



Nasdaq Crypto™ Index (NCI™)

Constituents

What is the Nasdaq Crypto™ Index (NCI™)?

Launched in February 2021, NCI™ is Nasdaq's first Digital Asset Index offering¹. The index measures the performance of a basket of the most actively traded digital assets and provides a benchmark for institutional investment in this new and emerging asset class. The Index is specifically designed to be dynamic in nature, broadly representative of the market, and readily trackable by investors.

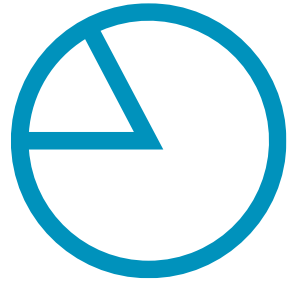
Index Overview:

- Tracks the performance of a diverse basket of USD-traded digital assets
- Applies liquidity, exchange and custody standards for asset eligibility²
- Rebalanced and reconstituted on a quarterly basis
- Free float market cap weighted
- Governed by a robust methodology and the Nasdaq Cryptocurrency Index Oversight Committee (CIOOC)

¹ In June 2021, Nasdaq launched additional digital asset indexes including the Nasdaq Bitcoin Reference Price™ Index (NQBTC™) and the Nasdaq Ether Reference Price™ Index (NQETH™). In April 2022, Nasdaq launched additional indexes including the Nasdaq Crypto Index Europe Reference Price™ Index (NCIE™) and the Nasdaq Bitcoin/Ethereum Index Reference Price™ Index (NQBEI™). The NQBEI™ became the Nasdaq Crypto US™ Index (NCIUS™) on June 3, 2024 with a standalone methodology that supports US regulation only.

² On June 3, 2024 the NCI™ methodology was updated to include asset eligibility criteria that supports multiple international, non-US jurisdictions

Index Design Principles



Representative

Provides a representative benchmark for investment into the asset class



Investible

Utilizes exhaustive selection criteria to include digital assets available at vetted core exchanges and custodians



Adaptable

Adjusts index composition at each reconstitution to ensure that it remains a flexible representation of the asset class as it evolves

What are the NCI™ Constituents?



NCI™ Weights and Components as of 9/30/2024¹

Component	Weight
Bitcoin (XBT)	73.21%
Ethereum (ETH)	16.53%
Solana (SOL)	5.32%
Ripple (XRP)	2.18%
Cardano (ADA)	1.04%
Chainlink (LINK)	0.44%
Avalanche (AVAX)	0.44%
Litecoin (LTC)	0.35%
Polygon (MATIC)	0.26%
Uniswap (UNI)	0.22%

 ¹ Source: <https://indexes.nasdaqomx.com/Index/Weighting/NCI> using end of day data on 9/30/2024

NCI Constituents

Bitcoin (BTC / XBT)

Consensus Proof of Work	Use Case Payments	Token Purpose Transaction fees Mining rewards
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Overview

Bitcoin is a peer-to-peer electronic payment system that utilizes open-source code and cryptographic proofs rather than relying on centralized intermediaries for transfers of value. Bitcoin is the world's first public blockchain, and relies on participants called "nodes" around the world to contribute to its operations by storing a ledger of historical activity, and processing transactions on the network ongoing. Bitcoin has a relatively simple design which was intended to facilitate payments and does not have native smart contract support. It has a large network of participants but faces slow transaction times and costs as compared to other public blockchains, and relies on layer 2 solutions to address these issues and expand functionality. The Lightning Network, which allows users to transact off-chain, is one example.

Significant Events

- Regulated trading options for Bitcoin have been evolving in the US:
 - SEC approval of multiple spot BTC products in January 2024

NCI Constituents

Ethereum (ETH)

Consensus Proof of Stake	Use Case Decentralized Applications	Token Purpose Transaction fees Staking rewards
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Overview

Ethereum is a public blockchain with a native token called Ether (ETH), which emerged from a whitepaper in 2014 from founder Vitalik Buterin, before officially launching in July 2015. While Ethereum originally utilized many of the same fundamentals as Bitcoin such as Proof of Work (PoW) consensus, it was designed to function like a globally decentralized computer with the ability to facilitate more advanced interactions and exchanges between parties. Ethereum specializes in processing smart contract code using its engine called the Ethereum Virtual Machine (EVM). This allows builders to create and maintain decentralized applications (dApps). Ethereum transitioned from PoW consensus to Proof of Stake (PoS) in 2022, in a transition known as “The Merge”. Ethereum is home to thousands of projects and decentralized applications.

Significant Events

- Regulated trading options for Ether have been evolving in the US:
 - SEC approval of multiple spot ETH products in July 2024

NCI Constituents

Solana (SOL)

Consensus Proof of History Proof of Stake	Use Case Decentralized Applications	Token Purpose Transaction fees Staking rewards
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Overview

Solana is a public blockchain designed to support scalability and performance. This Layer 1 blockchain has been optimized for throughput, fast settlement times, low transaction fees, and smart contract processing to support developers launching decentralized applications. Solana has a novel consensus mechanism called Proof of History that it uses in conjunction with Proof of Stake consensus to process transactions. Proof of History is an ordering system based on transaction timestamps that enables fast transaction speeds. Solana has a governance mechanism for voting on proposed changes.

Significant Events

- In September 2024 Solana announced a version 2 of their “Seeker” smartphone
- The SEC alleged that SOL was a security in June 2023 and later released a filing announcing it plans to drop charges that third party tokens, including SOL, constitute unregistered securities.

NCI Constituents

Ripple (XRP)

Consensus Federated/ Consensus Rounds	Use Case Cross-border Payments	Token Purpose Transaction fees Payments Facilitation
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Overview

Ripple was launched in 2012 to address cross border payments by making them faster and more affordable than traditional payment methods. XRP is designed to act as a bridge currency between various fiat currencies that otherwise may not have markets. Ripple reports that global payments can be settled in 3-5 seconds. Ripple has expressed interest in developing smart contract functionality to support decentralized application creators, which may initially manifest as a sidechain with Ethereum Virtual Machine (EVM) compatibility. While Ripple is a public blockchain, consensus is Federated, meaning participation is based on pre-approved participants.

Significant Events

- In September 2024 Ripple announced that it's working towards native smart contract capabilities and an EVM sidechain
- Ripple has had a long running legal battle with the SEC over the alleged sale of unregistered securities.

NCI Constituents

Cardano (ADA)

Consensus Proof of Stake	Use Case Decentralized Applications	Token Purpose Transaction fees Staking Rewards Governance
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Overview

Cardano was founded by former Ethereum co-founder Charles Hoskinson in 2015 and launched in 2017 as a public blockchain with the intent to further innovate on the designs of Bitcoin and Ethereum. Cardano is a Layer 1 blockchain that accommodates smart contract functionality and has a technology foundation based in peer reviewed research. Cardano has organized their development roadmap into 5 “eras”,

Significant Events

- The first phase of Cardano’s Chang hardfork went live in September 2024, introducing new functionality for governance where users will be able to elect representatives and vote on proposals.

NCI Constituents

Chainlink (LINK)

Consensus Proof of Stake via Ethereum	Use Case Oracle Services	Token Purpose Payments Staking Rewards
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Overview

Chainlink is decentralized computing platform built on Ethereum which provides Oracle services to developers creating decentralized or Web3 solutions. An oracle is a data feed that connects to a blockchain via smart contracts. In this way off-chain, real world data or compute technology is connected to and utilized by smart contracts for the purpose of enriching their functionality. Examples include price or market data feeds for DeFi tools, weather data for weather risk tools, and a randomness generator which can be used to mint NFTs. LINK is an Ethereum-based token which has been bridged to other networks. LINK is used to reward operators to execute jobs which include retrieving, formatting and computing off-chain data.

Significant Events

- Chainlink has seen strong developer engagement into 2024, according to crypto analytics firm Santiment

NCI Constituents

Avalanche (AVAX)

Consensus Avalanche Consensus Model	Use Case Decentralized Applications	Token Purpose Transaction fees Staking Rewards
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Overview

Avalanche is a public blockchain launched in 2020 to enable decentralized applications. Avalanche has a primary network comprised of three blockchains which each perform a different function (transactions, smart contracts based on the Ethereum Virtual Machine (EVM) code, management of subnets and validators). Application developers may create their own networks, called subnets, which feature one or more blockchains with their own consensus models, permissioning design, and virtual machine. Avalanche offers a Snowman Protocol for consensus that has been optimized for smart contract processing on the EVM.

Significant Events

- In September 2024 Avalanche announced a \$40 million grant program to attract developers to its network

NCI Constituents

Litecoin (LTC)

Consensus Proof of Work	Use Case Payments	Token Purpose Transaction fees
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Overview

Litecoin is a public blockchain that was launched in 2011 from a fork of the Bitcoin codebase. Litecoin aims to handle higher transaction volume than Bitcoin due to its more frequent block generation. It also has a different miner reward schedule, programmed to produce ~4 times the amount of currency units as Bitcoin.

Significant Events

- Litecoin was the first altcoin developed from Bitcoin code, and had a relatively high market cap in early years before the market became more saturated with more projects and new approaches

NCI Constituents

Polygon (MATIC)

Consensus Proof of Stake	Use Case Decentralized Applications	Token Purpose Transaction fees Staking Rewards
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Overview

Polygon is a Layer 2 scaling solution that leverages and builds upon the Ethereum network to address drawbacks including throughput (transactions per second) and transaction fees. Polygon makes it easy for dApp and Web3 developers to transition projects from Ethereum to Polygon, which is EVM compatible. Developers may utilize the Polygon Proof of Stake sidechain and create their own consensus networks at the Polygon network layer. Much like the EVM, polygon allows for the processing of smart contracts and its token is used for transaction fees and staking.

Significant Events

- Polygon announced that the MATIC token would transition to POL in September 2024
- In March 2023 Polygon launched the Polygon zkEVM on its Mainnet beta which utilizes ZK proofs to reduce transaction costs

NCI Constituents

Uniswap (UNI)

Consensus Built on Ethereum	Use Case Decentralized Exchange / DeFi	Token Purpose Governance Liquidity
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Overview

Uniswap is an Ethereum based decentralized finance (DeFi) protocol that allows users to swap Ethereum tokens through its decentralized exchange (DEX), charging a small fee for the automated market-making service. Uniswap addresses liquidity issues of thinly traded crypto assets by allowing anyone to become a liquidity provider. Users can deposit assets into a pool based on an asset and receive assets based on their stake which are redeemable for transaction fees. Uniswap is based on multiple non-upgradeable Ethereum smart contracts and has been deployed on many EVM compatible blockchains including Polygon PoS, and Avalanche. Uniswap determines asset prices based on mathematical equations built into the protocol, and relies on arbitrage traders to ensure asset prices align with the overall market.

Significant Events

- In January 2024 EIP-6963 went live which aims to simplify switching between Uniswap wallets
- UniswapX was launched in July 2023 which aims to provide a trading solution with key benefits such as no gas fees



Crypto Market Capitalization¹

Spot market



The total crypto market capitalization is currently just above USD \$2 Trillion

Source: CoinMarketCap.com as of 10/8/2024

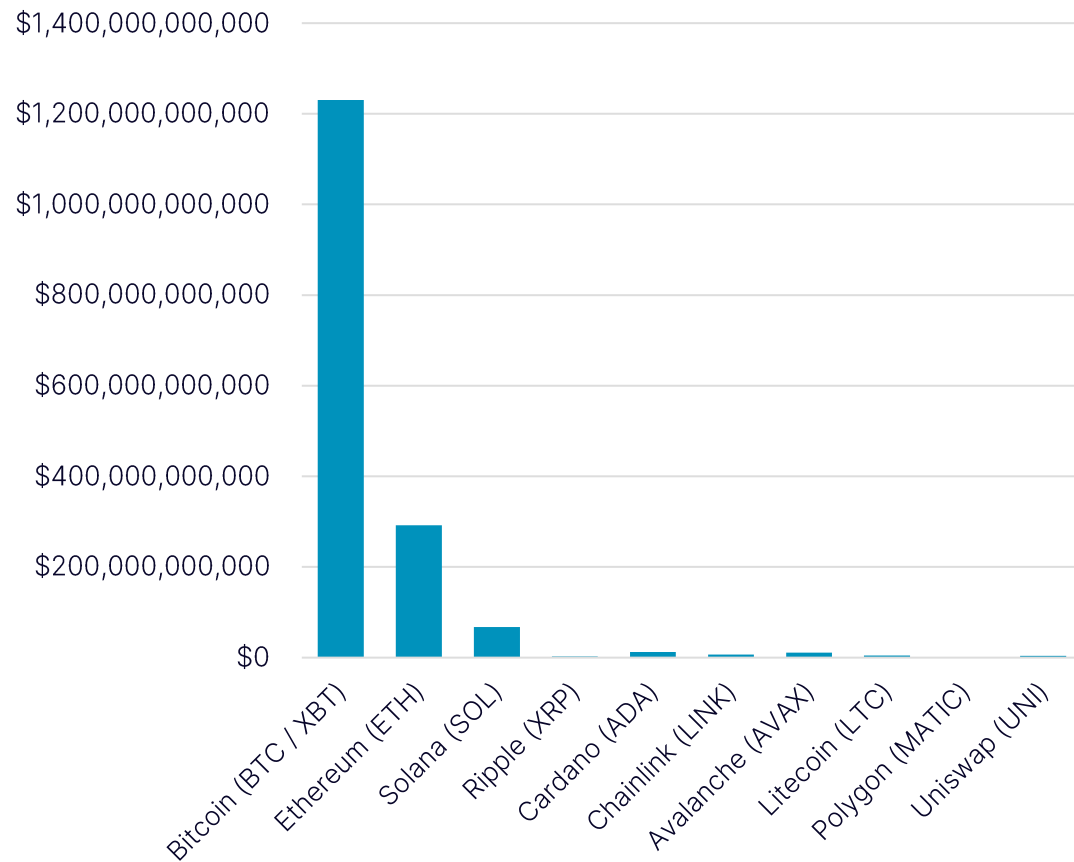


¹Source: CoinMarketCap.com. Chart is based on the total market value of the circulating supply of all cryptocurrencies, including stablecoins and tokens, as defined by CoinMarketCap.com.

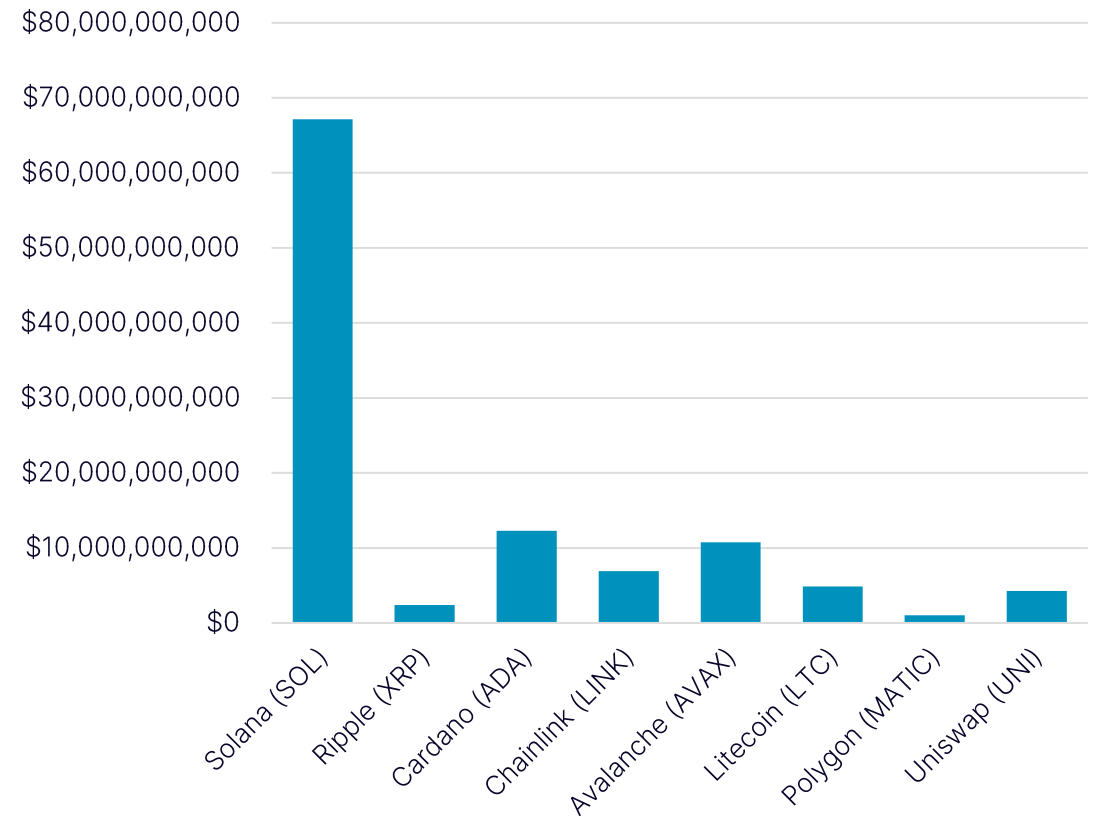
NCI Constituents

Market Capitalization Comparison¹

Market Capitalization: 10/8/2024



Market Capitalization without BTC and ETH:
10/8/2024



Source: CoinMarketCap.com

Source: CoinMarketCap.com

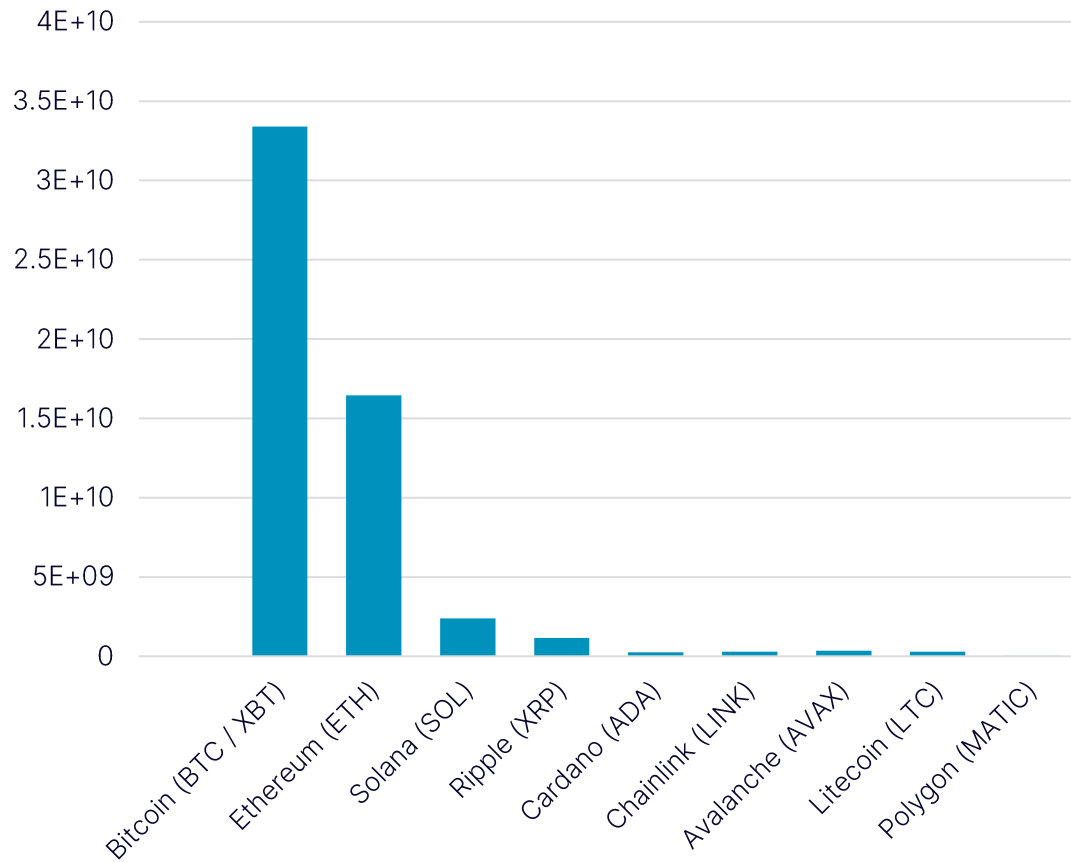
¹ Source: CoinMarketCap.com. Charts are based on a snapshot of market capitalization taken on October 8, 2024.



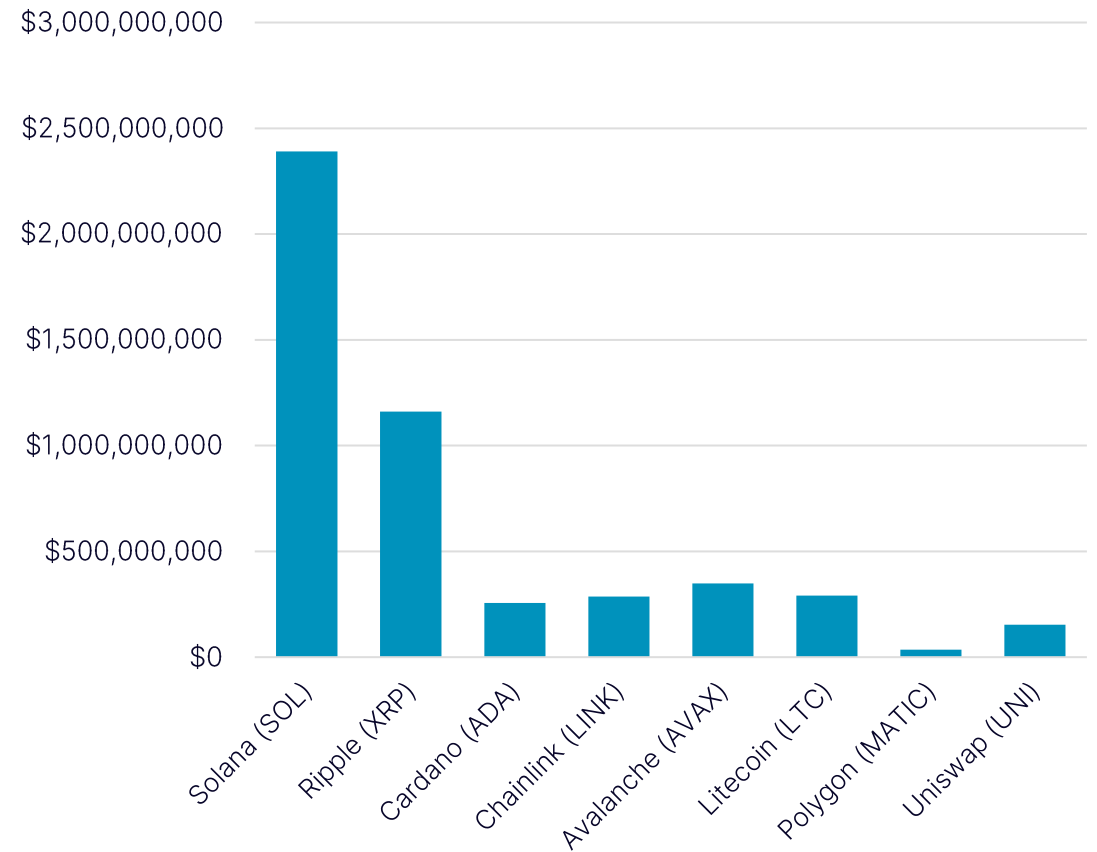
NCI Constituents

Volume Comparison¹

Volume (24h): 10/8/2024



Volume (24h) without BTC and ETH: 10/8/2024



Source: CoinMarketCap.com

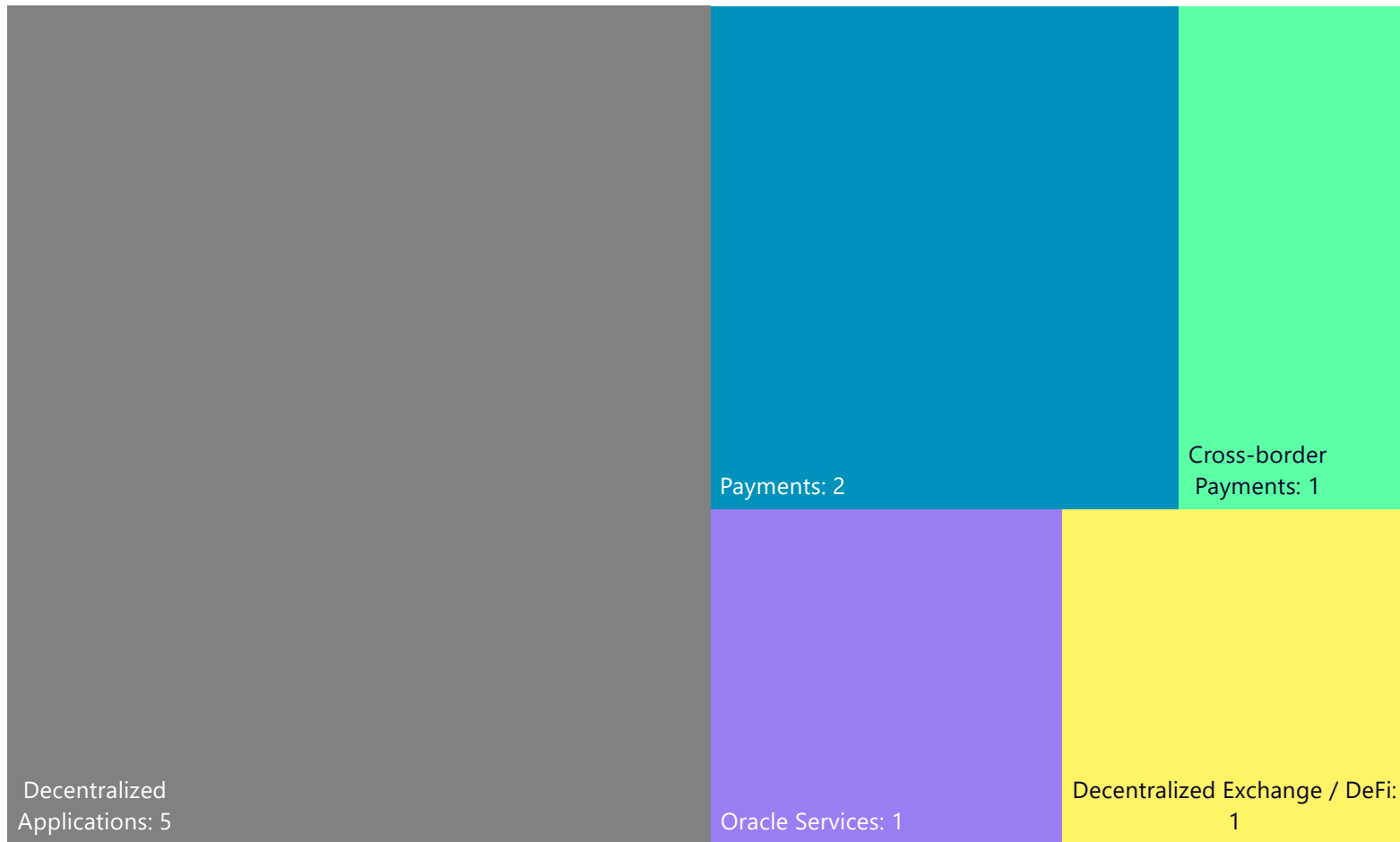
Source: CoinMarketCap.com

¹Source: CoinMarketCap.com. Charts are based on a snapshot of market volume taken on October 8, 2024.



NCI Constituents

Use Case Comparison¹



Current NCI Constituent Use Cases:

Decentralized Applications: 50%

Payments: 20%

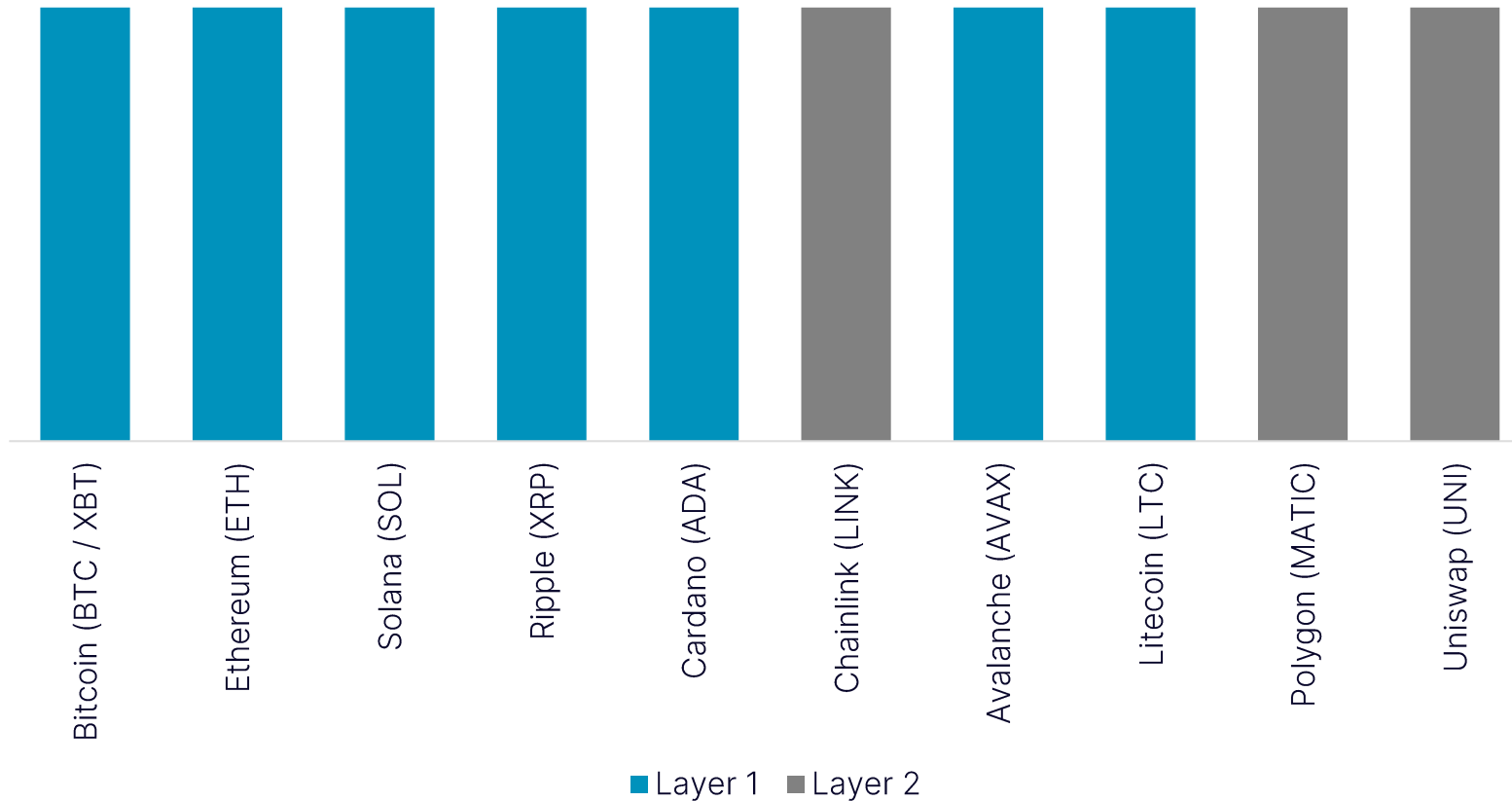
Cross-border Payments: 10%

Oracle Services: 10%

Decentralized Exchange/DeFi: 10%

NCI Constituents

Layer Comparison¹



70% of the Current NCI Constituents are Layer 1 projects with their own technical architecture

30% of the Current NCI Constituents are Layer 2 projects built on Ethereum and/or additional protocols

NCI Constituents

Constituent Project Launch Year¹

Year	Project(s) Launch
2009	Bitcoin (BTC/XBT)
2010	
2011	Litecoin (LTC)
2012	Ripple (XRP)
2013	
2014	
2015	Ethereum (ETH)
2016	
2017	Cardano (ADA) Chainlink (LINK)
2018	Uniswap (UNI)
2019	
2020	Solana (SOL) Avalanche (AVAX) Polygon (MATIC)

NCI constituents are based on project ecosystems with varying ages



¹ Source: Messari.io. This timeline captures Mainnet launch or project launch. Other project activity may have taken place prior to these years.

Additional Information

Ticker Symbol	NCI (Real-Time) and NCIS (Daily Settlement)
Calculation Agent	The Index is calculated by CF Benchmarks Limited
Reconstitution and Rebalancing Frequency	Reconstitution and rebalances occur quarterly (First business day of March, June, September and December)
Index Back-test Start Date	June 1, 2020
Index Launch Date	February 2, 2021
Daily Index Publication (NCIS)	The closing level of the Index is calculated once a day on business days at 4:05:00 P.M. New York Time and is published on the Nasdaq Global Index Data Service (GIDS)
Real-Time Index Level (NCI)	Real-time calculation of the Index is available on the CF Benchmarks website at https://www.cfbenchmarks.com/indices/NCI
Currency	USD

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