading pair according to a mathematical formula. Trades within the pool alter the trading pair balance/ratio and, thus, changes the token prices. Arbitrageurs/traders are then incentivized to bring prices in line with the wider market.

Most DEXs execute their digital exchange under a Constant Function Market Maker (CFMM) architecture, a type of model of an Automated Market Maker (AMM). CFMMs use a constant function as its pricing mechanism for trading token A for token B. "Constant function" refers to the fact that the product of the asset reserves must remain constant with all incoming trades. The mechanics of AMMs will be discussed further in the Uniswap section.

However, because CFMMs markets are dictated by a formula, they depend on arbitrage traders to bring prices back in line with the wider market when prices deviate. If prices become too deviated from the wider market, traders will buy tokens on other platforms to sell them on the CFMM DEC for a better price.

Inspired by Ethereum co-Founder Vitalik Buterin and created by Haden Adams, Uniswap was the first AMM that allowed anyone to create liquidity pools for any Ethereum token and to do so much faster than centralized exchanges. Anyone can provide liquidity to a pool that's then distributed to providers in respect to the amount of the provider's pool share. Stakers provide a deposit of two tokens—either ETH and an ERC-20 token, or two ERC-20 tokens—in return for interest from the principal.

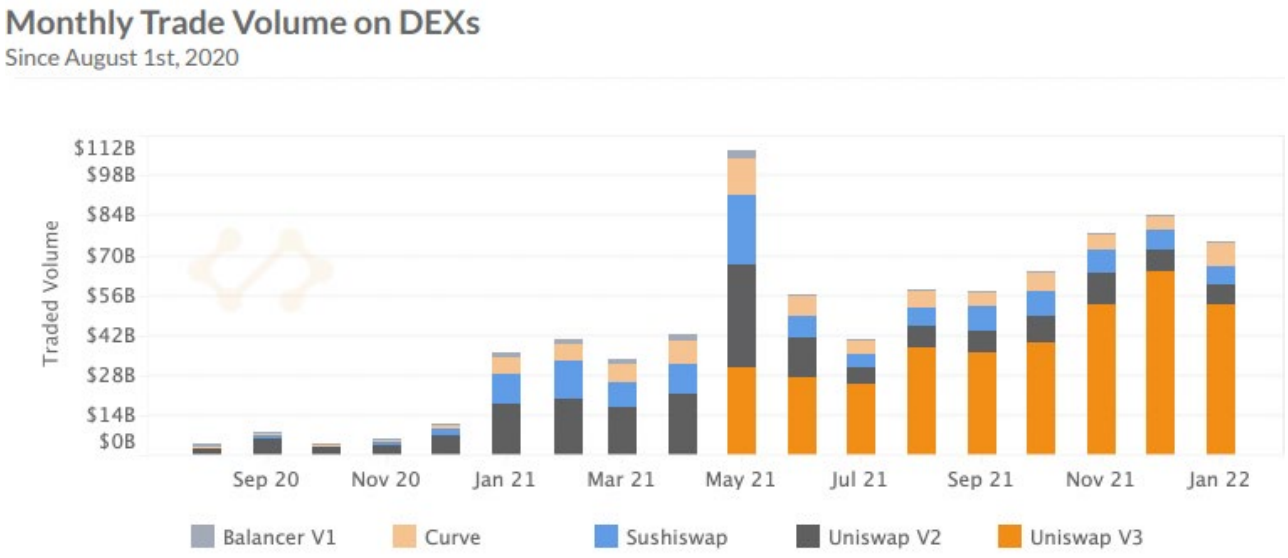
The top DEXs by TVL can be seen below. However, TVL is not the whole story. Remember capital efficiency (TVL/volume)? One may assume that since Curve has double the TVL of the next biggest DEX (Uniswap) that it would also have the most volume. However, as the second image clearly shows, Uniswap's share of daily DEX volume dwarfs all other competitors. Uniswap, thanks to v3's Concentrated Liquidity (discussed more later), has allowed it to do multiples of Curve's volume on less TVL!



	Name	Chains	1d Change	7d Change	1m Change	TVL ↓
1	Curve (CRV)		+0.04%	+0.28%	-13.42%	$19.78b
2	Uniswap (UNI)		+1.49%	-0.46%	-1.11%	$7.76b
3	SushiSwap (SUSHI)	+6	+1.15%	-2.32%	-8.19%	$4.8b
4	Balancer (BAL)		+1.45%	+3.04%	+4.61%	$3.37b
5	Bancor (BNT)		+1.01%	+1.97%	-9.40%	$1.18b
6	Synapse (SYN)	+3	+0.49%	+0.43%	+4.94%	$1.02b
7	DODO (DODO)			+39.85%	+41.79%	$358.59m

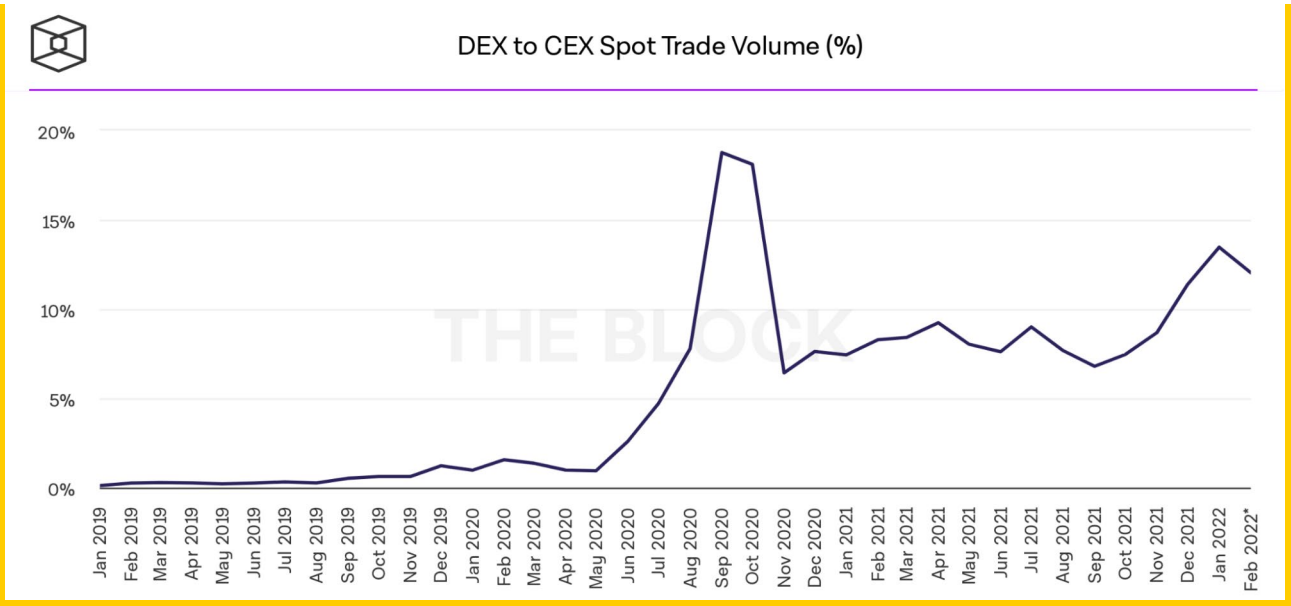
SOURCE: DeFiLlama

SOURCE: Footprint Analytics



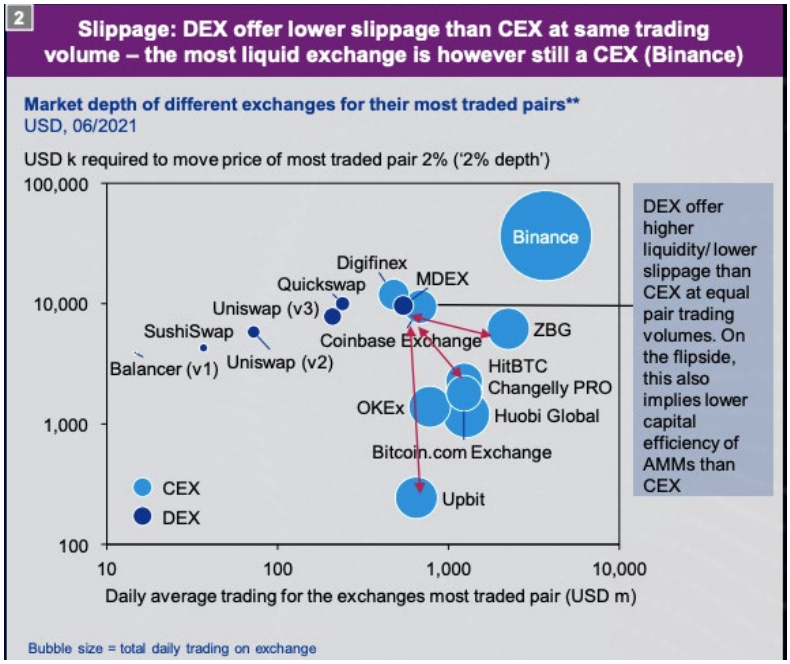
SOURCE: Kaiko Research

Despite the fact that the very invention of a DEX is only four years old, DEX crypto trading now constitutes 10-20% of the total daily crypto trading volume. As cryptocurrencies become more ubiquitous and the user experience of a DEX becomes comparable to a CEX, this number should increase.



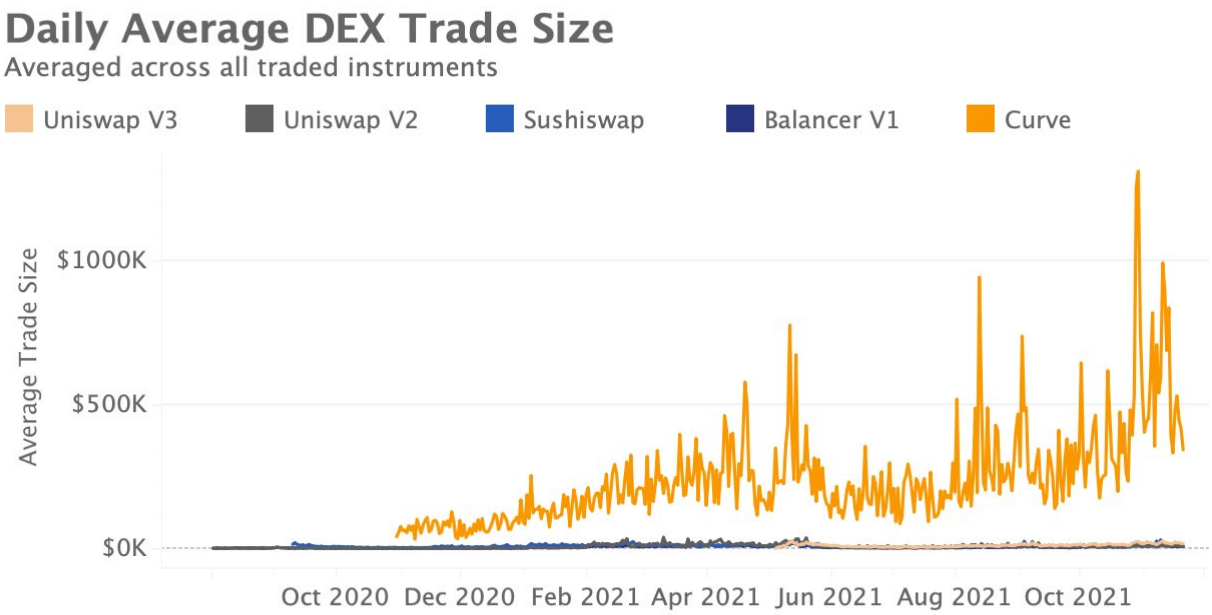
SOURCE: The Block

As discussed in the slippage section, DEX liquidity and total trade cost are closing the gap with CEXs. Additionally, as Layer-2 (L2) solutions on Ethereum begin to drive down gas costs, users will be able to enjoy the same cost and experience, but with no counterparty risk. If you'd like to learn more about how L2s are increasing Ethereum's scalability while driving down costs, you can find more here.



The average trade sizes have increased on nearly all DEXs since the beginning of 2020. In Q4 2021, the average trade size on Curve Finance ranged from $500,000-$1M, while deals on other prominent DEXs such as Uniswap v3, Uniswap v2, SushiSwap, and Balancer v1 average between $10,000-$20,000. While much smaller than Curve, the DEX trade sizes are ~10x larger than seen on CEXs (~$2,000-$4,000).

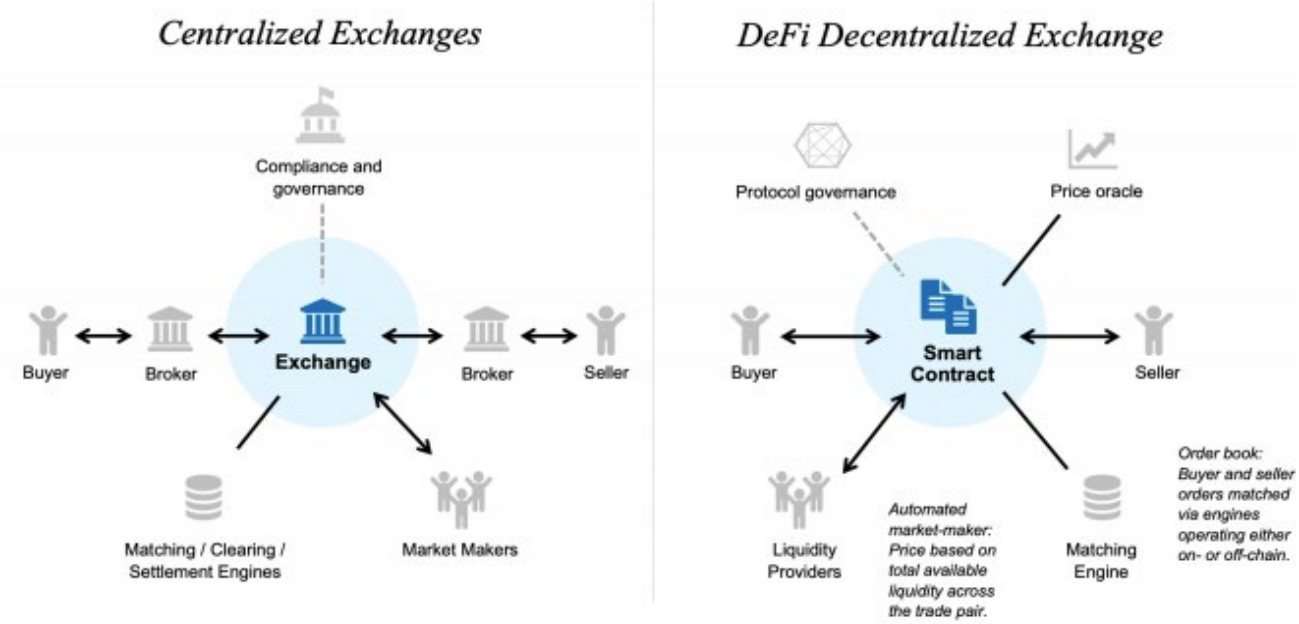
	Blockchain	Fees	Avg. Gas Fees	Tokens	Trading Pairs
UniSwap	ETH	0.30%	$11.38	282	856
PancakeSwap	BSC	0.25%	$0.05	936	15,265
SushiSwap	ETH	0.30%	$9.98	392	496
1Inch	N/A	Varies	Varies	312	319
ParaSwap	N/A	Varies	Varies	184	289



Source: The Block

a. Uniswap

Uniswap is one of the largest decentralized exchanges and automatic market makers on Ethereum. An automated market maker (AMM) is a specific type of DEX that relies on a mathematical formula to price assets instead of an order book where buys and sells are matched, like on Coinbase or Gemini. Traditional market-making uses giant firms with extensive resources to create a tight bid-ask spread on an order book exchange. Automated market makers decentralize this process, enabling anyone to create a market for any two tokens on a blockchain. Price discovery is purely mathematical.



Source: Wharton School of Business, University of Pennsylvania

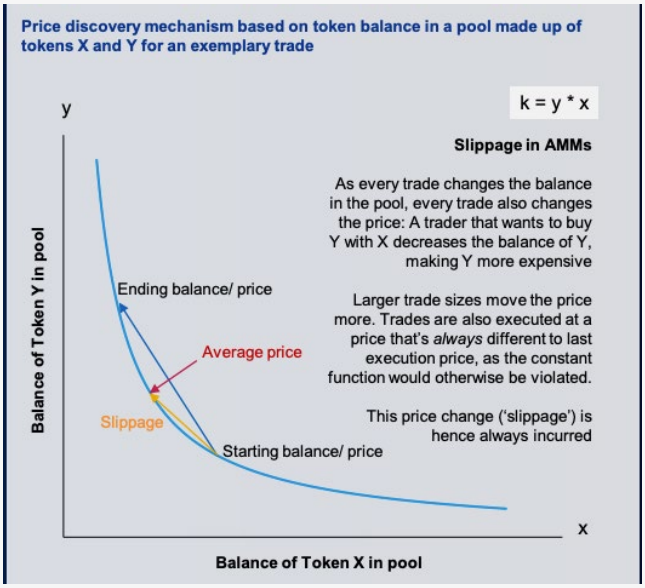
- x is the amount of one token in the liquidity pool
- y is the amount of another token
- k is a fixed constant

Uniswap works on a Constant Product Market Maker model that ensures the product of the two assets in the pool must always remain constant while the price for trading against the pool is based on the ratio of the two tokens to each other. In order to enable anyone to provide liquidity and earn fees on any assets, Uniswap uses a mathematical formula to rebalance liquidity providers' deposits. Uniswap uses the formula x * y = k.

Both x and y are rebalanced based on their price and liquidity variations to one another. The goal is for the value of k to remain constant, despite these changes and split 50/50 between both assets in the pool. Essentially, the ratio of value between the two tokens must always remain the same.

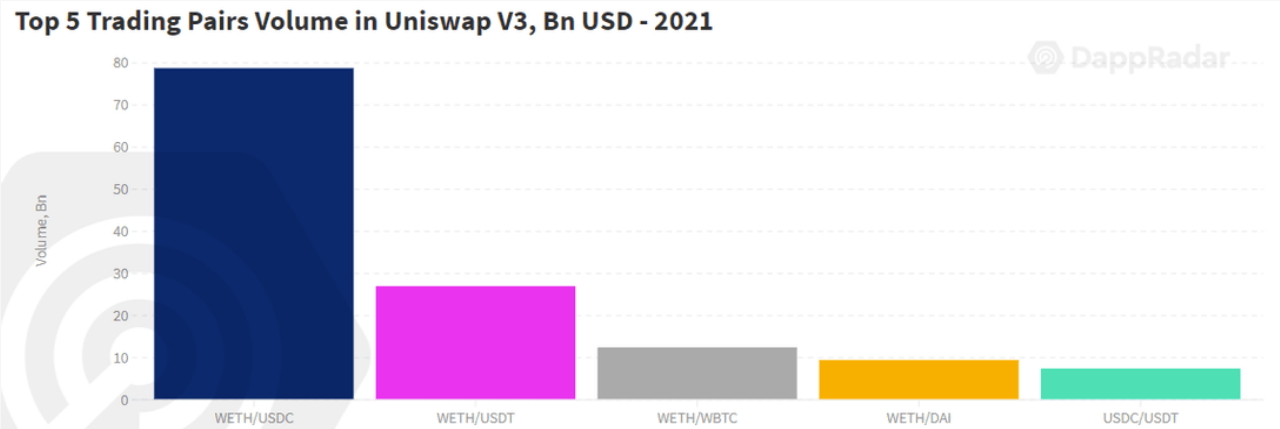
Liquidity providers add funds to the AMM pool which creates the market for each trading pair. LPs will deposit an equivalent value of two tokens, e.g. 50% ETH and 50% AAVE, to the ETH/AAVE pool. When a trader draws from that liquidity pool, the mathematical formula will set the price so the balance of ETH-AAVE remains in balance.

The advantage of the x * y = k formula is it enables liquidity at infinitely high or low prices of each asset since neither asset can ever be fully depleted. The disadvantage is the relationship between x and y is not linear, but rather asymptotic, as shown in the chart below. This results in very high slippage once prices move into the more extreme ends of the curve. If the ratio of the assets in the pool changes by a wide margin, execution prices suffer, and slippage increases.

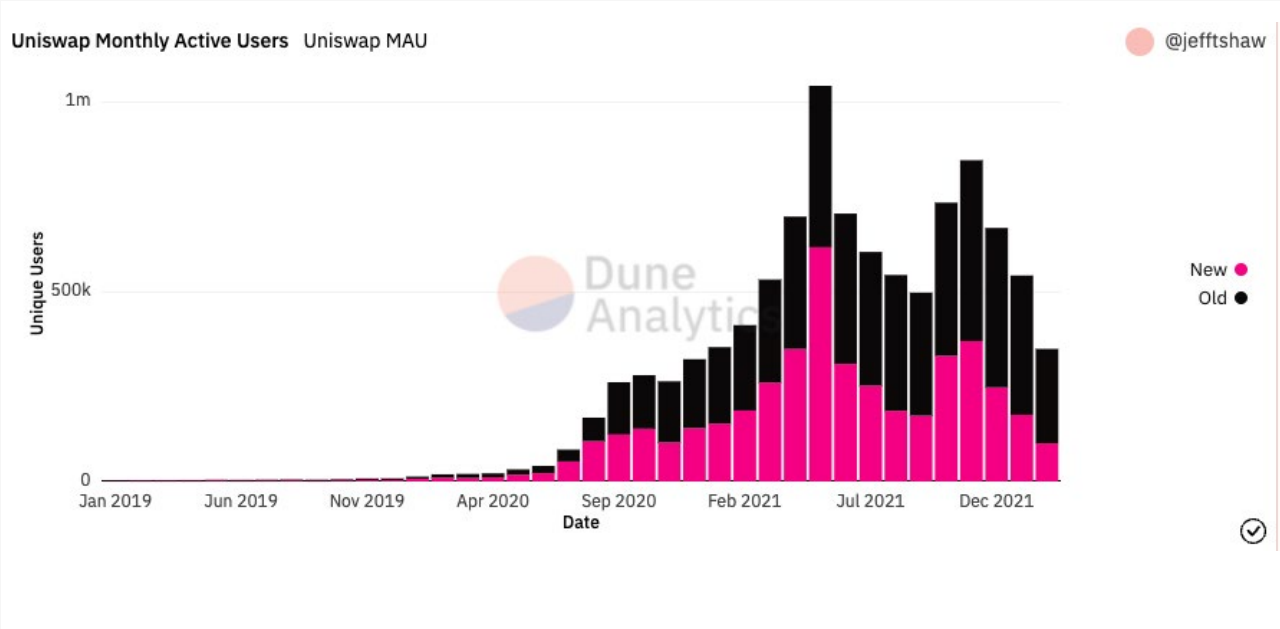


Source: KPMG

The most popular liquidity pairs on Uniswap, for whales and overall, are WETH/USDC, WETH/USDT, and WETH/WBTC. Uniswap boasts monthly active users in the hundreds of thousands, leading the DeFi DEX industry.

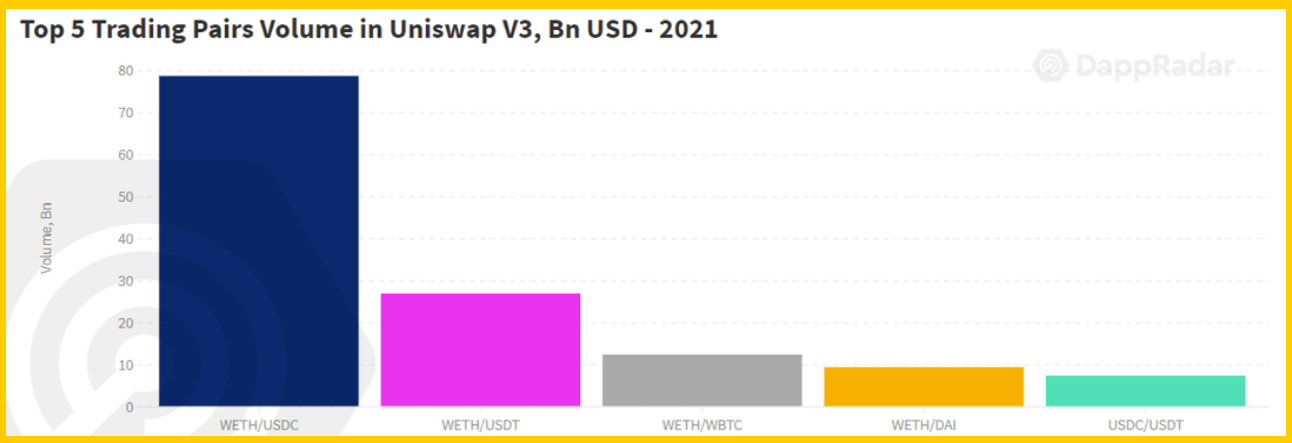


SOURCE: Dapp Radar



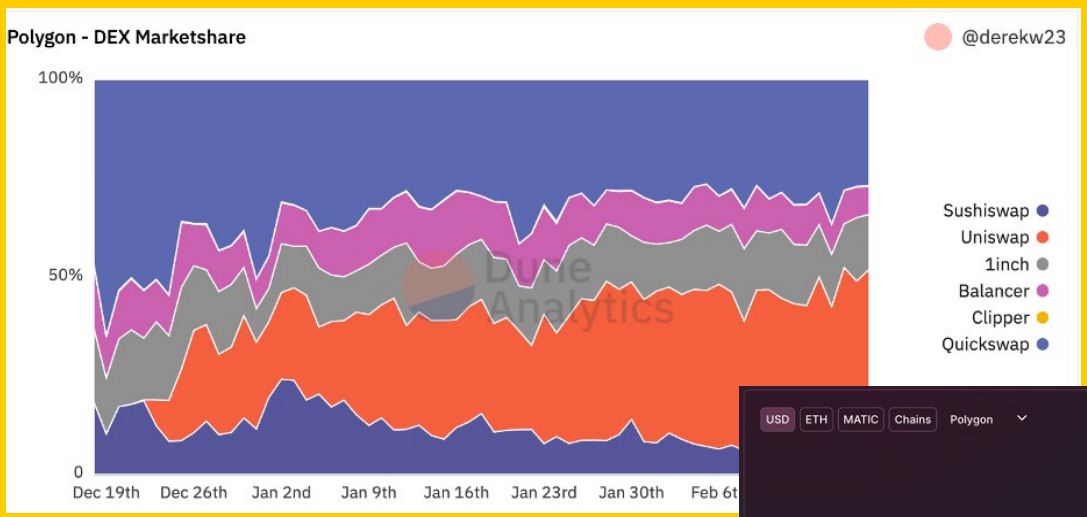
SOURCE: Dune Analytics

Uniswap also boasts an above-average transaction size (~$50,000), implying a certain level of whale activity. As the chart below indicates, the average transaction size increased throughout 2021 (250%+), suggesting that v3 brought in the whales.

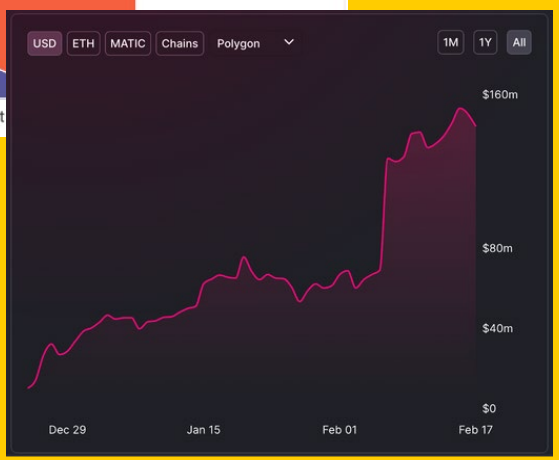


SOURCE: Dapp Radar

Uniswap is live on Ethereum, Optimism, Arbitrum, and Polygon, where it is experiencing impressive growth. Uniswap deployed on Polygon in late Q4 2021, continually growing its market share to ~45% of all Polygon DEX volume. Uniswap's TVL on Polygon is ~$140M, lagging behind current leaders QuickSwap (~$800M) and SushiSwap(~280M).



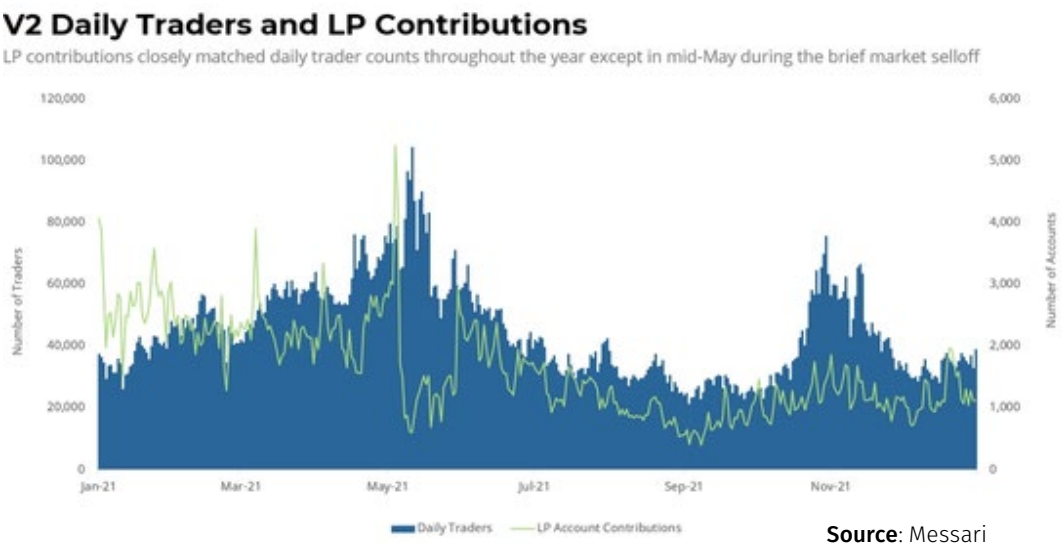
SOURCE: Dune Analytics @derekw23



SOURCE: DeFiLlama

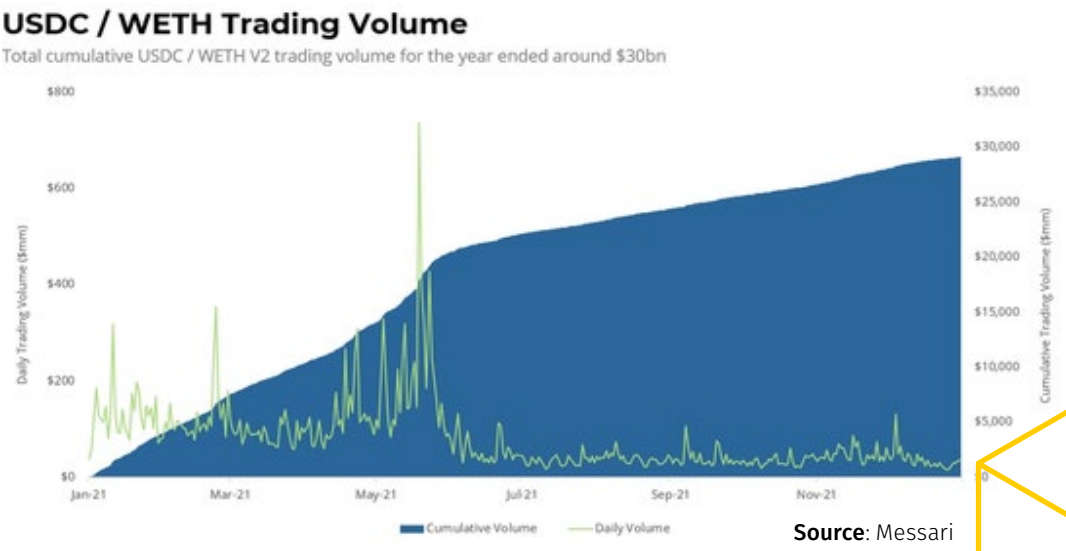
Uniswap v2

As previously discussed, Uniswap originally launched in 2017 but has since released updated versions of the protocol. Uniswap v1 set the foundation of on-chain token swaps and decentralized liquidity pools that rewarded users for providing liquidity of underlying token pairs, such as DAI to ETH or DAI to USDC. Uniswap v2 introduced ERC-20-to-ERC-20 token swaps, a price oracle, flash swapping (allowing you to withdraw any ERC-20 token at no upfront cost), and support of non-standard ERC-20 tokens. Uniswap v3 (discussed later) introduced concentrated liquidity, multiple fee tiers (allows liquidity pools to be appropriately paid for taking on risk), and 4,000x capital efficiency (allowing earning higher returns on equity).



Source: Messari

The number of daily traders on Uniswap v2 in 2021 mostly ranged between 30,000 and 60,000, peaking in May 2021 at ~100,000. After the H1 peak, the number of daily traders declined substantially and mostly stayed there. This can be attributed to the release of v3 as well as the rise in alt-L1 DeFi thanks to Ethereum's rising gas fees. However, in 2021, the USDC/WETH pool, the most active v2 pool, facilitated nearly $30B worth of trades exclusively through v2.



Source: Messari

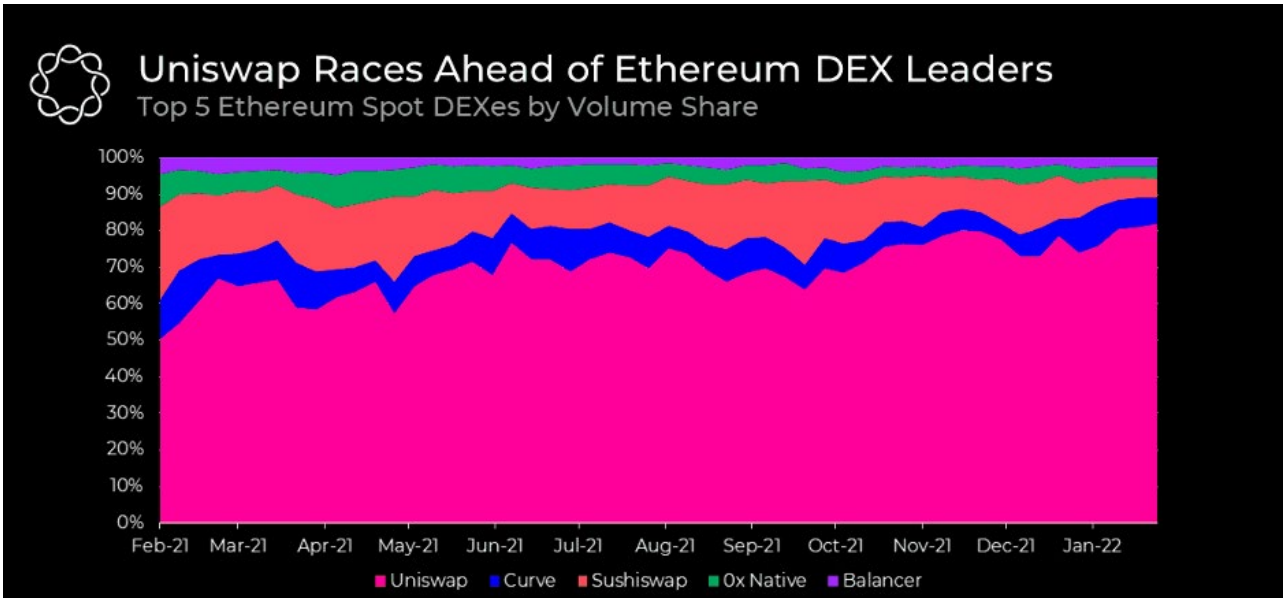
Uniswap V3

There are two significant differences that v3 introduces in its design: concentrated liquidity, and multiple fee tiers. On Uniswap v2, users provide liquidity evenly along all of its markets' price curves. This is somewhat inefficient since there doesn't need to be equal amounts of liquidity for ETH at $1 vs. $3,500.

The concentrated liquidity gives individual liquidity pools control over what price range to which their funds are allocated. This allows for individual positions to be fused together into a single pool to make one combined curve for traders to trade against. Liquidity pools can focus capital within a custom price range so pools can provide larger amounts of liquidity at desired prices. This mechanism allows for individualized price curves and increases the customization of liquidity positions. In doing so, traders can trade against the combined liquidity pool of all curves with no gas increase per liquidity provider. Trading fees are then collected and dispersed at a given range appropriately.

Multiple fee tiers allow for liquidity pools to be compensated for taking risks. There are three fee tiers per pair: 0.05%, 0.30%, and 1%. These options make sure that liquidity pools are customized to their margins according to certain pair volatility of the tokens. This may lead to some liquidity fragmentation, but the Uniswap team believes that most pairs will calibrate to an appropriate fee tier. Uniswap expects liquidity pools to take more risk on non-correlated pairs, like ETH/DAI, and to take on less risk in correlated pairs, like USDC/DAI. Correlated pairs are expected to sit at around 0.05% fees and 0.30% fees for pairs like ETH/DAI. 1% swap fees will be more appropriate for riskier pairs.

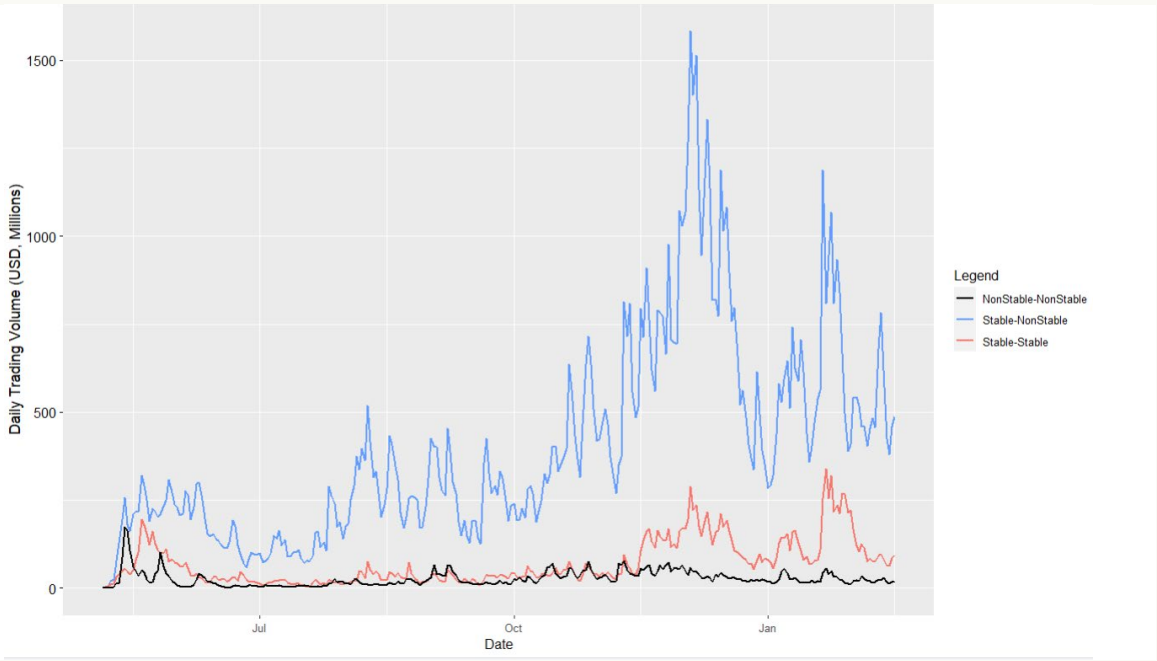
Since the introduction of the v3 and the fee tiers, Uniswap has seen its market share in the DEX space steadily increase by 30%+ in just the last year alone. The 0.05% fee in the stablecoin market has especially taken some volume away from Curve and, now, Uniswap has nearly ~80% of the total volume share across DEXs.



Source: Delphi Digital

Uniswap v3 whales

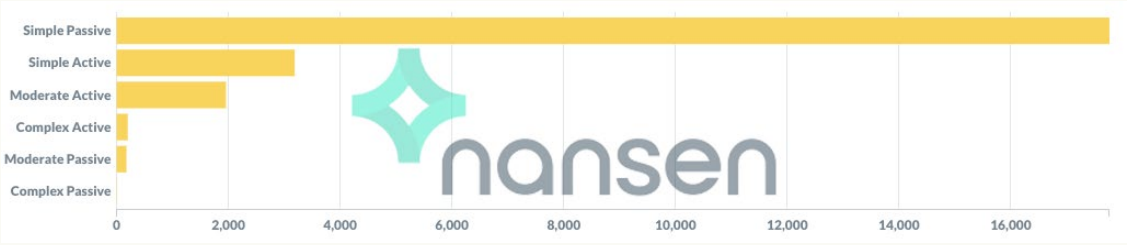
Despite v3 stealing some of Curve's stablecoin to stablecoin volume thanks to its new 0.05% fee pools, as the chart demonstrates, the majority of whales still come to Uniswap for stablecoin to non-stablecoin transactions. 75%+ of the whale volume transacted on v3 is stablecoin to non-stablecoin.



Whale Trading Volume by Coin Type in Transactions **Contributor**: Vladimir Belik

With the introduction of concentrated liquidity in Uniswap v3, providing liquidity comes with much more optionality and, in theory, has become a much more active process than passive. This is because LPs set a range for their position and have to monitor price action and make adjustments should the market price fall outside of their range. While this is great from a capital efficiency standpoint, it has also significantly increased the sophistication and technical expertise required to successfully generate yield from an LP position. Users' positions now require constant oversight and persistent tracking of market prices.

Nansen conducted a study on Uniswap LPs finding that there are ~23,000 unique addresses who own/had owned positions on Uniswap v3. ~75% of that total are considered passive LPs, meaning they own just one LP position and have never modified it.



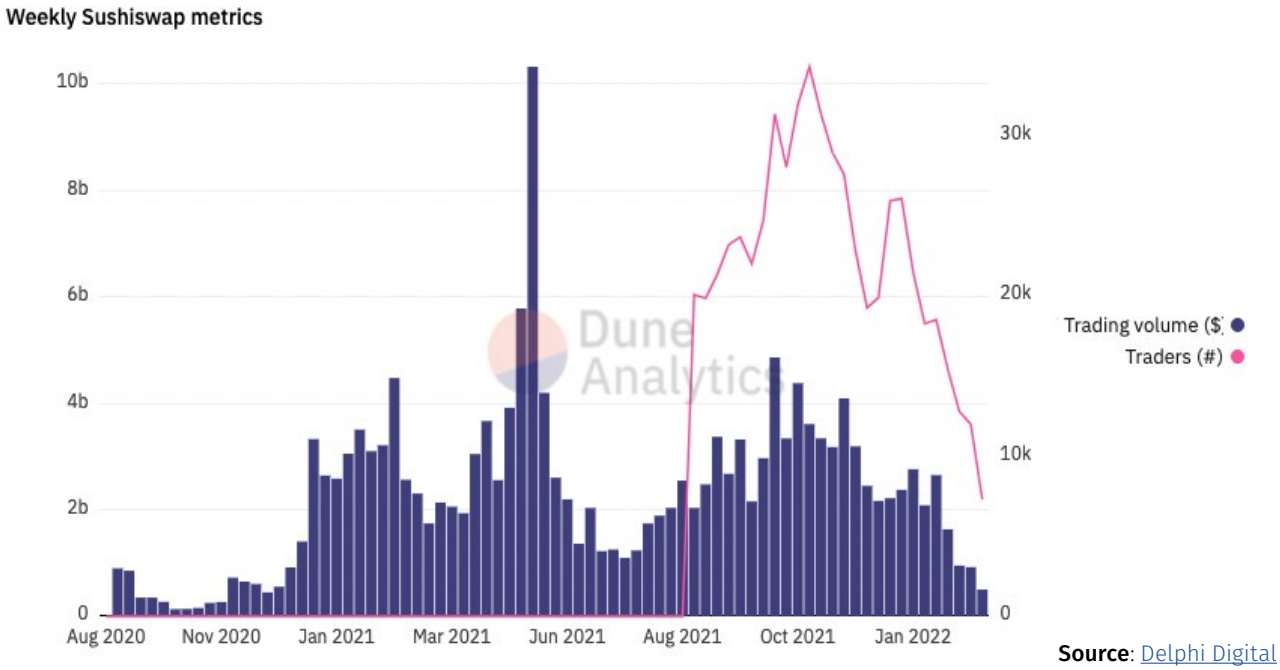
Uniswap tools

- Alpha Degen: Analytics and launch information for Uniswap liquidity pools.
- Unistats: Open-source utility that fetches historical fee accrual for any Uniswap exchange.
- Uniswap Vision: Community-made TradingView integration for Uniswap.
- Uniswap Info: Explorer with transaction and liquidity pool stats for Uniswap.

b. SushiSwap

SushiSwap is a Uniswap 2020 fork by the (at the time) anonymous developer Chef Nomi. SushiSwap launched via a controversial "vampire attack" in which it copied/forked Uniswap's code, added a token to pay LPs more than on Uniswap, and pilfered many of their users and funds. Chef Nomi found himself personally in hot water when he, shortly after launching the project and garnering millions, withdrew his liquidity. Ultimately, after fervent community backlash, Nomi returned the funds and turned over control of the project to a new team.

Today, SushiSwap remains an Ethereum DeFi staple that continues to update and innovate its DEX product. It's consistently a top-10 DeFi product in terms of TVL, is approaching 1M total users, and regularly facilitates $1B+ in weekly volumes. But, as seen by the third image below, whale transactions over $500,000 make up a very small portion of its volume distribution.

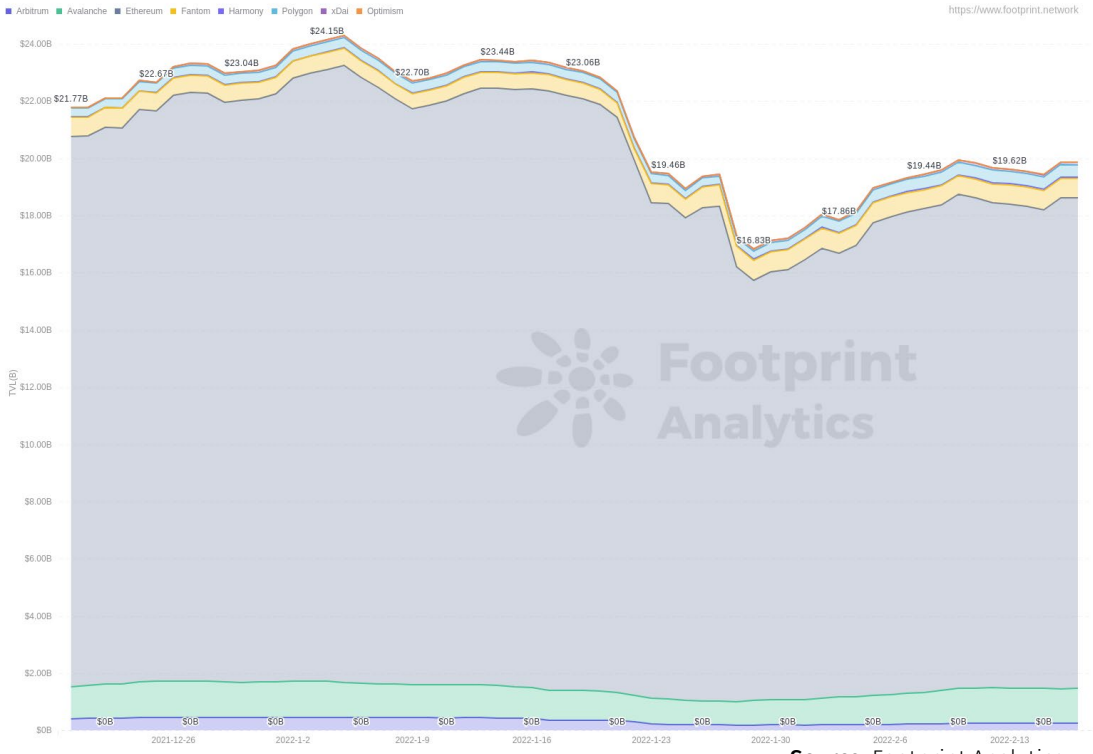


Source: Delphi Digital

c. Curve

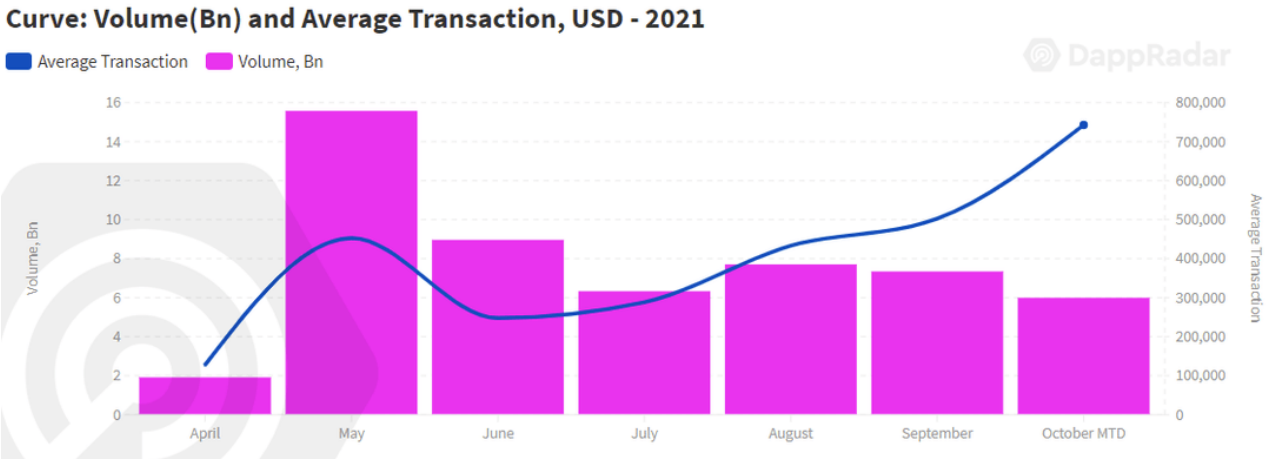
Curve is another AMM DEX that's optimized for trading crypto assets with similar values, e.g. stablecoins, ETH-WETH, etc. Despite launching in late 2020 and limiting itself to only like-valued assets, Curve is a top-3 Ethereum DeFi dApp and also exists on six other blockchains including Polygon, Avalanche, and Fantom. However, as illustrated in the chart below, TVL on Ethereum makes up the overwhelming majority of total TVL across all chains. As of Q1 2022, Curve's TVL is ~$11B, placing it behind only MakerDAO on Ethereum.

One aspect that sets Curve apart from other DEXs is that it provides liquidity pools with up to three assets in a single pool. The most popular pools are ETH/stETH, DAI/USDC/USDT, and renBTC/WBTC.



Interestingly, Curve has also become the whale trading destination. Beginning in April 2021, the average transaction size on the Ethereum Curve DEX has steadily increased from ~$125,000 to ~$500,000 today. Curve regularly does billions in weekly volume despite only a couple hundred total traders in a week (compared to tens of thousands for SushiSwap and Uniswap).

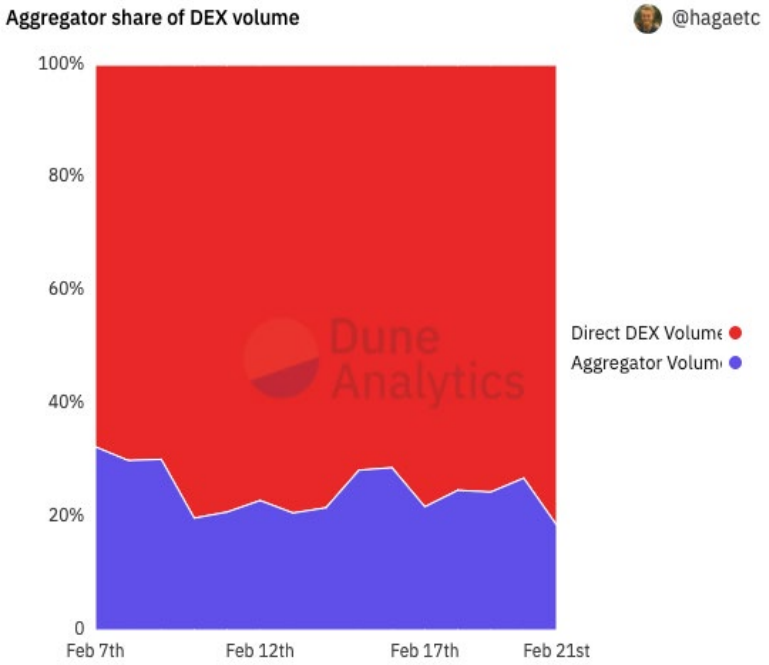
Source: Footprint Analytics



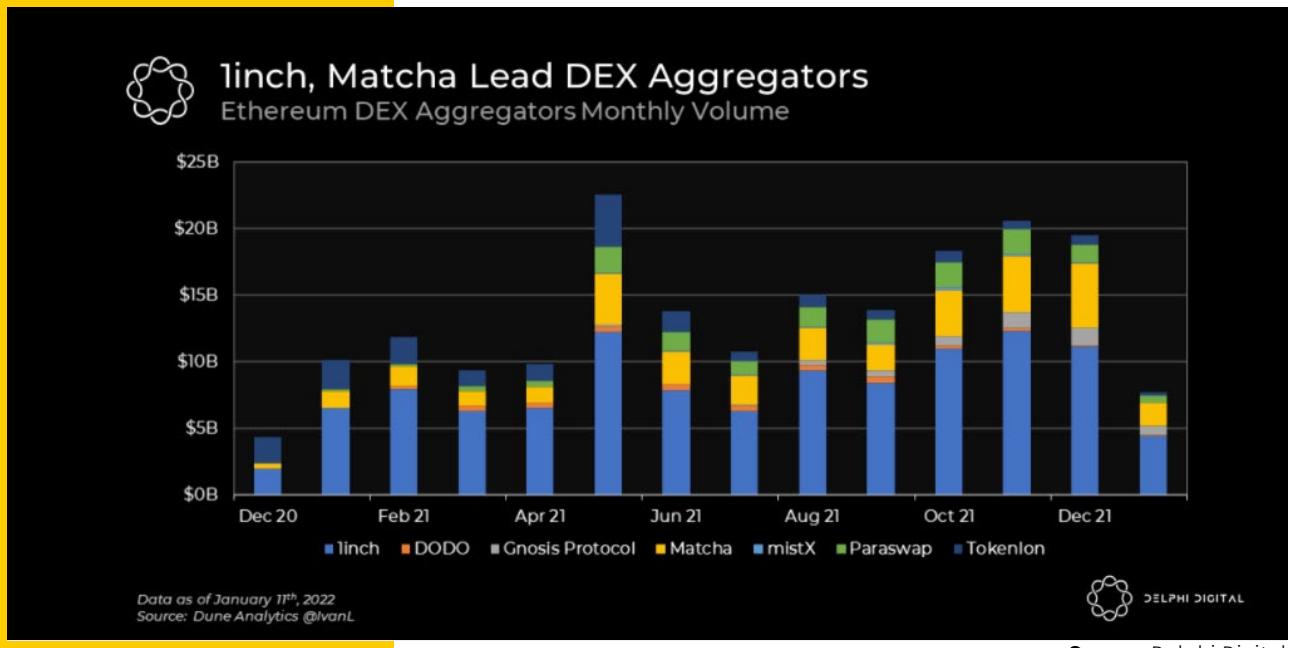
4. Aggregators

DEX aggregators serve as a layer atop DEXs that source liquidity from many different DEXs to provide their users the best trade price. In many cases, aggregators can reduce slippage and offer lower swap fees for a lower total cost of execution. Some aggregators—like 1inch (discussed below)—go beyond simple routing by also bundling transactions. This helps reduce the chances of failed transactions.

Despite the seemingly no-brainer advantage of using an aggregator, only ~14% of the DEX volume stemmed from aggregators in 2021. In February 2022, this number is closer to ~20-25%. However, aggregators, in general, saw their overall volumes trend up in Q4 2021, with 1inch and Matcha executing the majority of the volume.

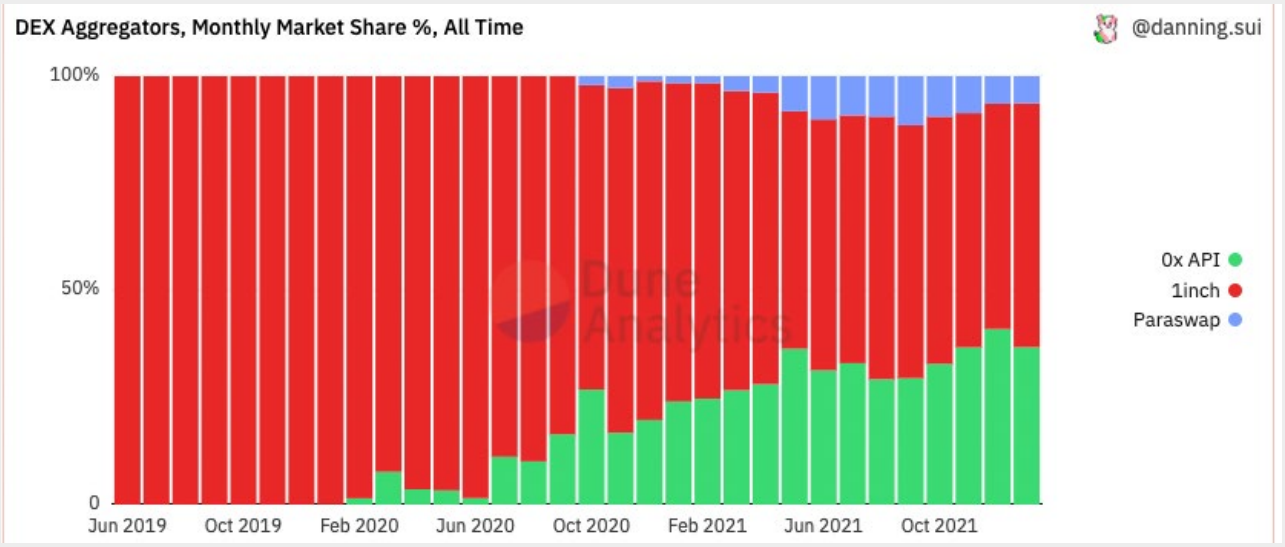


Source: Dune Analytics

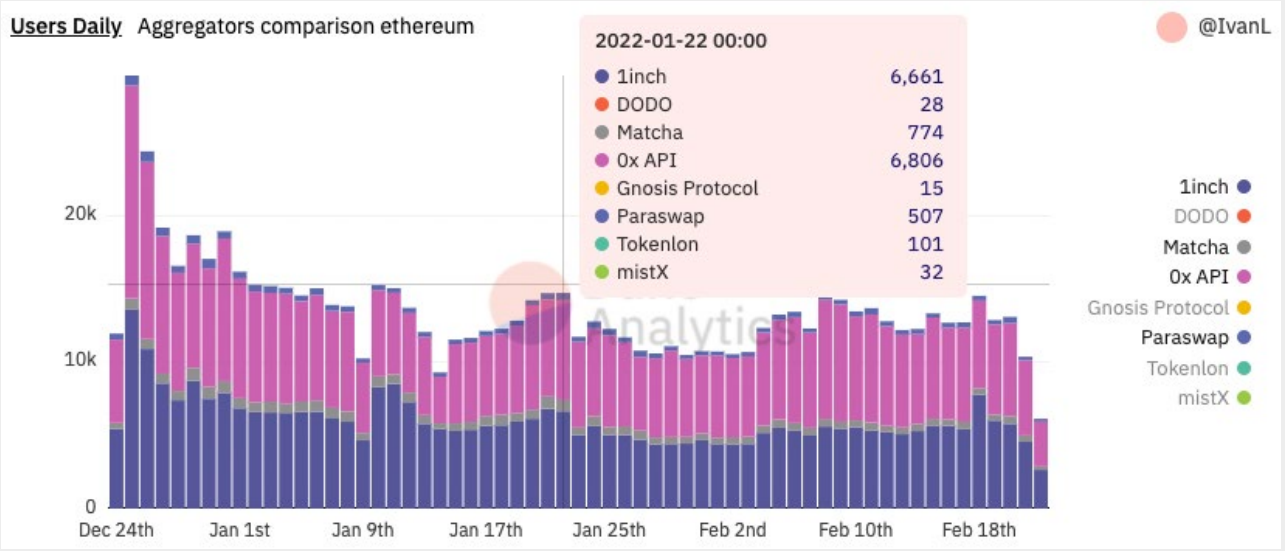


Source: Delphi Digital

1inch is the leading DEX aggregator with a market share of ~62%, followed by 0x/Matcha at 33%. However, their daily user count is much closer with both having ~6,500 daily users in February 2022. Ultimately, the aggregator space will most likely converge on one or two names that provide the best fees, liquidity, and trading pairs. As the crypto markets mature and more DEXs and dApps integrate with aggregators, the inefficiencies (arbitrage opportunities) in the market will be driven to near zero. As the cost savings offered by distinct aggregators begin to converge, aggregators will begin to compete on UI/UX, speed, and the number of integrations.



Source: Dune Analytics

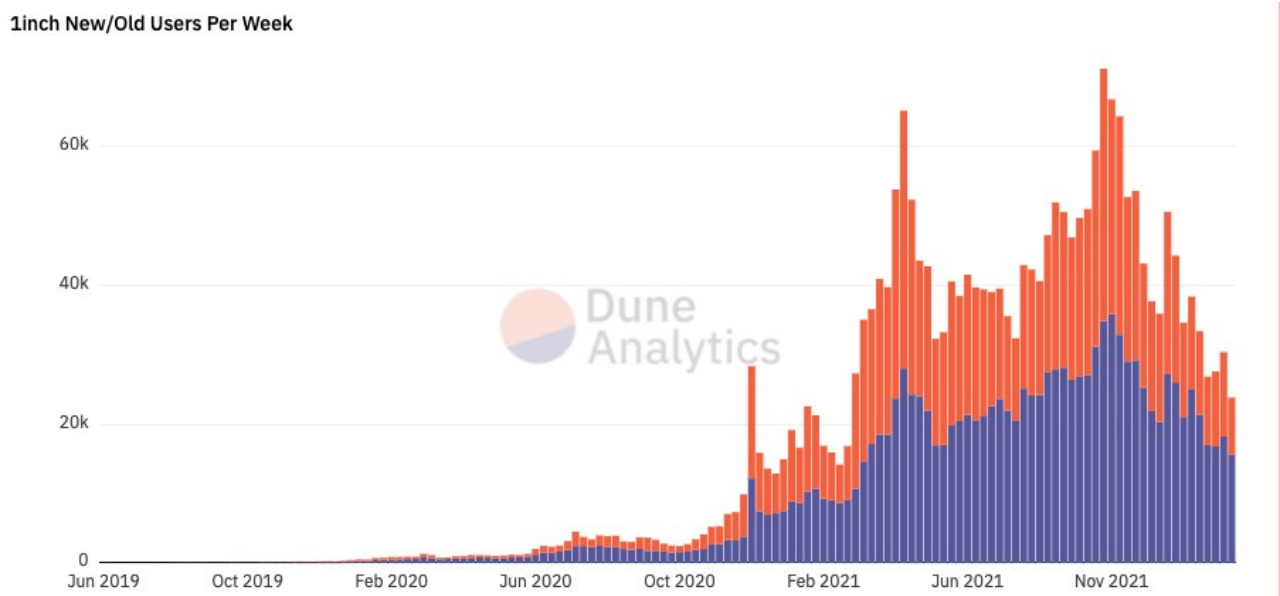


Source: Dune Analytics

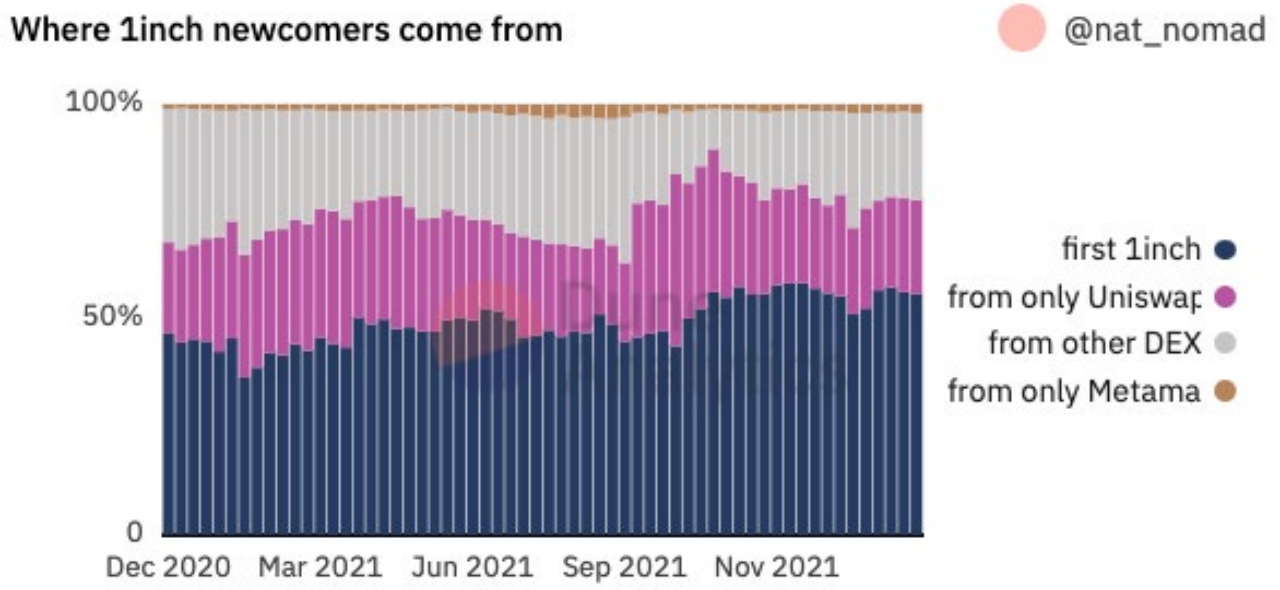
a. 1inch

1inch sources liquidity from 188 sources across 7 blockchains in order to provide the lowest cost trade possible. Aggregators like 1inch allow arbitrage traders to easily find pricing differences between multiple exchanges and exploit them while also reducing mispriced trading pairs across the ecosystem.

Currently, 1inch is the dominant aggregator on Ethereum mainnet with ~$140B of total volume, ~30,000-50,000 users per week (mostly either directly from 1inch or from Uniswap), and nearly 15% of all DEX volume.



Source: Dune Analytics



Source: Dune Analytics

Source: Dune Analytics

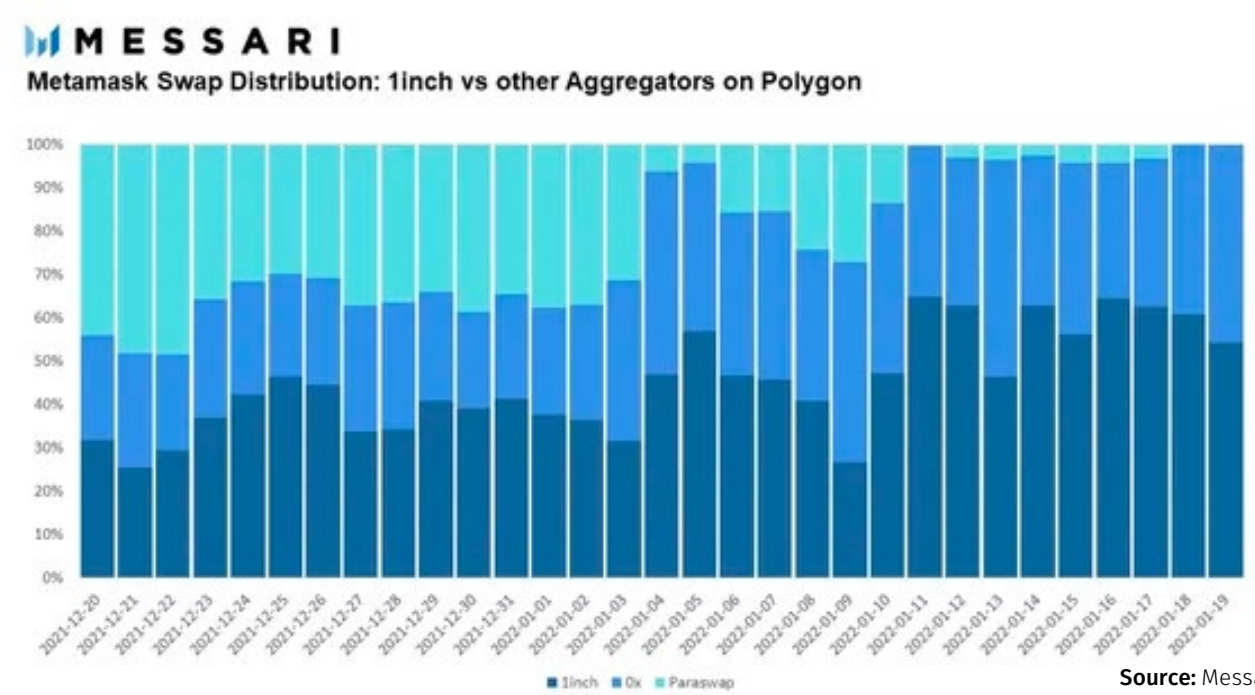
1inch supports ~2,500 different trading pairs, 16 different wallets, and a mobile app. It's also live on BNB chain, Polygon, and various Ethereum rollup solutions.

MESSARI

1inch Network volumes, trades, users and liquidity sources across chains

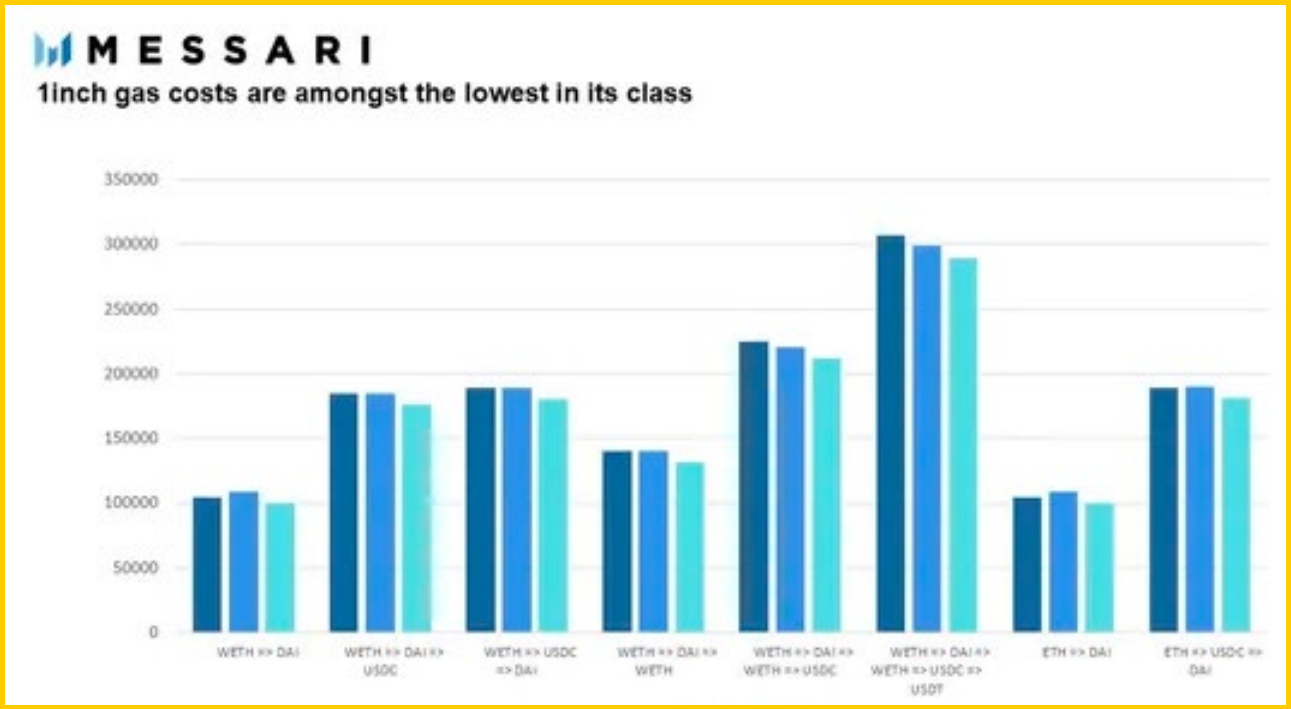
Chain	Volumes	Trades	Monthly active users	Liquidity Sources
Ethereum (including Rollups)	$131.5B+	5M+	109K	81
BSC	$16.3B+	3.9M+	87K	44
Polygon	$27B+	4.4M+	31K	29

Source: Messari



Source: Messari

Due to Pathfinder's dynamic order filling mechanism, it also helps reduce the likelihood a large transaction fails due to inadequate liquidity. Once a transaction is split across multiple liquidity sources, Pathfinder enables the ability to switch or cancel any liquidity source that is unfavorable compared to the rest. This means only the portions sourced from the most economically-favorable liquidity pools are used. All of these options can easily be toggled from the swap interface.



Source: Messari

b. Matcha

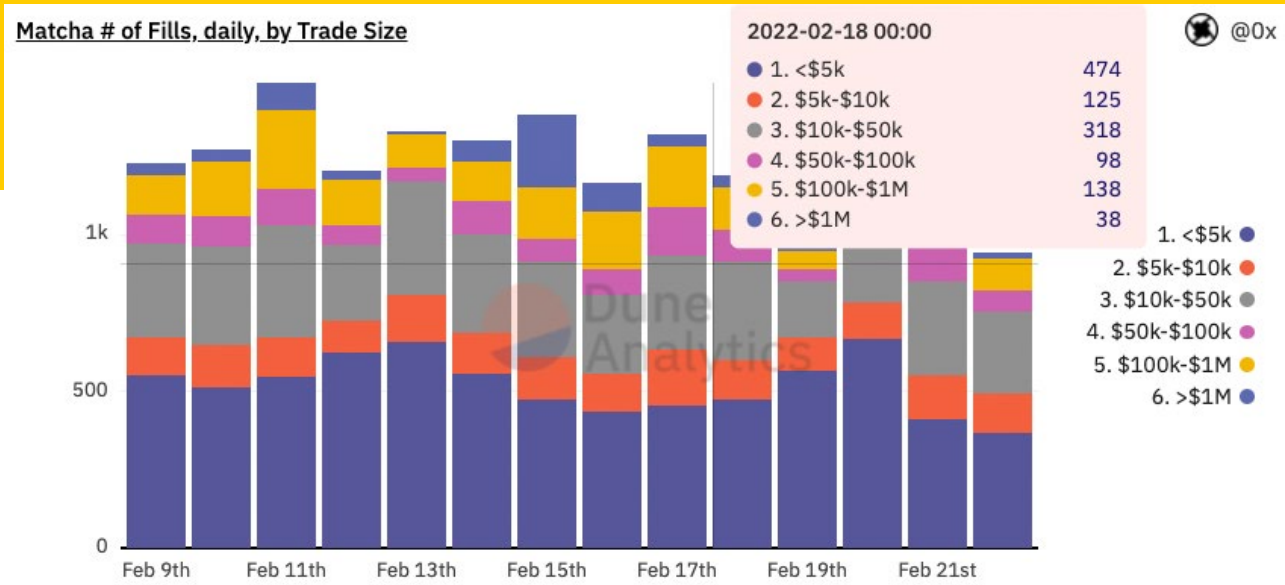
Matcha is an Ethereum DEX aggregator developed by 0x Labs in 2020 that, exactly like 1inch, aims to source the best price for crypto trades across many liquidity sources. Matcha uses the 0x API to source liquidity from 50+ DEXs and, similar to 1inch, will split orders across multiple DEXs in order to fill the trade at the best price. Matcha is the number two aggregator behind 1inch by many metrics and currently is live on Ethereum, Optimism, BNB, and Polygon.

Protocol	Liquidity	
	Pool Features	Innovative approaches
1inch	1.Polymerisation 2.Depth: Connected Source 122 protocol 3.Three options available: maximum profit, minimum GAS fee, OTC zero slippage trading	1.Positive Slippage Income 2.Flash and limit orders available 3.Gas token Chi, which reduces Gas fees and can reduce transaction costs by up to 42% 4.Partial sale possible
Matcha	1.Depth: 50 protocols 2.Support for order book pending orders, blockchains asset exchange	0x API beats the competition 72% of the time, offering better prices than 1inch, Dex Ag, Paraswap and Uniswap

Source: Messari

Unlike on 1inch, Matcha integrated the fiat on-ramp company, MoonPay, meaning users can buy cryptocurrencies with fiat on Matcha.

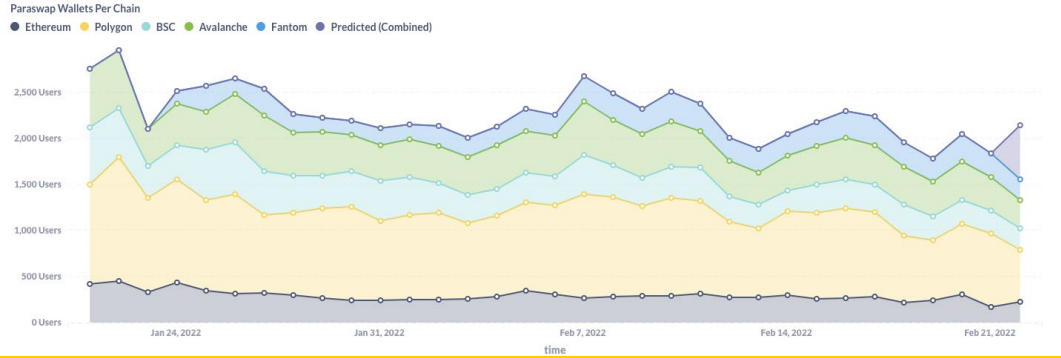
Matcha specifically—not the 0x API—averages ~600-1,000 daily users. However, while only a small fraction of the trades would be considered "whale trades" (over $500,000), it still boasts a respectable average trade size of ~$75,000 compared to ~$10,000-$20,000 for DEXs like Uniswap and SushiSwap.



Source: Dune Analytics

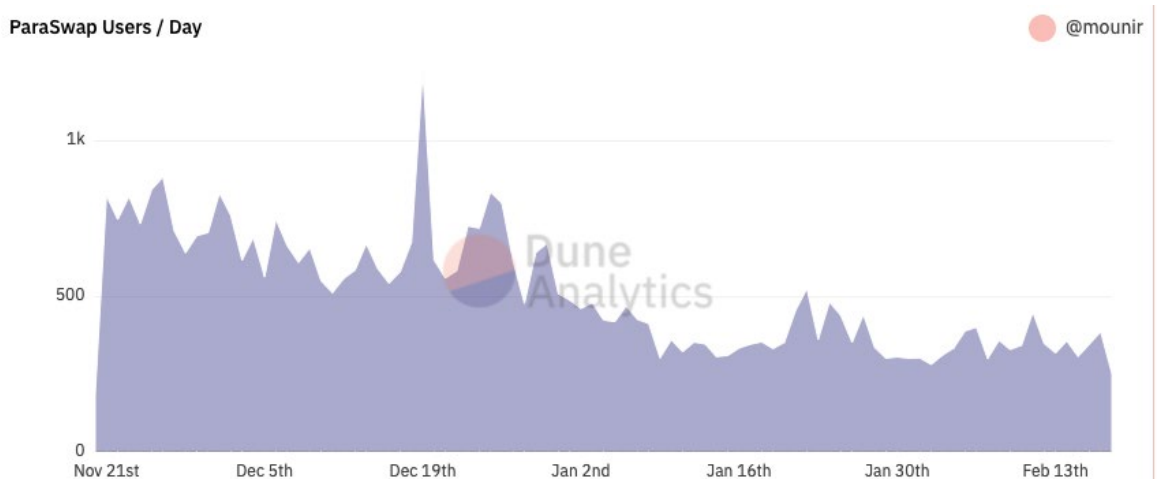
c. ParaSwap

ParaSwap is one more DEX aggregator on Ethereum, Polygon, BNB, Fantom, and Avalanche. ParaSwap sources liquidity from 75+ DEXs and liquidity pools as well as their own liquidity pool, ParaSwapPool, for ~150 different crypto trading pairs. Surprisingly, most ParaSwap users can be found on Polygon, not mainnet Ethereum.

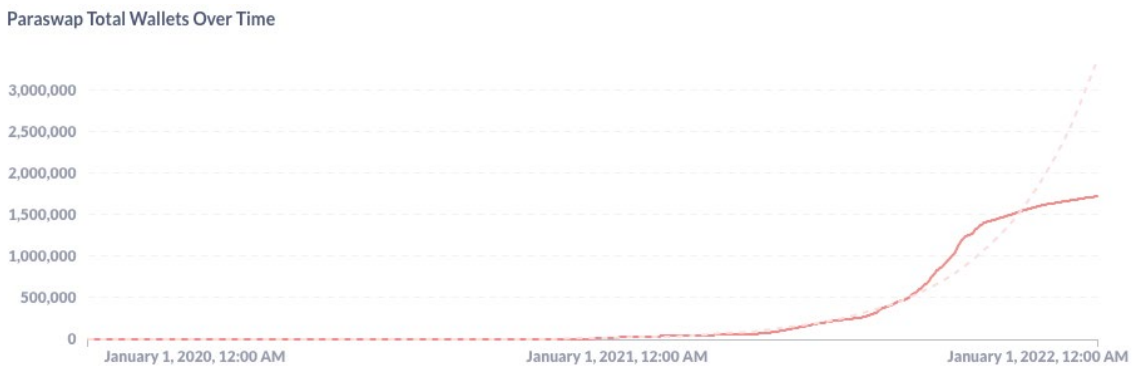


Source: ParaSwap Analytics

Over the course of 2021, ParaSwap had ~1.37M total users, but the number of daily users has been declining since Q4. This can be partly attributed to the rollout of ParaSwap on Polygon and other alt-L1 blockchains and the downturn in crypto prices. As the second chart illustrates, total ParaSwap wallets continue to increase, albeit at a slower rate.



Source: Dune Analytics



Source: ParaSwap Analytics

IV. Integral

As previously discussed, although whale trades make up a small percentage of the overall DEX activity, they account for a significant portion of today's DeFi volume. As the crypto markets over the last ~two years have experienced increased adoption, well-funded professional traders, VC and hedge funds, and institutional investors have begun trading in DeFi. This is supported by not only the price appreciation in some assets but also the increased on-chain activity of high-value trades. Over the course of 2021, whale activity shifted away from mostly using Curve and out to new protocols. In Q2 2021, much of the whale activity was on Curve, but by Q4 2021, Curve dominance fell while Uniswap and aggregators began to command whale activity.

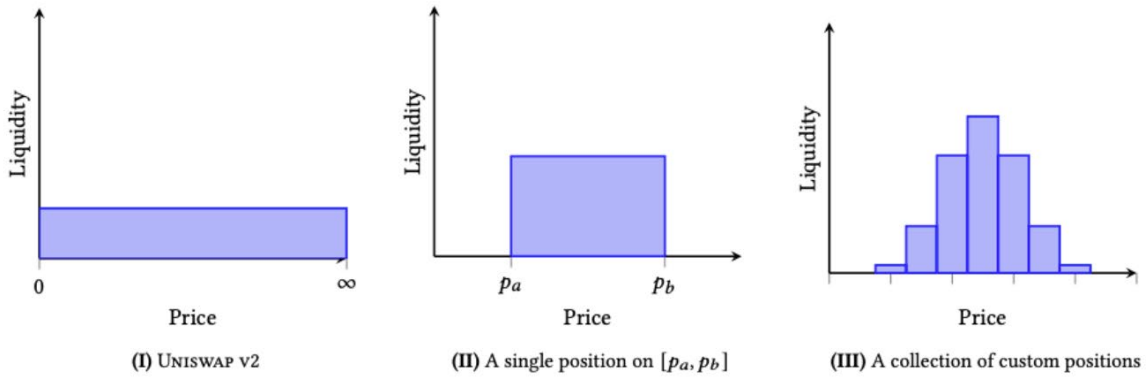
Part of the whale migration was enabled in March 2021 when Integral launched its Ethereum DEX/DeFi solution, Integral FIVE, specifically designed to execute large DeFi trades at the lowest cost. In previous sections, we covered CFMMs, AMMs, and aggregators, but none of these trading solutions were tailor-made for a specific client in mind. In fact, as discussed, CFMMs suffer tremendous slippage on illiquid assets and/or large trades thanks to its constraints by the x * y= k formula. Integral FIVE caters solely to whale transactions (over $500,000), aiming to beat the trade execution costs and services typically only offered by centralized exchanges and OTC desks, but in a DeFi-native way.

Integral's approach to filling whale orders differs from the traditional AMM model. With an AMM, trades are constrained by the available deposits in the liquidity pool and the CFMM formula. While this approach has inarguably been successful to accommodate most traders, this siloed liquidity pool has serious limitations. It's for this reason that aggregators were created. Aggregators are no longer limited to the liquidity in one protocol and can now access hundreds of separate liquidity pools.

Integral continues to push the evolution of DEX trading in two ways: “mirroring” liquidity, and implementing a time-weighted-average-price (TWAP) execution strategy.

Integral approaches trading by separating the traditional relationship between market depth and available capital to execute the trade by “mirroring” the liquidity from other exchanges. This means Integral’s market depth is no longer confined to a single liquidity pool, but to what other CEXs and DEXs have available. By “mirroring” others, Integral liquidity pools require only a small fraction of others.

How is this possible? Leverage. Integral utilizes a leveraged AMM model consisting of concentrated liquidity, a method popularized by Uniswap v3. Concentrated liquidity is when capital is condensed only in certain portions along the price curve. This enables a (relatively) small, concentrated liquidity pool to execute whale-sized trades at a lower cost than was previously possible. Combining a price oracle to “mirror” larger exchange’s liquidity and their leveraged AMM, Integral traders can take advantage of this “implied liquidity,” executing their trades with minimal slippage and competitive execution prices.



Example Liquidity Distribution **Source:** UniSwap v3 Whitepaper

However, as all crypto traders know, leverage can be a double-edged sword. While during the good times, this leveraged model helps facilitate trades at otherwise unachievably low costs. If the balance of assets in the Integral pool sways too far to one side in a tail-risk event, the leveraged system falls apart and trades cannot be executed.

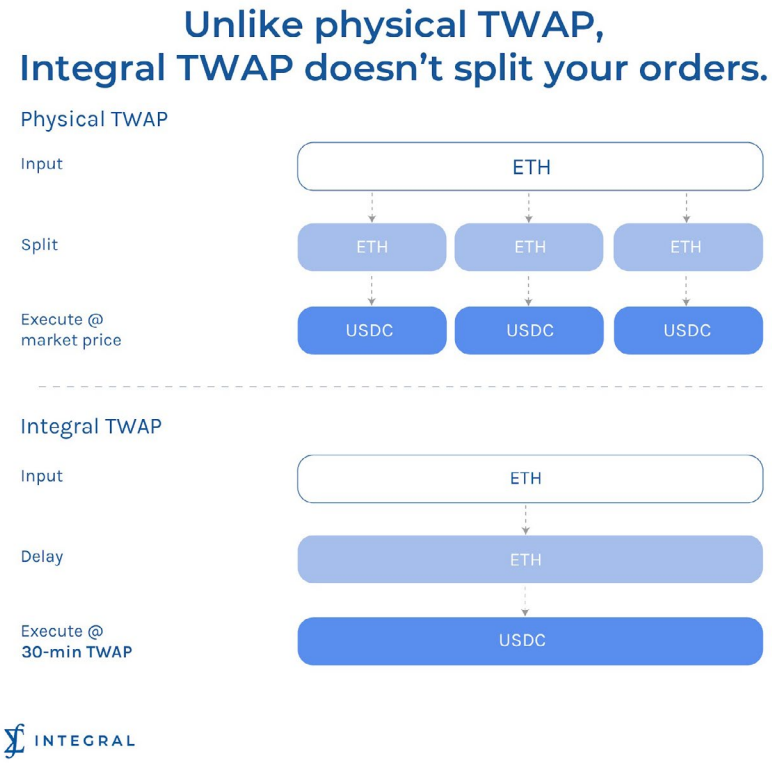
Beyond the novel leveraged AMM model, Integral also utilizes a TWAP strategy in which a large trade is executed at an average price across a certain time interval. TWAP is a popular strategy in traditional finance where a large trade order is split into many small orders and executed over a period of time to minimize the price impact. Executing many small orders over time rather than one large order all at once allows liquidity to recover for a better price.

Integral’s approach uses Uniswap’s five-minute TWAP oracle to help smooth out any sudden bouts of volatility and to mitigate any impermanent loss (IL) to which the liquidity providers (LPs) may be subject. With traditional blockchain trades, arbitrageurs can see your trade before it’s confirmed and may choose to front-run you if the opportunity presents itself. However, with the five-minute TWAP strategy, arbitrageurs cannot capitalize on your trade in one move. They would be forced to gamble on the asset price direction over the next five minutes, correctly guess, and then execute their strategy. This obviously makes the job of an arbitrageur more difficult, discouraging their attempts..

SIZE

Despite their success in executing whale trades at the best prices with Integral FIVE, the team at Integral plans to launch their second product, Integral SIZE, in March 2022. Where FIVE enabled whales to trade a select few, highly liquid tokens like ETH, USDC, and wBTC, SIZE is built for less liquid tokens and trades are executed via a 30-minute TWAP strategy with near-zero price impact.

Crypto whales will enjoy SIZE because it allows them to trade more long-tail, illiquid assets at scale without having to concern themselves with order splitting, slippage, sandwich attacks, etc. Previous attempts at on-chain TWAP and order splitting fell victim to high Ethereum gas fees. The fees paid by splitting up one order into multiple orders negated any savings gained on price impact. Integral's approach does not require splitting up the trade.

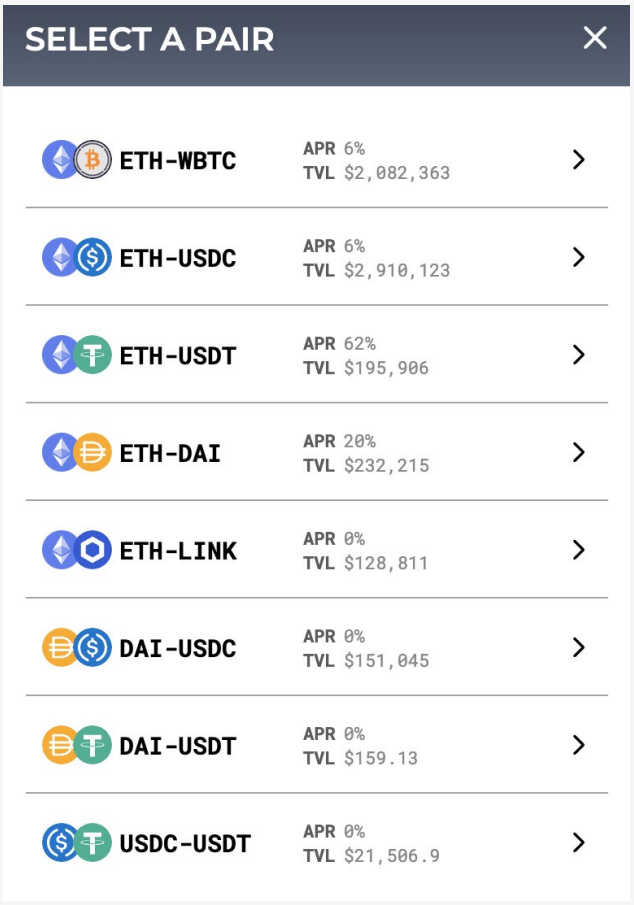


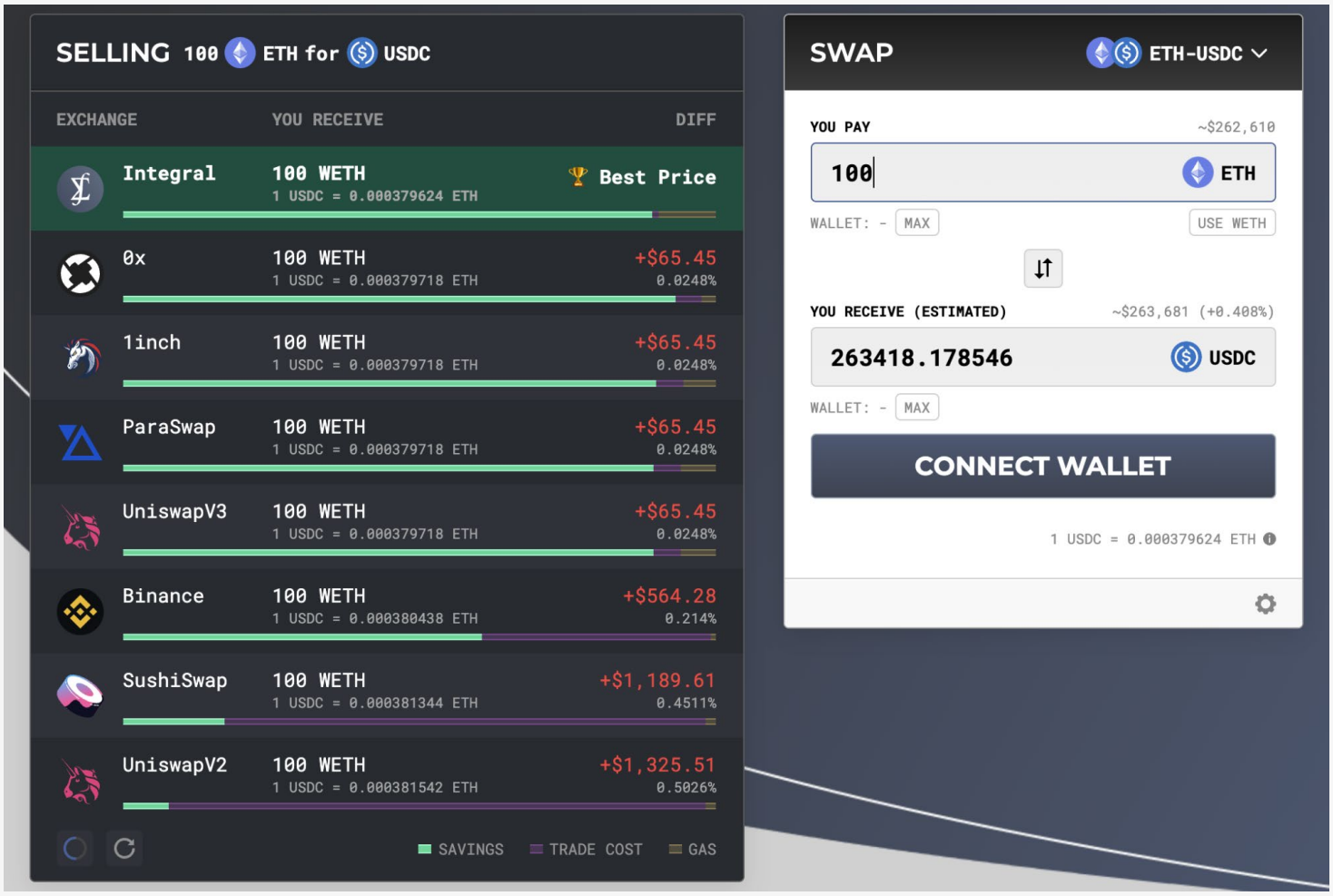
Negligible price impact is possible because Integral's SIZE design removed the typical price curve (and slippage) associated with AMMs as well as created a dynamic TWAP approach (i.e. variable TWAP durations) based on the token's liquidity. However, at the initial launch in March 2022, only the 30-min TWAP duration will be live.

When a whale places a large trade on SIZE, the order sits for 30 minutes while the protocol continuously collects price information from the Uniswap v2 oracle. After 30 minutes, SIZE executes the entire order at the average price over those 30 minutes.

Integral currently does not service U.S. citizens, providing a warning upon immediately entering the dApp. However, for non-U.S. citizens, Integral currently offers eight distinct trading pairs seen below. The ETH-WBTC and ETH-USDC pairs are the only pairs currently with more than $1M in TVL. This is substantially lower than competitors, but thanks to the ability to separate capital and market depth by "mirroring," Integral can still service whale traders.

Additionally, traders can input their desired trade and compare the costs across a wide range of DEXs, CEXs, and aggregators to know for sure whether they're getting the best price. Users can experiment with different trades sizes, noting which exchange provides the best prices for the trade size.





IV. About CRYPTOEQ

Mavericks & Thought-leaders

CryptoEQ™ is an independent cryptocurrency analysis and rating agency that provides unbiased, objective, and transparent research you can trust. We help people navigate their investment journey and trading decisions.

Spencer Randall
Principal & Co-Founder

- 8+ Years in System Architecture Implementation
- 5+ Years in Crypto Trading/ Investing
- Bachelor of Science in Engineering

Brooks Vaughan
Head of Innovation & Co-Founder

- 17+ Years in Product Design/ Management
- 8+ Years in Crypto Trading/ Investing
- Bachelor of Industrial Design

Michael Thoma
Lead Analyst & Co-Founder

- 11+ Years in Technical Research/Analysis
- 5+ Years in Crypto Trading/ Investing
- Master of Science in Geology

Company Statistics

+85%
Algorithm Win Rate

+175%
Average CORE Rating ROI

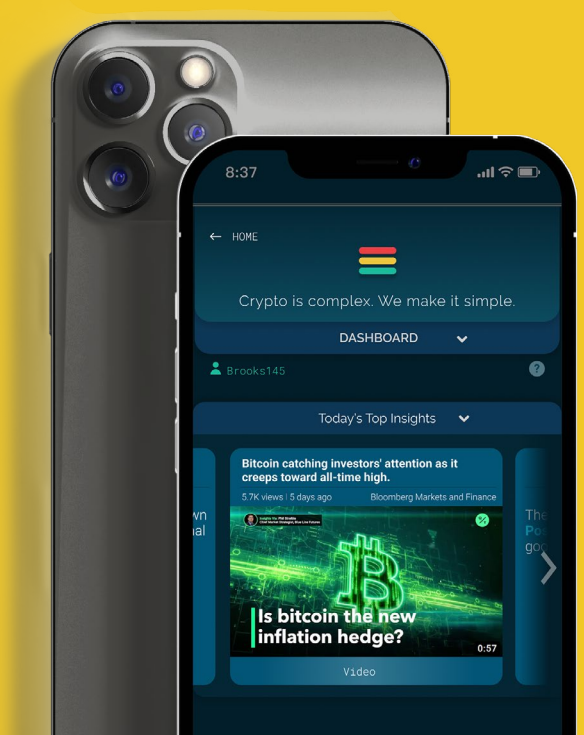
+300%
Q/Q Revenue Growth

+50,000
Total Active Users

We help you gain the market insights you need to grow your cryptocurrency portfolio. Our team's supportive and interactive approach helps you refine your crypto investing and trading strategies. .

Our objective is to provide trusted information and analysis for quickly evolving blockchain technologies and make navigating cryptocurrency less intimidating for new investors. Our research and analysis encourage you to make smart decisions for both long term investments and short term trading strategies.

Our proprietary algorithms, exhaustive research and helpful community are key to our success as we follow strict principles and ethics to deliver honest information. We actively seek to identify scams and low quality nefarious projects relieving you of that burden.



Platform Highlights

v1 launched in 2019

» Signal over noise.

» Direction over data.

» Quality over quantity.

» Usability over complexity.

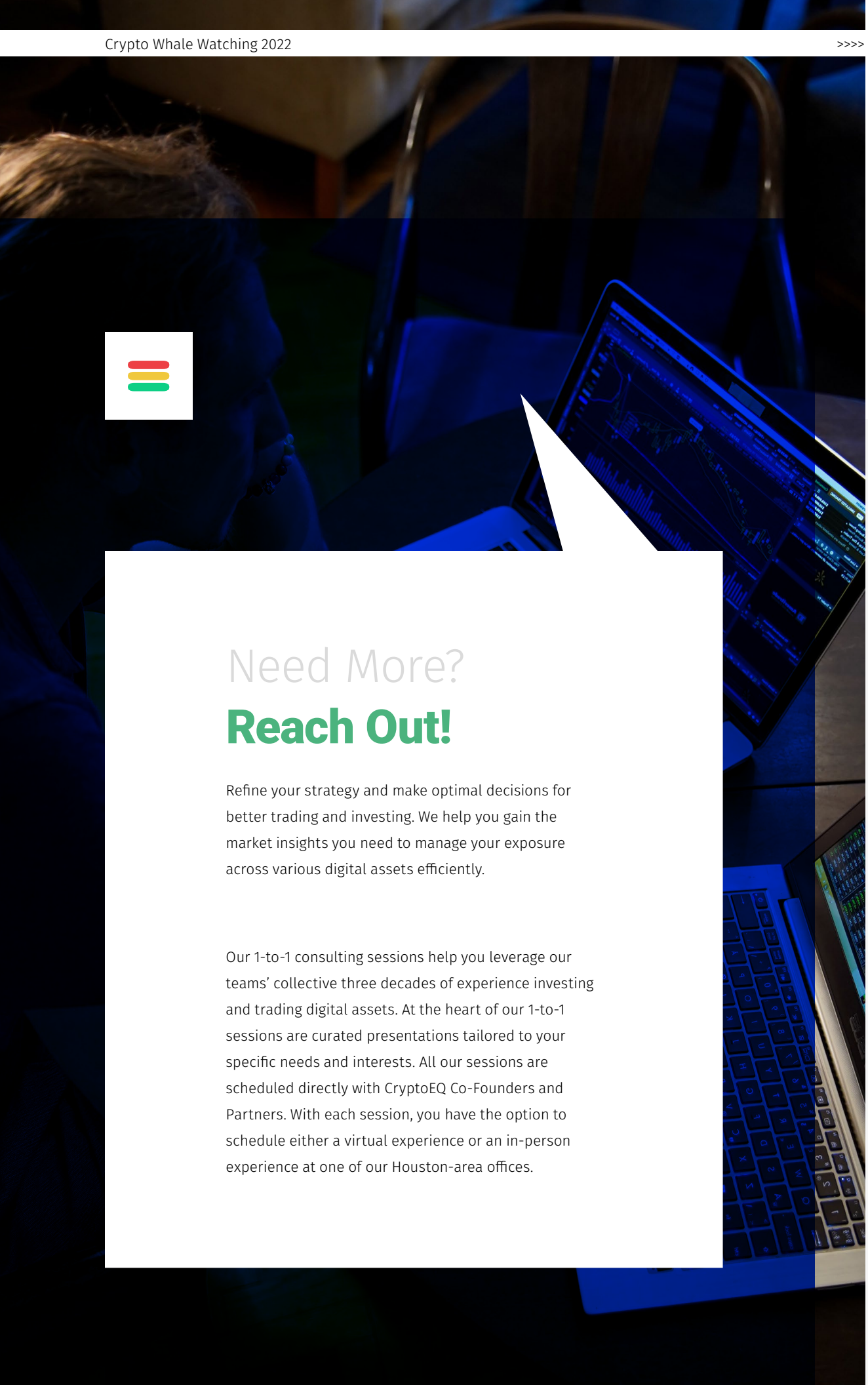
XI. Final Words

Our Story

Like most disruptive tech startups, Crypto**EQ** started as a small group of like-minded individuals.

Each of the co-founders—Spencer Randall, Michael Thoma and Brooks Vaughan—was a cryptocurrency investor and trader before the crypto explosion of 2017. They met one another attending local crypto conferences and immediately began to admire their different perspectives and maverick approach to the assets available on the market. After some time getting to see each other in action, they each noticed a glaring hole in the crypto-asset market —truly unbiased, thorough insights and research.

We launched CryptoEQ v1 in July 2019 and acquired approximately 3,000 new users. Meeting our goal to be constantly launching, CryptoEQ v2 debuted in January 2020 with new features and an all-new sales funnel. Our third iteration, v3, launched in June 2020 with average quarterly revenue growth of over 300%. We also blew through our 5,000-user milestone. Recently, our v5 launch incorporated a new and intuitive user interface and exclusive one-on-one consulting sessions, pushing us past 50,000 users. And currently, we‘re tracking to exceed our next goal of 75,000 users within Q1 of 2022.



Need More?

Reach Out!

Refine your strategy and make optimal decisions for better trading and investing. We help you gain the market insights you need to manage your exposure across various digital assets efficiently.

Our 1-to-1 consulting sessions help you leverage our teams' collective three decades of experience investing and trading digital assets. At the heart of our 1-to-1 sessions are curated presentations tailored to your specific needs and interests. All our sessions are scheduled directly with CryptoEQ Co-Founders and Partners. With each session, you have the option to schedule either a virtual experience or an in-person experience at one of our Houston-area offices.

INTEGRAL

CRYPTOEQ

Crypto Whale Watching 2022

CryptoEQ CORE+ Series.

The Tools and Landscape Used by Cryptocurrency's Biggest Players