



CoinGecko

# GameFi Levels Up

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FULL REPORT

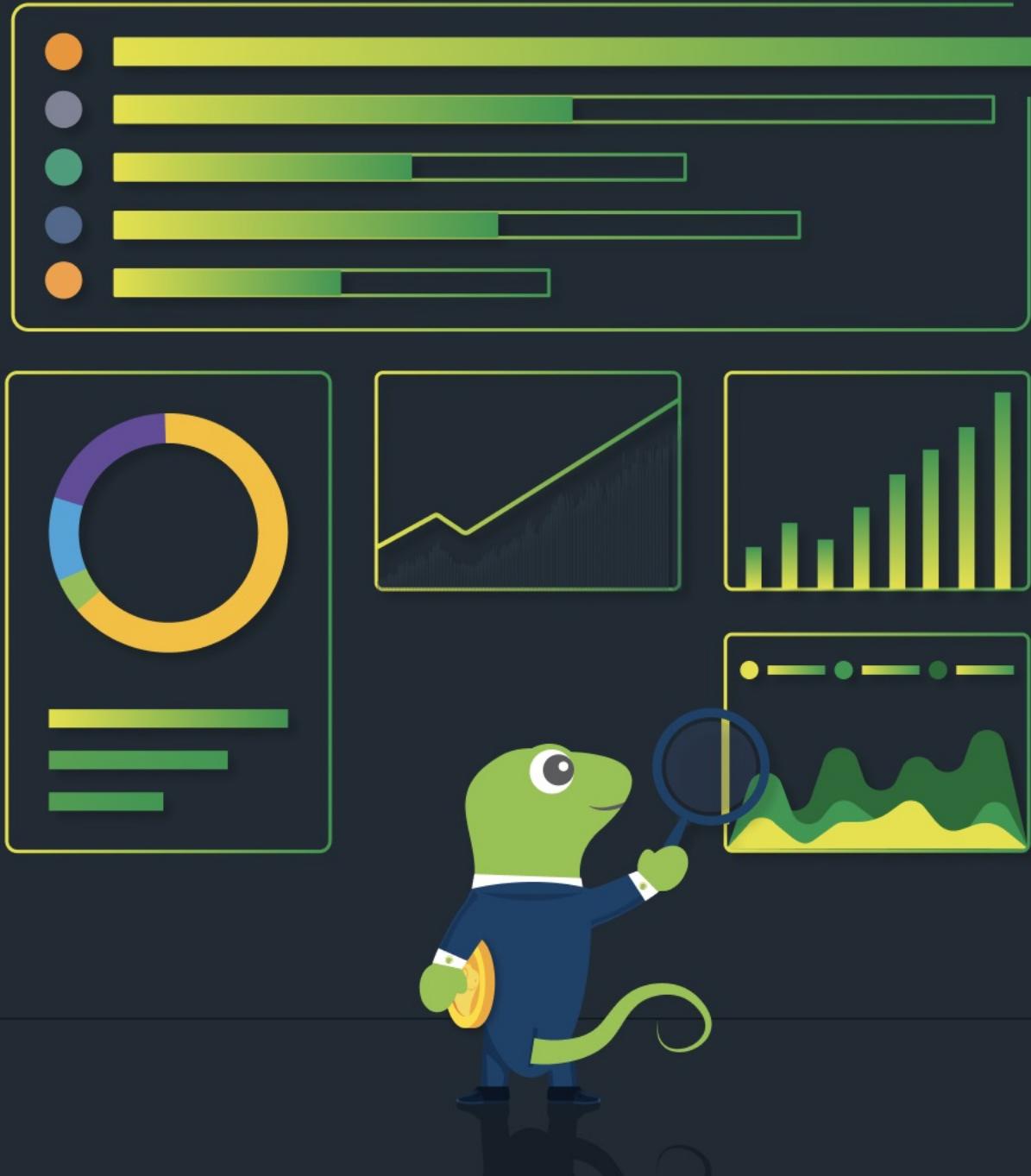
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## Introduction to Blockchain Gaming & Play-to-Earn

By combining video games with the capabilities of the blockchain, blockchain games allowed users to play games while also earning token rewards for doing so.

### What is Blockchain Gaming and Play-to-Earn?

With the evolution of smart contracts and NFTs on the Ethereum network, developers were able to implement the traditional mechanisms of video games on-chain, allowing for the creation of blockchain games. The first iteration of blockchain games, e.g. CryptoKitties spawned the ERC-721 NFT standard, and allowed users to verify simple in-game actions and trade their game items with other players in a permissionless manner.



While the first few blockchain games proved to be extremely popular, it also exposed the weakness of Ethereum's scalability, it led game devs to migrate and build on chains which were more performant and cheaper.

Towards the end of 2020, rising interest in Axie NFTs and the Axie Infinity card game gave way to the rise of the Play-to-Earn wave. As its name suggests, Play-to-Earn (P2E) allows users to earn an income simply from playing games. Depending on the game, there are different economies, strategies, and methods to build a reliable revenue stream. A common example would be selling in-game resources that require a significant time investment to obtain.

Although the P2E hype fell quickly due to the low quality of games available and their unsustainable reward mechanics, the GameFi sector has continued to grow over the past two years, branching out beyond just the monetization of video games but also other activities, such as Move-to-Earn.



### CryptoKitties

One of the first blockchain games to be released on Ethereum is **CryptoKitties**, where players could purchase virtual pets in the form of NFTs and breed them to create new pets with different traits.



While the game proved to be extremely popular, the influx of players resulted in network congestion and **high transaction fees**, amounting to as high as \$200 per transaction. As a result, newer blockchains such as Flow and Ronin were created to address this problem.



After the launch of the Ronin sidechain in early 2021, users were able to **play and perform transactions on Axie Infinity** at a much lower cost, which brought in more players and **increased demand for Axies**.



The success of Axie Infinity resulted in the proliferation of similar games with near-identical mechanics. However, it also helped to expand the **GameFi sector exponentially**, with new types of blockchain-based games being built across various genres.



## The First GameFi Wave

The success of the first GameFi Wave with Axie, metaverse games and STEPN spurred significant investments into blockchain gaming, with the promise of better gameplay and tokenomics.

### The Launch of CryptoKitties

-  **CryptoKitties**
  - CryptoKitties, a virtual cat breeding game, was launched by Dapper Labs in November 2017.
  - The game caused **massive network congestion on ETH**, leading to the development of the Flow blockchain.
  - After the success of CryptoKitties, Dapper Labs would partner with the NBA to launch **TopShot**, a sports collectibles game.
  - The popularity of NBA TopShot would result in more sports NFTs from other franchises such as the NFL and NHL.

### The Rise of Play-to-Earn



- Axie Infinity and the ability to **earn SLP from playing the game** drew in players in droves, particularly from emerging markets who could earn a living playing the game.
- Rising price of Axie NFTs and SLP led to the creation of **scholarship guilds** to offset the startup cost to play the game and draw in more players.
- The success of Axie resulted in the proliferation of clones, but all of them ultimately collapsed due to unsustainable tokenomics.

### Welcome to the Metaverse



- After Axie, blockchain games attempted to **emulate MMOs**, leading to the birth of games such as The Sandbox, Decentraland and Somnium Space.
- Facebook's pivot to Meta and focus on the metaverse then supercharged this trend, and it was believed that blockchains would be crucial to building open and interoperable metaverses.
- However, the **hype was short-lived**, as high system requirements and limited things to do failed to retain users.

### STEPN and Move-to-Earn



- Launched in late 2021, STEPN allowed users to **earn token rewards just by walking**, kickstarting the Move-to-Earn (M2E) wave.
- Unlike blockchain games then, STEPN was a mobile game, and abstracts the complexities of the blockchain away from users.
- While the high initial rewards have faded and so did their userbase, STEPN also spawned a bunch of clones, and led to other projects **exploring the gamification of different activities**.

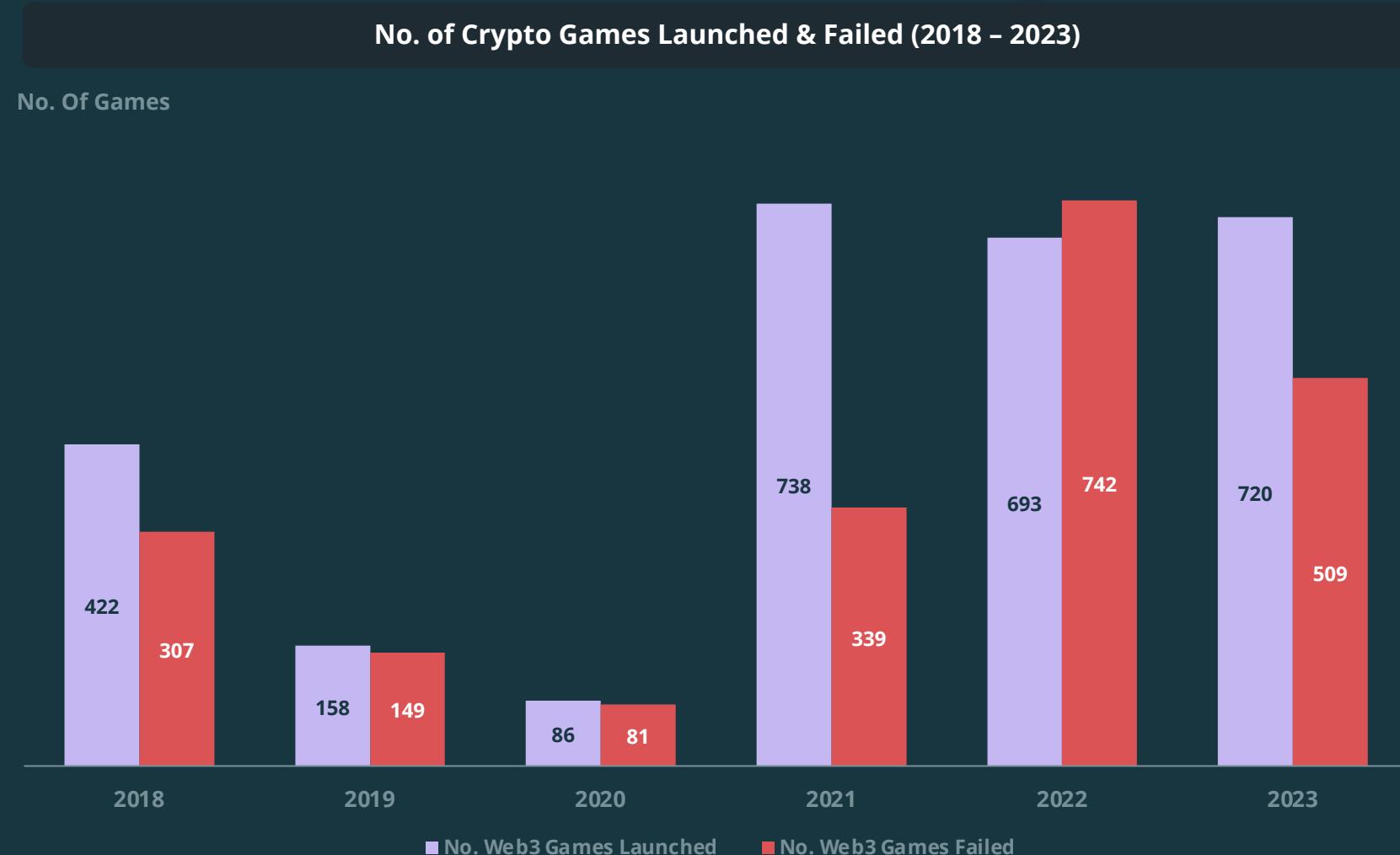
### The Institutions Arrive



- Since the success of Axie Infinity, VCs and institutions such as Animoca Brands, Yield Guild Games have **raised and invested hundreds of millions** into blockchain games and various gaming infrastructure.
- Traditional game companies such as Bandai Namco are also **getting involved directly** by building their own NFT games.
- A few years on, lots of new upcoming games are on the horizon with supposed AAA quality, sustainable tokenomics and better gameplay.

## How Many Web3 Games Have Launched & Failed?

The first GameFi Wave drove significant growth in the number of blockchain games launched since 2021, but the failure rates have also been high.



**75.5%**

Web3 Games Have Failed\*

Based on our analysis, 2,817 web3 games were launched between 2018 to 2023. During that same period, 2,127 games have failed, representing a fail rate of 75.5%.

GameFi development only really took off in 2021, with significant investments flowing into the sector. From 2021 onwards the number of games launched has increased exponentially to ~700 games per year.

With the bullrun in full swing in 2021, the number of games launched significantly outpaced the number of games that failed during the year.

However, the market downturn in 2022 led to a significant jump in dead games, with the number doubling to 742 from 339 in 2021.

## The Current GameFi Landscape\*

While GameFi started with simple Pet Breeding & Battling games, later projects have branched out to a broad breadth of genres.

### RPG



### FARMING/MINING



### SHOOTERS



### MOVE-TO-EARN



### CARD GAMES



### PET BREEDING & BATTLING



### STRATEGY



### RACING



### METAVERSE



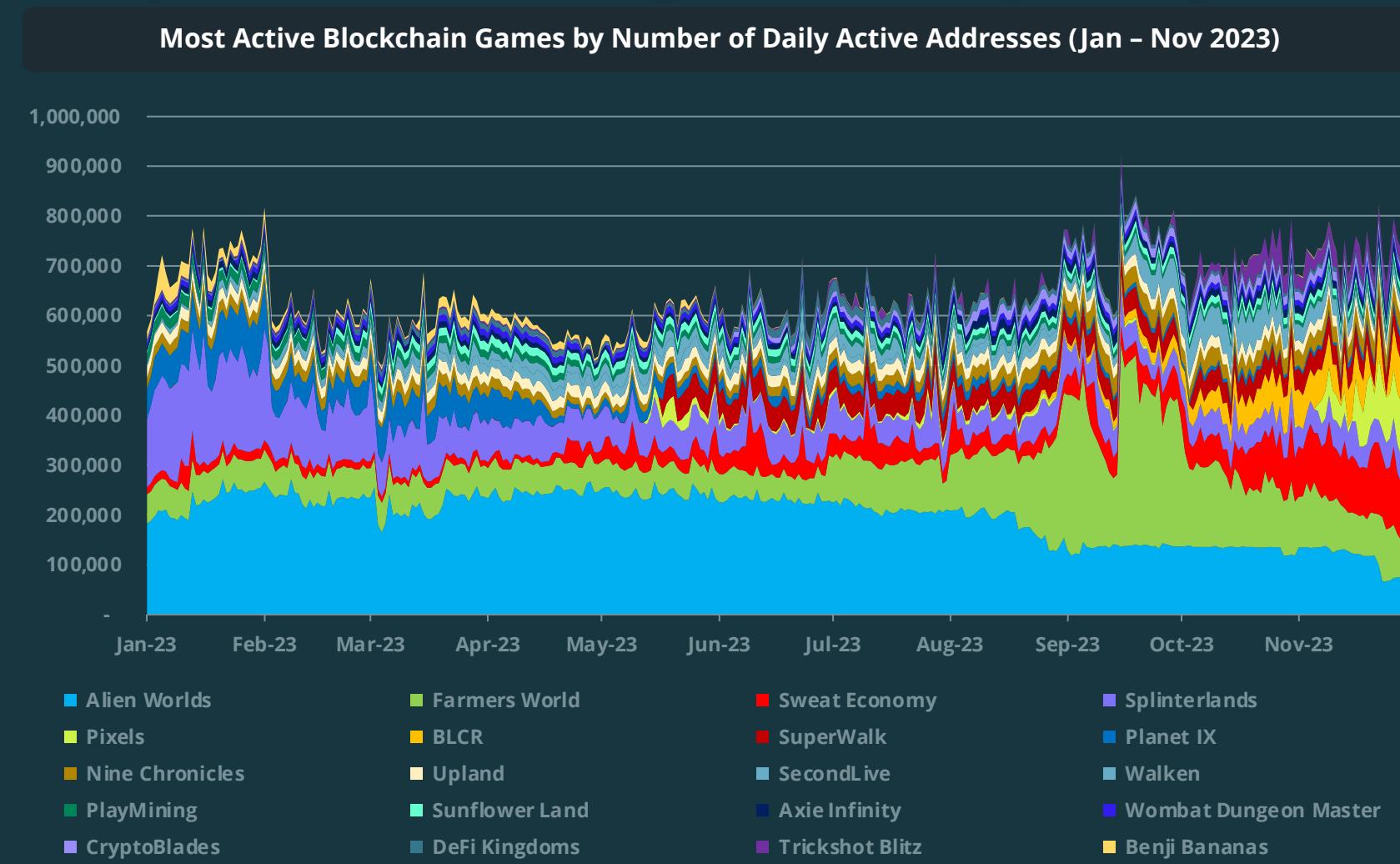
### SPORTS





## Most Active Blockchain Games by Number of Active Addresses

Overall, Alien Worlds, Farmers World and Splinterlands are the 3 most active Web3 games in 2023 up to end-November, though Sweat Economy has surged into the lead in November.



# 685K

Average Total Daily Active Addresses for Top 20 Games

Overall, **Alien World, Farmers World and Splinterlands** are the most active web3 games in 2023 up to end-November with an average of **197.8K, 101.3K and 75.2K daily active addresses**.

However, active addresses for these games have seen declines through out the year.

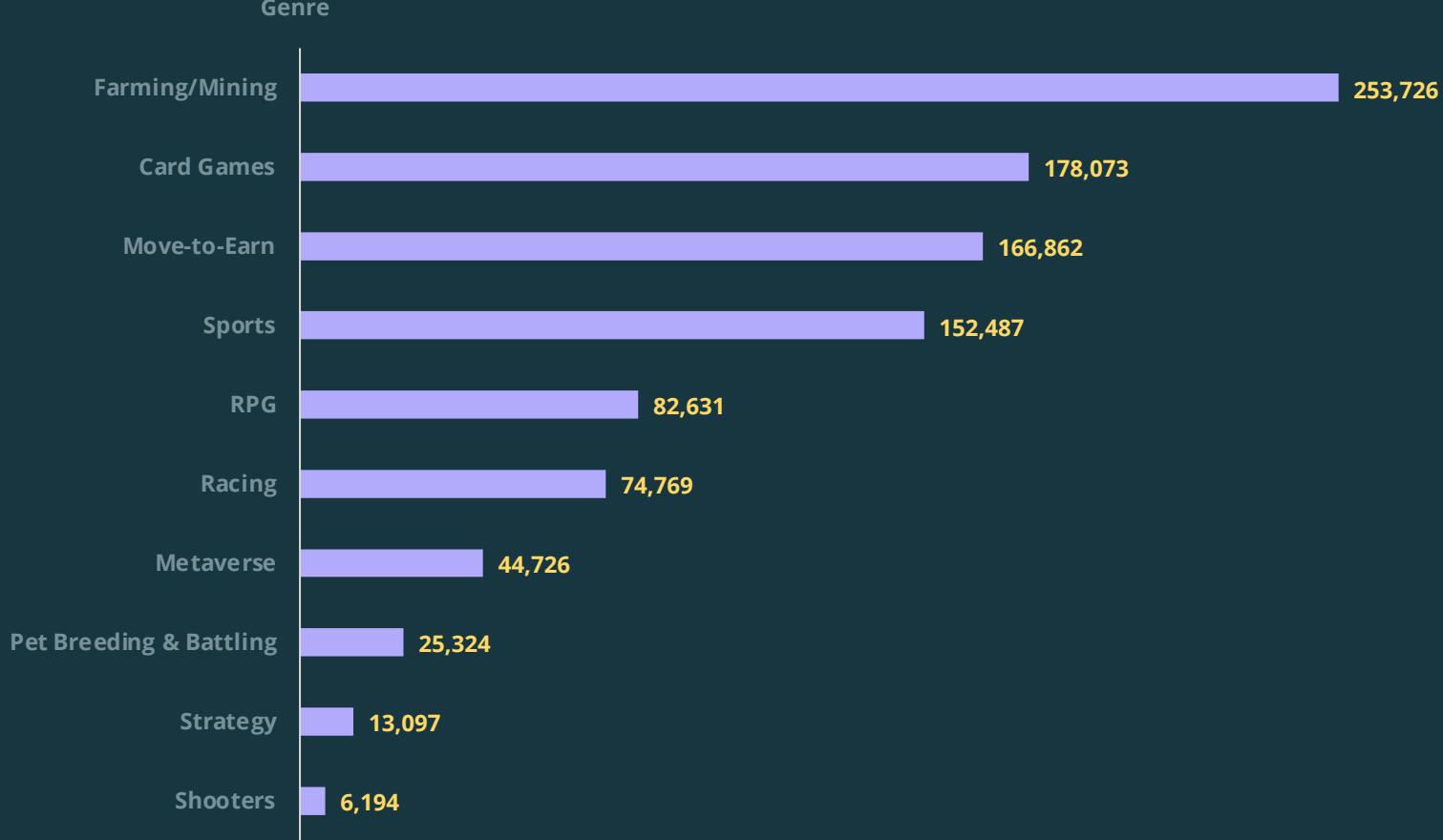
**Sweat Economy** has had a meteoric rise to become the most active Web3 game in November, with 116k average daily active addresses compared to 22k in January.

Of the Top 20 games, only two were launched in 2023. Both **Pixels** on Ronin (launched in May) and **BLCR** on Polygon (launched in August) have seen strong growth, **climbing to average daily active addresses of 74K and 63K** in November respectively, making them the 4<sup>th</sup> and 5<sup>th</sup> most active games of the month.

## Breakdown of Most Active Games by Genre

In more recent times, farming, card games and Move-to-Earn have garnered the most activity, while racing and shooting games are proving to be less popular.

Most Active Game Genres by Daily Active Addresses (November 30, 2023)\*\*



**118.1K**

Highest Daily Active Addresses for a single game\*

The GameFi sector is currently concentrated around **farming, Move-to-Earn, and digital card games**. As the most active genre, farming games such as Alien Worlds and Pixels are seeing over **75K daily active addresses**.

Although the Metaverse hype that started in late 2021 has mostly faded away, the genre is still pulling in **over 44K active addresses**, making it the **seventh most active genre in GameFi**. SecondLive is currently leading the genre, attracting **~16K daily active addresses** cumulatively across BNB Chain, Arbitrum and zkSync Era.

With under 20K active addresses cumulatively, strategy games and shooters have the smallest player bases compared to other genres as the **pool of blockchain games in this genre are still underdeveloped**, with existing titles lacking modern gameplay mechanics.

Source: Footprint Analytics, DappRadar

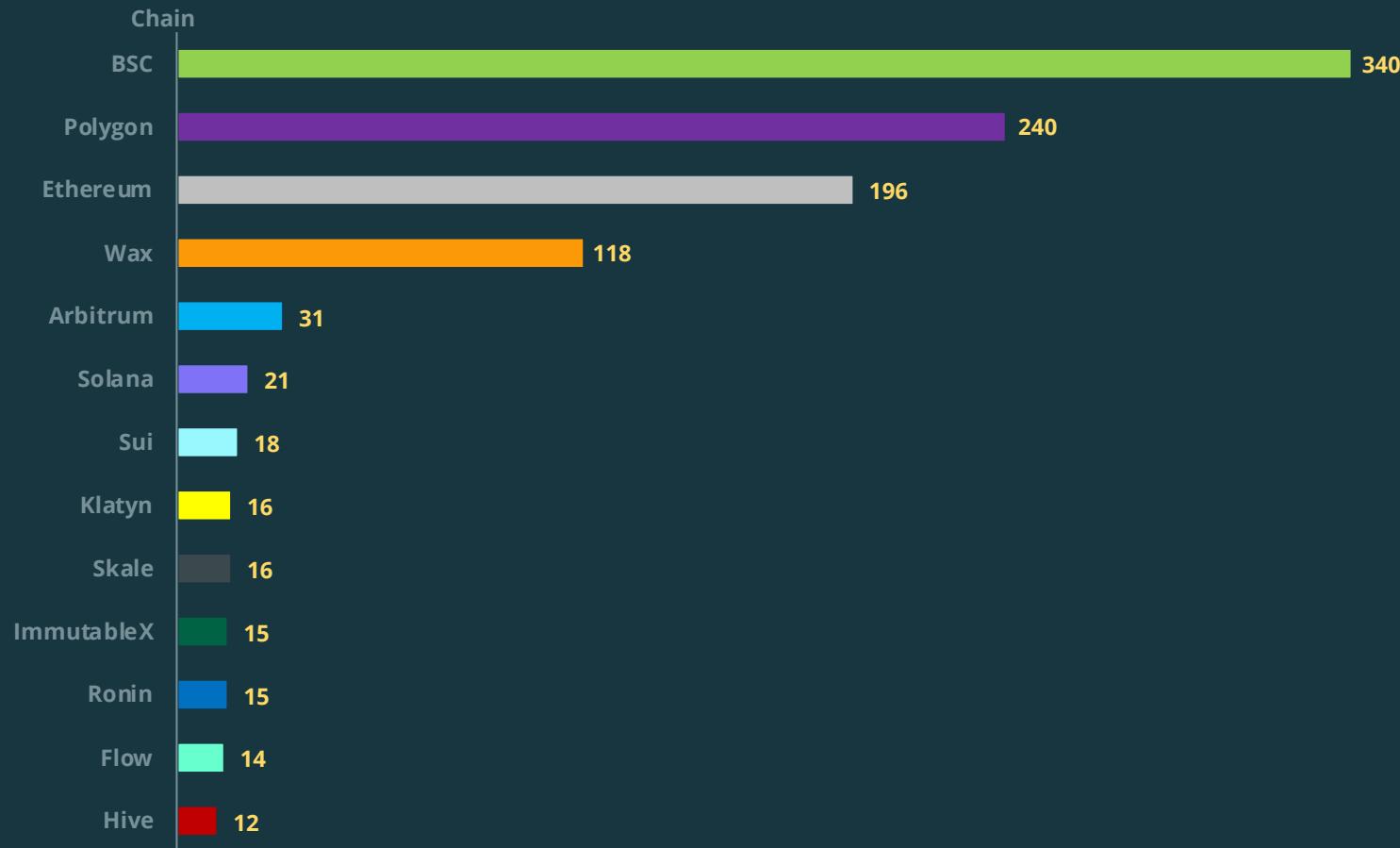
\*Data based on the top 5 games from each genre as of November 30, 2023

\*\*Figures for Sorare, Parallels and Big Time are estimated based on active buyers of their NFTs as they are not publicly disclosed

## Comparison of Top 13 Gaming Chains

While the GameFi sector spans across a wide array of networks, most of these games are being built on specific blockchains and Layer-2 solutions.

Number of Active Games on Top 13 Gaming Chains\*



While GameFi started on Ethereum, its high gas fees resulted in more developers choosing to build on **EVM altchains** due to lower fees, better performance and familiar architecture. BNB Smart Chain currently boasts the highest number of active games with 340 titles, followed by Polygon with 240.

The GameFi Wave also gave rise to game-centric chains such as Flow, and **gasless chains such as Wax** that currently hosts 118 games.

Performant non-EVM networks such as Solana and Flow have also attracted developers but **have less games** due to the differences in architecture.

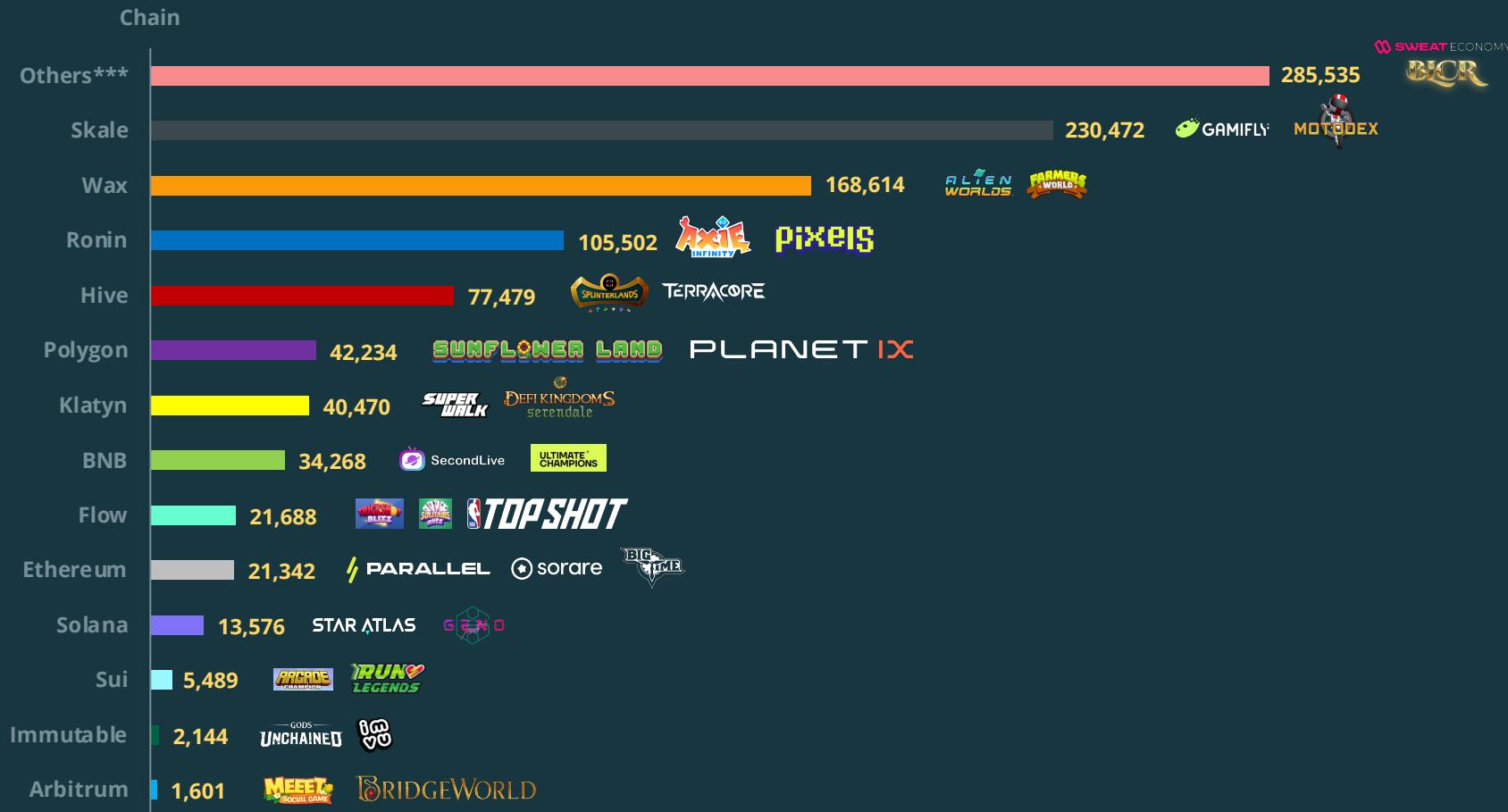
However, with the **advent of Layer-2s** in 2021, more games are launching on networks such as Arbitrum, ImmutableX and Skale. Arbitrum is currently the L2 with the most active games, largely due to the network's native gaming platform, TreasureDAO.

Although not included in this report, **Avalanche** used to be an active gaming chain, thanks to the success of Crabada and DeFi Kingdoms.

## Most Active Gaming Chains

Gasless blockchains such as Skale, Wax and Hive are proving to be the most active chains for GameFi with ~45% of daily active addresses, while Ronin has seen a recent resurgence.

Most Active Gaming Chains by Daily Active GameFi Addresses (November 30, 2023)\*\*



~1.05M

Daily Active GameFi Addresses  
as of November 30, 2023\*

Skale is currently the most active chain for gaming, with over 230K daily active GameFi addresses in November 2023. Other gasless blockchains such as Wax and Hive are also proving to be active networks for GameFi, with approximately 169K and 77K daily active GameFi addresses respectively.

While the popularity of Axie Infinity has dwindled since its peak in 2021 to over 17K daily active GameFi addresses, activity on Ronin has resurged due to the migration of Pixels from Polygon, bringing with them an additional 87K active addresses. With the majority of activity concentrated around these two titles, Ronin has become the third most active gaming network.

Under the Others category, the majority of daily active addresses are coming from Sweat Economy which is built on Near, and BLCR which is built on BSC.

Source: Footprint Analytics, DappRadar

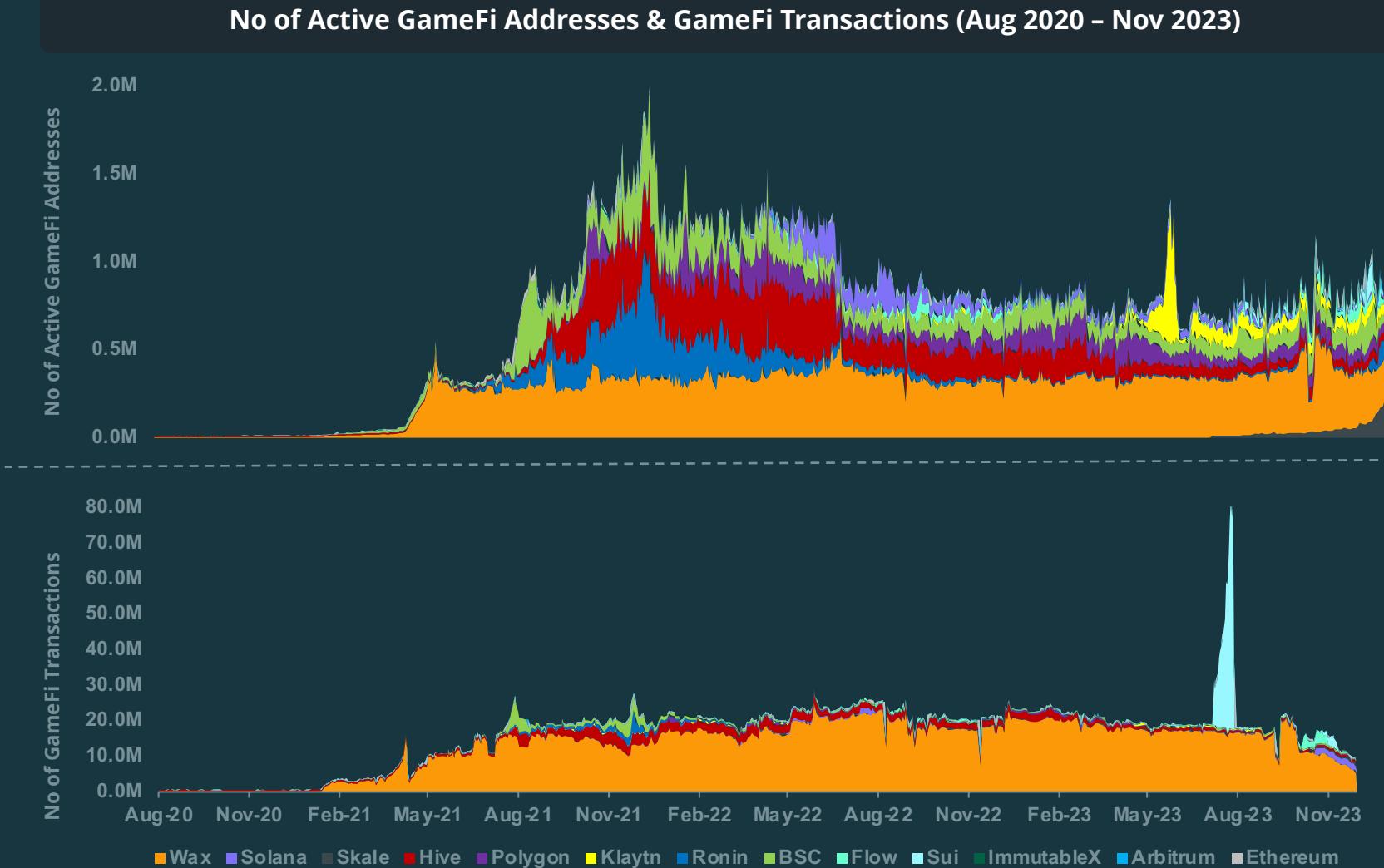
\*Data based on the top 5 games from each chain as of November 30, 2023 (excluding gaming platforms and trading/gambling games)

\*\* Figures for Sorare, Parallels and Big Time are estimated based on active buyers of their NFTs as they are not publicly disclosed

\*\*\*Others refer to the cumulative users from networks that were not included in this report. or native app-chains.

## Number of Active GameFi Addresses & GameFi Transactions by Chain

Daily active GameFi addresses peaked on November 30, 2021 with 1.99M led by Ronin / Axie Infinity, but have since declined by 57.9% to 837k.



Daily Active GameFi Addresses across the top 13 gaming chains reached its peak of **1.99 million at the peak** of the 2021 bull cycle on November 30, led by Ronin which captured 35.9% of daily active GameFi addresses, followed by BSC (21.9%) and Hive (21.3%).

However since then total active GameFi addresses have **declined by 57.9% to 0.84 million** as of November 30, 2023. The main chains which saw drop off in active GameFi addresses were Ronin, Hive, BSC and Wax.

GameFi Transactions across the top 13 gaming chains totaled 8.7 million as of November 30, 2023. **A significant percentage (57.9%) of GameFi transactions originate on Wax**, which is gasless.

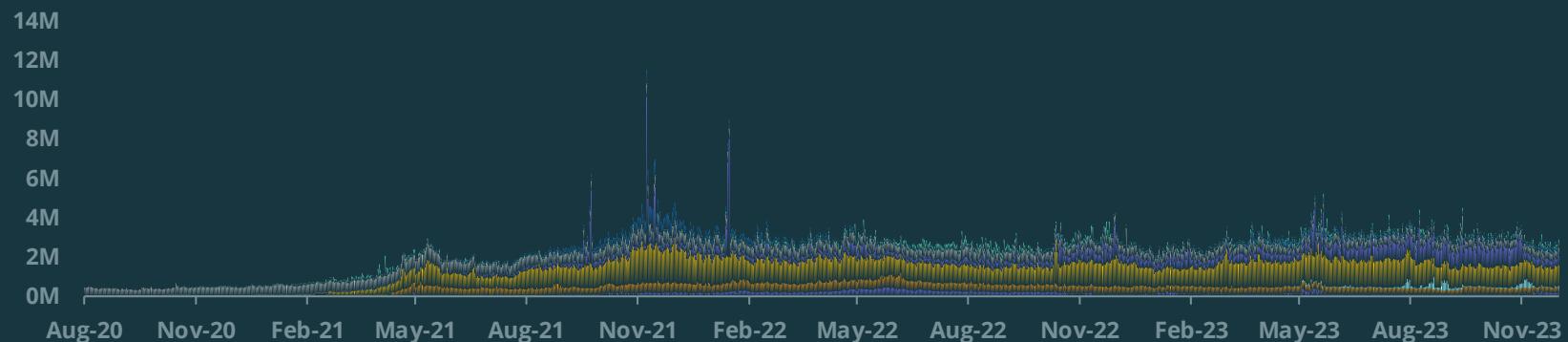
Nonetheless, most blockchain games today are built based on a **hybrid architecture**, where the gaming engine and most, if not all in-game actions / game states are not actually stored on-chain. Instead on-chain transactions are limited to minting / upgrading NFTs or tokens which may have some in-game utility.

## Number of Active Addresses & Transactions on Top 9 Gaming Chains

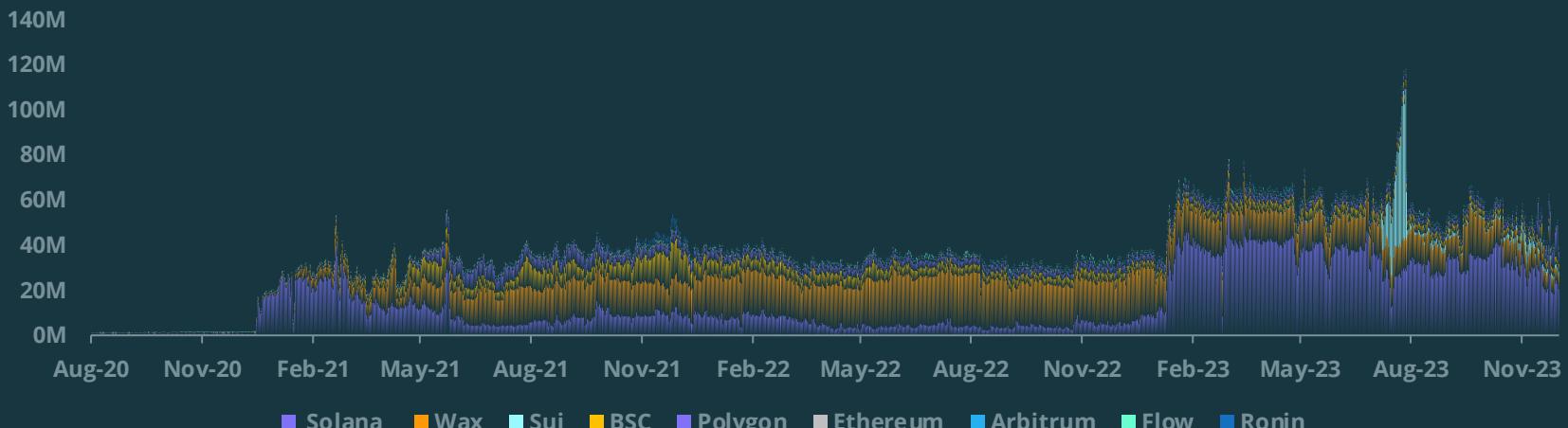
Amongst gaming-centric chains, Wax has the most daily active addresses and transactions, though overall activity on gaming-centric chains still lag behind generalized chains in general.

Daily Active Addresses & Transactions (Aug 2020 – Nov 2023)

No. of active addresses



No. of transactions



Source: [Etherscan](#), [Footprint Analytics](#), [Hello Moon](#), [DappRadar](#)

\*data missing for Skale, ImmutableX, Klaytn, and Hive

Gaming-centric chains Wax, Flow and Ronin have seen an **overall decline of -35%** from 727K to 472K in daily active addresses in 2023 compared to 2022.

Generalized chains had mixed results, with Solana and Ethereum seeing declines while Arbitrum, Polygon and BSC recorded gains in average daily active addresses in 2023.

Average daily transactions paint a largely similar picture, with the only exception being BSC seeing a decline in onchain transactions despite active addresses increasing.

This has led it to be surpassed by Wax, which recorded **14.1M average daily transactions** in 2023. It is the only gaming-centric chain to outpace a generalized chain in our comparison.

There were strong surges in onchain transactions in November on Ronin and Polygon, with both chains recording **>2x the number of transactions compared to their earlier YTD (Jan – Oct) averages**. While Ronin's rise could be attributed to Pixels, Polygon's spike in transactions seems to have originated from inscriptions-based tokens.





## Top 10 GameFi Tokens by Market Cap

In contrast with the most active blockchain games, the largest GameFi tokens present quite a different list, which also attracts speculators to trade their tokens.

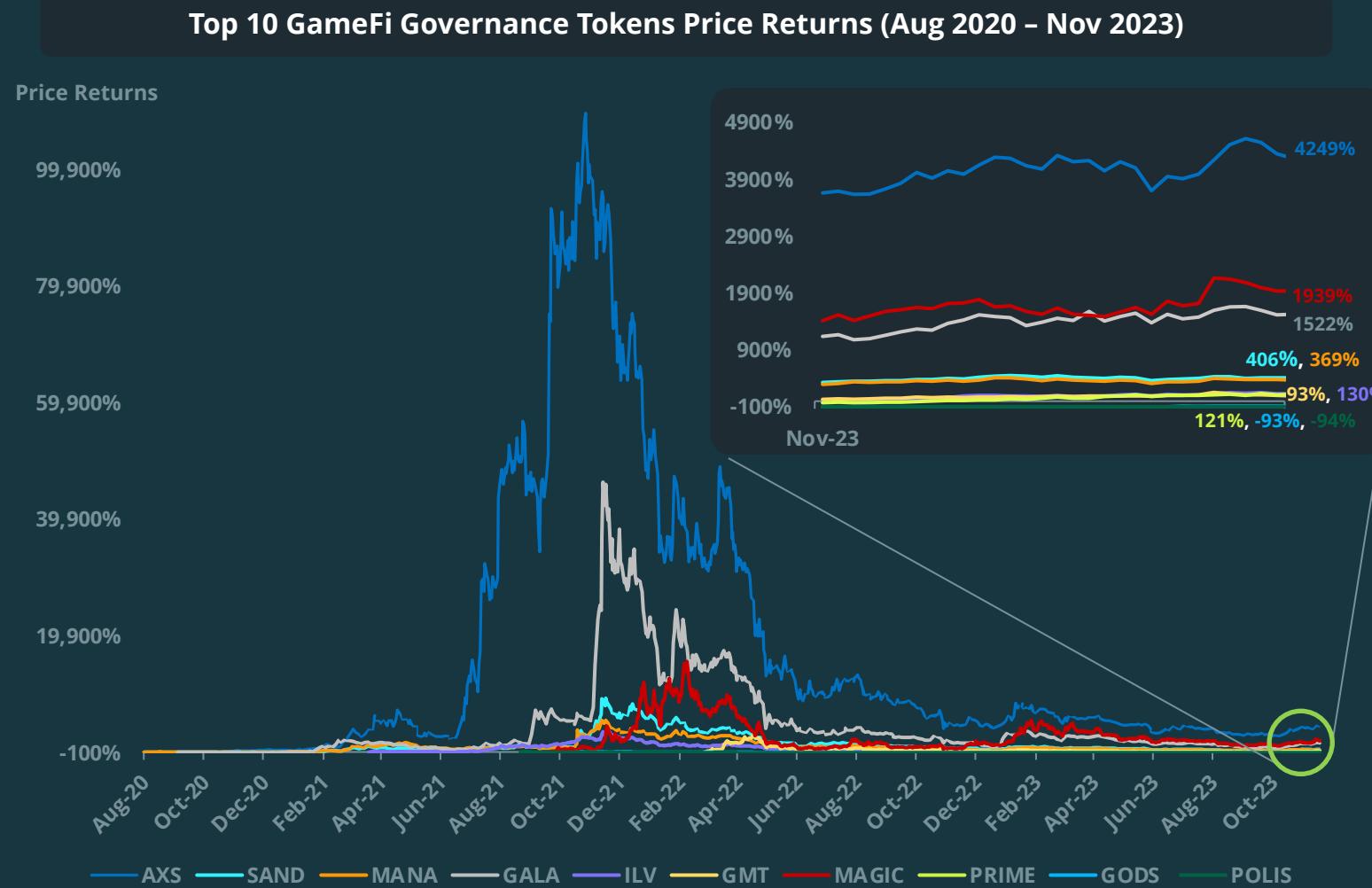
	Genre	Launch Date	Chain(s)	Governance Token	Utility Token	NFTs
	Pet Breeding & Battling	December 2019	Ronin	AXS	SLP	Axies, Axie Lands, Charms, Runes, Accessories
	Metaverse	June 2015	Ethereum	SAND	SAND	The Sandbox LAND, The Sandbox ASSETS
	Metaverse	February 2020	Ethereum, Polygon	MANA	MANA	Land, Wearables, Emotes, Names
	Farming/Mining	June 2020 (First game released)	Ethereum	GALA	GALA	VOX Collectibles, Gala Games Collectibles
	Pet Breeding & Battling	April 2022 (Closed Beta)	ImmutableX	ILV	ILV	Illuvitars, Illuvitars Accessories, Illuvium Land
	Move-to-Earn	December 2021	Solana, BNB Smart Chain, Ethereum	GMT	GST	Shoes, Shoebox, Badges, Minting Scrolls, Gems
	Strategy	January 2022 (First game released)	Arbitrum	MAGIC	MAGIC	Treasures, Legions, Consumables
	Card Games	July 2023 (Closed Beta)	Ethereum	PRIME	PRIME	Parallel Alpha, Parallel Avatars, Parallel Cosmetics
	Card Games	July 2019	ImmutableX	GODS	GODS	Gods Unchained Cards, Gods Unchained Cosmetics
	Strategy	September 2023 (Launch of SAGE Labs mini-game)	Solana	POLIS	ATLAS	Star Atlas Ships, Resources, Star Atlas Collectibles

\*As of 1<sup>st</sup> November 2023

\*\*Source: DeFiLlama, Nansen, Footprint Analytics, DappRadar, BscScan, PolygonScan, Arbiscan, Solscan, Flowdive, Roninchain

## Price Returns of Top 10 GameFi Tokens

8 of the 10 largest GameFi tokens, which all launched in 2021, still record gains from their launch price, despite a massive decline across 2022.



Source: CoinGecko, Token Unlocks

\*Data as of 30<sup>th</sup> November 2023

	Circulating Supply*	Market Cap*	Fully Diluted Valuation*
<b>AXS</b>	132M	\$843M	\$1.7B
<b>SAND</b>	2.1B	\$858M	\$1.2B
<b>MANA</b>	1.8B	\$797M	\$947M
<b>GALA</b>	28.8B	\$725M	\$744M
<b>ILV</b>	6.1M	\$653M	\$1.0B
<b>GMT</b>	1.4B	\$363M	\$1.4B
<b>MAGIC</b>	256M	\$200M	\$265M
<b>PRIME</b>	30.4M	\$255M	\$930M
<b>GODS</b>	260M	\$874M	\$167M
<b>POLIS</b>	237M	\$126M	\$192M

The 2021 P2E wave saw numerous GameFi tokens surge by several orders of magnitude, led by Axie Infinity's governance token, AXS, which **rose by 1,096x at its peak**, from \$0.15 in November 2020 to \$157 in November 2021.

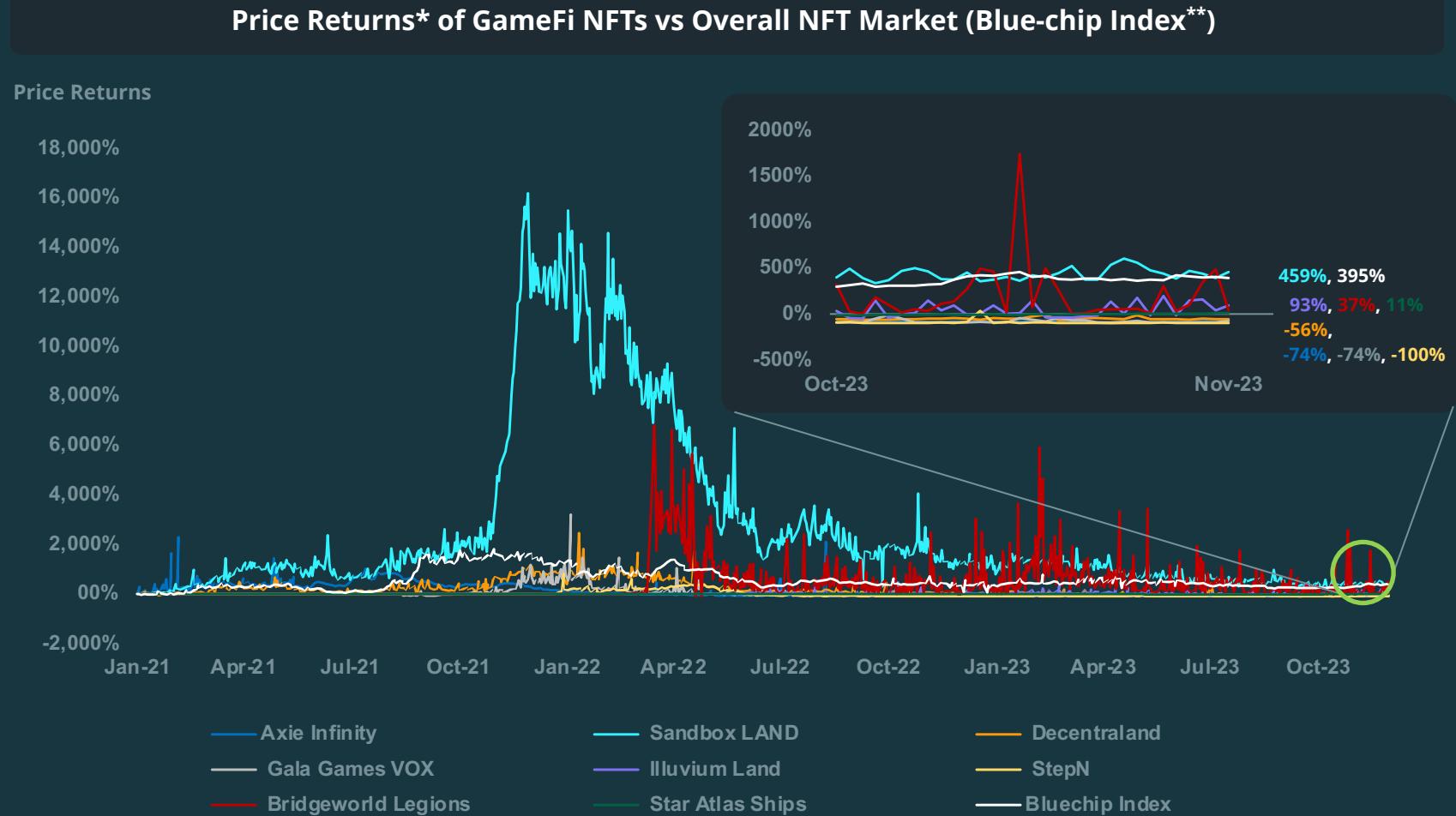
In 2023, 8 out of the top 10 tokens are still priced higher than their initial launch price, with AXS, MAGIC and GALA still more than **10x higher** despite declining across 2022.

Tokens that were launched towards the end of 2021 and 2022 fared much worse, with POLIS plunging by up to 97%, from an **initial price of \$8.60 in September 2021 to \$0.22 towards the end of October 2023**.



## Price Returns of GameFi NFTs vs Overall NFT Market

GameFi NFTs outperformed the overall NFT market in 2021 but have given back most of their returns in 2022 and 2023; a majority of GameFi NFTs have underperformed in 2023.



Source: [Dune Analytics](#), [Cryptoslam](#), [Flipside](#), [Footprint Analytics](#)

\*Price Returns are calculated based on the average price of daily sales, with the initial price set on March 1, 2021, or the average price of secondary sales on the first day of the NFT launch.

\*\*Blue-chip Index is calculated using Footprint Analytics methodology as stated [here](#).

\*\*\*Parallel Alpha & Gods Unchained are excluded in GameFi NFTs due to the wide range of individual card values

In line with GameFi tokens, the prices of GameFi NFTs surged by multiple orders of magnitude, led by Sandbox's LAND, which **rose by 162x at its peak**, from \$109.0 in January 2021 to \$17.7K in November 2021.

Although there were only 3 collections at the time, **GameFi NFTs largely outperformed the overall NFT market**, with The Sandbox leading the charge due to the Metaverse hype towards the end of 2021.

The performance of GameFi NFTs launched in 2022 were **marred by the overall decline of the NFT market**. Launched in February 2022, Bridgeworld Legions fell from a peak price of \$6.1k to \$329 at the end of 2022.

As NFT prices continued to decline throughout 2023, GameFi NFTs plummeted even further as 5 of the top 8 GameFi NFTs **plunged by up to 99.7%**. On the flip side, ILV Land, Bridgeworld Legions, and Star Atlas Ships have appreciated by 54.0%, 46.4% and 10.5% respectively since the start of the year.



## Looking Ahead

The community is still waiting for the promises made in 2021 of AAA-quality blockchain games with modern gameplay and sustainable tokenomics to be delivered.

### Delivering on the Promises of 2021



- During the 2021 GameFi Wave, devs raised heavy investments on the promise of delivering AAA-quality blockchain games with modern gameplay and sustainable tokenomics. It was meant to be a quantum improvement over the early P2E games of the time.
- We are still waiting for these promises to be delivered, though these titles should be close to coming to fruition after two years of development.
- While high fidelity trailers may garner eyeballs, devs shouldn't lose sight that it's ultimately gameplay and tokenomics that will keep gamers coming back.
- Perhaps more healthy skepticism is reserved for the traditional Web2 gaming studios who have invested heavily into developing their own blockchain games, and should theoretically have the experience and resources to deliver market-leading titles.
- However thus far they have had to fend off accusations of these projects being just lazy efforts at a money-grab, with no real thought given on leveraging the benefits of the blockchain for their games.
- A key lesson that should already be learnt from 2021 is around minimizing the friction of gamers interacting with the blockchain, e.g. having to create addresses, write down private keys, approve transactions, pay for gas. Abstracting these away will help in onboarding even normie gamers.

### Fully Onchain Games



- On the other end of the blockchain gaming spectrum, a set of projects are focused on building fully onchain games.
- The target of these projects are to have the entire game, including its game engine, assets, state, etc executed and stored onchain.
- The potential benefits of fully onchain games are:
  - Having a fully transparent, autonomous world that can live on even if the devs leave the project
  - Infinitely extendable through user generated content, including new assets and mods
  - Potentially interoperable with other blockchain projects, protocols and marketplaces
- However, significant challenges still remain:
  - Existing blockchains are only performant enough for simpler, asymmetric games
  - The tooling and framework to build games and game engines onchain have to be re-developed
  - Blockchain-specific challenges, such as MEV, front-running, botting, etc would still exist

## Conclusion & Takeaways

- Early crypto games actually launched way back in 2017, with CryptoKitties becoming the earliest craze, causing congestion on the Ethereum network. **CryptoKitties led to the creation of the ERC-721 NFT standard**, and the first game-centric chain Flow.
- The First GameFi Wave in 2021, ushered in by Axie Infinity and later StepN brought new GameFi trends such as **Play-to-Earn (P2E)** and **Move-to-Earn (M2E)**. Blockchain games across a variety of genres quickly followed, and quickly spread beyond Ethereum onto more performant chains with cheaper gas fees.
- While most of these games eventually **collapsed due to overly-simplistic gameplay and unsustainable tokenomics**, a few of them such as Alien Worlds, Farmers World, Splinterlands and Axie Infinity have survived until today, albeit with a much smaller community of active addresses. Compared to the peak of GameFi in November 2021, the **number of active participating addresses have declined** by 57.9% to 837k.
- **Farming / mining, move-to-earn, and card games** represent the most active genres today. They are more casual, have relatively simpler gameplay mechanics, are less technically demanding, and doesn't require overly sophisticated tokenomics.
- Looking under the hood at the underlying blockchain infrastructure, **gasless chains** such as Wax, Skale, and Hive, as well as **game-centric chains** such as Sui, Flow, and Ronin have become popular with blockchain gamers. However, activity on these chains are still relatively small in scale compared to more generalized chains such as Polygon and BNB Smart Chain.
- When examining the Top 10 GameFi governance tokens by market cap, most of them are still from games launched in 2021. Despite significant declines in 2022, the price of most of these governance tokens are still up compared to their launch price. However as of December 1, 2023, they haven't yet seen significant gains from the recent bull cycle.
- The **successes in 2021 spurred an explosion of investments into GameFi**, notably by firms like Animoca Brands, as well as Web2 Game Studios. However, we have not seen much of the results of these investments, though the **next generation of game titles should be approaching release** after more than two years of development.
- Meanwhile, research and development has begun for **fully on-chain games**, which promises to deliver autonomous worlds with infinite extensibility, but there are still significant technical challenges to be overcome.



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