Blockchain Development Trends

Q2 2020/21

This report outlines critical development trends in decentralized protocols and projects from July 2020 until June 2021

Outlier Ventures

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Table of Contents

Acknowledgments

1. Introduction

In this document, we will analyze critical projects and protocols of the Web3 ecosystem where we identify trends such as rising commit levels, protocols that exhibit clear and consistent levels of core developers across 24 months, and similar trends. In order to establish an overview of such development activity across different protocols and projects, we analyze **4,831 individual repositories**, **1,246,318 code commits**, and finally **2,002,393,842 lines of code** across 172 independent Web3 projects and protocols.

The Web3 ecosystem has experienced a substantial increase in interest from the general public from Q2 2020 to Q2 2021. In this period, we have observed core protocols such as Ethereum and Bitcoin gaining popularity for their usage properties, being referenced in pop culture, and have shown considerable growth in development activity. This report will assist with establishing a clear overview of how core development of specific protocols has performed during this period.

2. Methodology

In this section, we outline the methodology used to produce the contents of this report. The complete methodology, including data sources and analytical infrastructure, is fully open-source. We would like to thank the open-source developers at GrimoireLab, Django, and Open Distro for Elasticsearch, providing computational and analytical infrastructure during this report's development and research phases.

All the core repositories of each GitHub organization's protocol were taken, and the forked repositories were ignored when marked as such on GitHub. Forking repositories is a widespread practice and leads to the development activity of one ecosystem included in another. Including all forks in the analysis adds a lot more noise than clarity. For similar reasons, only activity for each repository's default branch (main or master) was included. In these 'unforked' repositories, all commits to the default branch were indexed and analyzed.

We attribute the development activity for each organization on GitHub to a single protocol and do not include individual repositories outside of those organizations to most accurately show development activity to the core development of protocols.

2.1 Core Development

Core development measures weekly commit and code updates (additions and deletions) over time to the core protocol GitHub organization repositories. Commits to the default branch and line-by-line additions and deletions to code across all repositories under each target organization were indexed and compared. We ignored empty commits with less than or equal to one line of code.
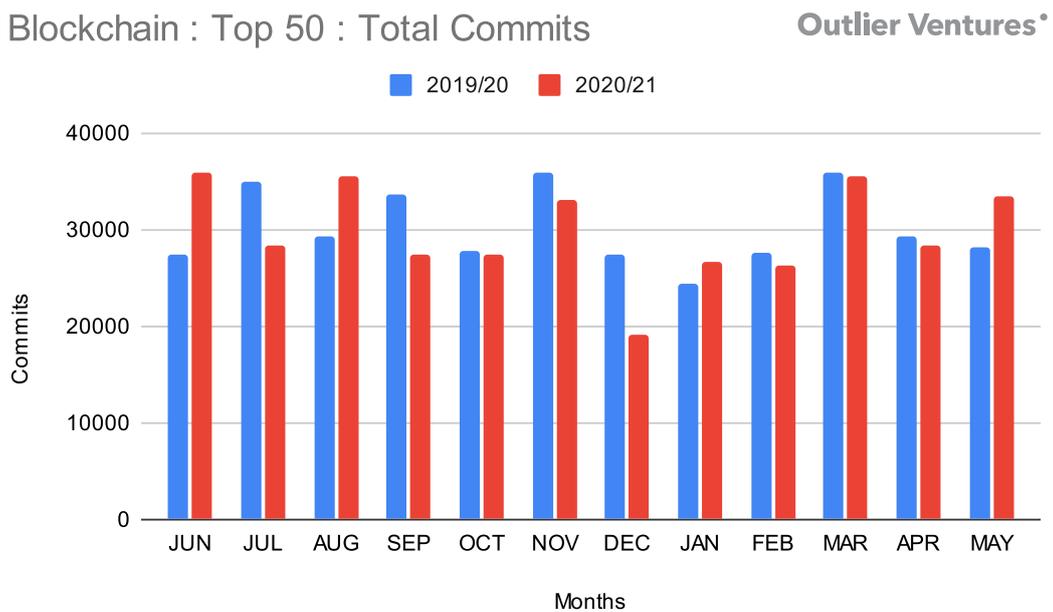
2.2 Contributing Core Developers

Contributing core developers measure the monthly active developers in a protocol's core GitHub organization repositories over time based on their commits. The developer commits to all core repositories of each protocol were de-duplicated against commits to other core repositories during a month to find all unique contributors per month.

3. Blockchain Protocols

In this section, we summarize our analysis of the top 50 open-source blockchain protocols by market capitalization; additionally, we include non-tokenized protocols such as Hyperledger and Corda. We summarize our main discoveries in relevant subsections such as protocols with rising commits, declining commits, and other relevant categories as described in the chapter above.

3.1 Commits

The total number of commits per 12-month period has slightly decreased by -1.30% going from 362 125 total commits compared to 357 406 commits in the recent year. This slight decrease in development activity does not indicate any downward trend for overall development in the Web3 space. However, as seen in the later chapters of this report, the slight decrease in development activity may be related to explosive growth in decentralized finance.

Blockchain : Top 50 : Total Commits

Further, we summarize the relevant content of sub-chapters below, first starting with projects ranked highest in terms of the highest average throughput of commits per month. Secondly, we summarize the top five projects that demonstrate an upward trend of commits. Thirdly, we analyze projects that exhibit a decline in commit levels. Finally, we summarize protocols that show clear and consistent commit levels throughout the total 24-month reporting period.

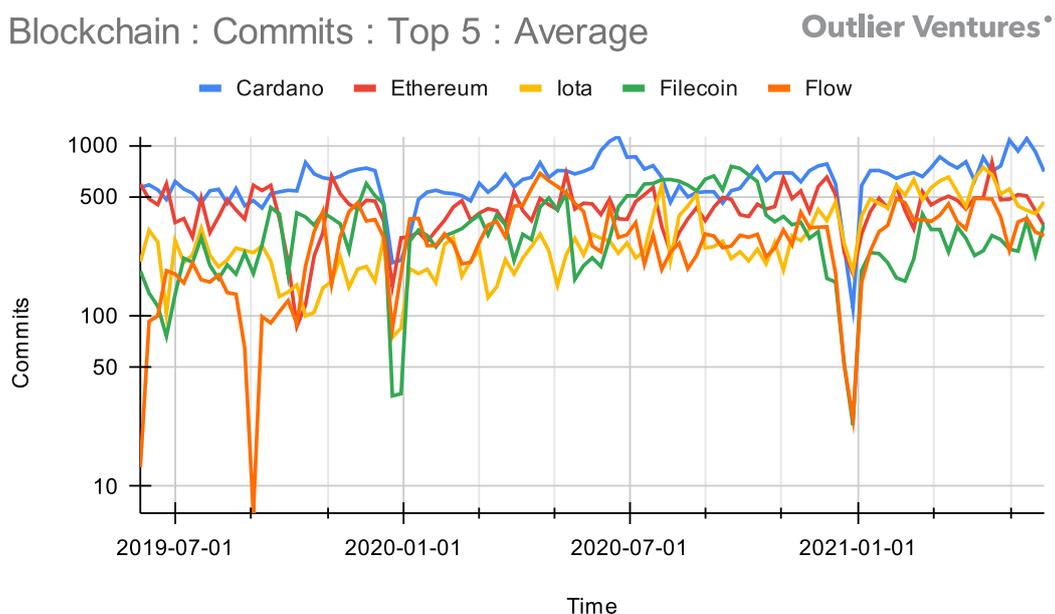- **Cardano** ranks the highest in terms of average commits per month (CPM) with a total of 701 CPM, growing by 24.0% compared to the previous 12-month period. **Ethereum** ranks second highest, with an average of 447 CPM growing by 10.5% compared to the previous period. After Ethereum's second-highest average number of commits, we observe **IOTA** at 394 CPM, **Filecoin** at 368 CPM, and **Flow** at 305 CPM.

- **Avalanche** demonstrated an explosive growth of 709.7% of total commits in the recent 12-month period compared to the last one, going from 1,553 commits per year (CPY) to 12575 CPY. Further, **Ocean Protocol** increased by 354.12% CPY, **Terra** exhibited a solid growth of 186.55%, **Cosmos** demonstrated double growth at 115.36%, and finally, **IOTA** has increased by 98.65% CPY.

- Aion has experienced a decrease of -95.1% in yearly commit levels in the recent 12-month reporting period compared to the previous period. **Energi** exhibited a clear downward trend at -94.19% CPY. Further, **Nuls** has dropped by -80.00% CPY, **Steem** demonstrated a -67.96% in total commit levels, and finally, **Ethereum Classic** has decreased by -65.89% CPY.

- **Monero** increased by 0.36%, going from 1945 CPY to 1952 CPY in the latter 12-month period. **Lisk** exhibited a slight drop of -1.64% CPY. Further, **Corda** experienced a decrease of -1.37% total commits per year. **Ark** exhibited a slight increase of 2.10% CPY, and lastly, **Bitcoin SV** demonstrated a consistent trend with a slight increase of 3.34% CPY in total.

3.1.1 Top Commit Trends

This section analyzes the top ten protocols for the highest monthly average commits (CPM). First, **Cardano** showed clear signs of a high average volume of 701 CPM. In addition, It is important to note that we have observed a high amount of monthly commits designated exclusively to project coordination and not necessarily to active core protocol development for Cardano. **Ethereum** exhibited a high level of commits on average during the relevant period of this report, averaging at 447 CPM. The total average of commits across all protocols in this report results in 107 CPM for a broader context. This indicates that Cardano is 555% more active and Ethereum 317% more active than the general average across all protocols. After Ethereum's second-highest average number of commits, we observe **IOTA** at 394 CPM, **Filecoin** at 368 CPM, and **Flow** at 305 CPM. Moreover, we list the top ten (10) protocols with the highest amount of average CPM, where we are comparing the results from 01-06-2020 to 31.05.21 with 01.06.2019 to 25.05.2020 time period.

Blockchain : Commits : Top 5 : Average — Outlier Ventures°

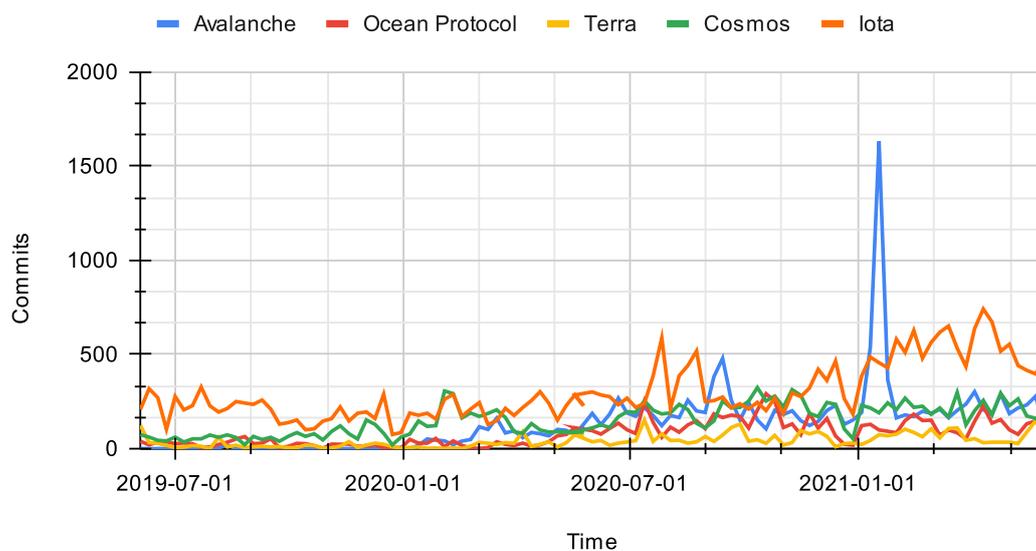| Protocols	2019/20 AVG CPM	2020/21 AVG CPM	Yearly Δ CPM
Cardano	566	702	24.0%
Ethereum	405	447	10.5%
Iota	202	394	94.9%
Filecoin	292	368	26.1%
Flow	269	306	13.6%
Lisk	263	254	-3.5%
Hyperledger	382	249	-34.8%
Solana	209	247	18.6%
Avalanche	30	237	694.4%
Polkadot	149	221	48.6%
			Outlier Ventures•

3.1.2 Rising Commit Trends

Avalanche demonstrated a clear rising trend in the last 12-month period compared to the previous period, going from 1,553 commits per year (CPY) to 12,575 CPY, resulting in an explosive growth of 709.72% of commit activity. The explosive growth of commits at the beginning of Q1 2021 may be related to the launch of Avalanche-Ethereum Bridge (AEB) and Pangolin, the largest DEX on Avalanche. **Ocean Protocol** had 1,482 total CPY and has increased by 354.12%, leading to 6,730 CPY in the recent 12-month period. **Terra** exhibited a solid growth of 186.55%, going from 1,100 CPY to 3,152 CPY in the latter half of the reporting period. Further, **Cosmos** demonstrated double growth, from 5,033 CPY to 10,839 CPY, resulting in a 115.36% solid growth. Finally, **IOTA** has increased by 98.65% CPY.

Blockchain : Commits : Top 5 : Rising   Outlier Ventures•

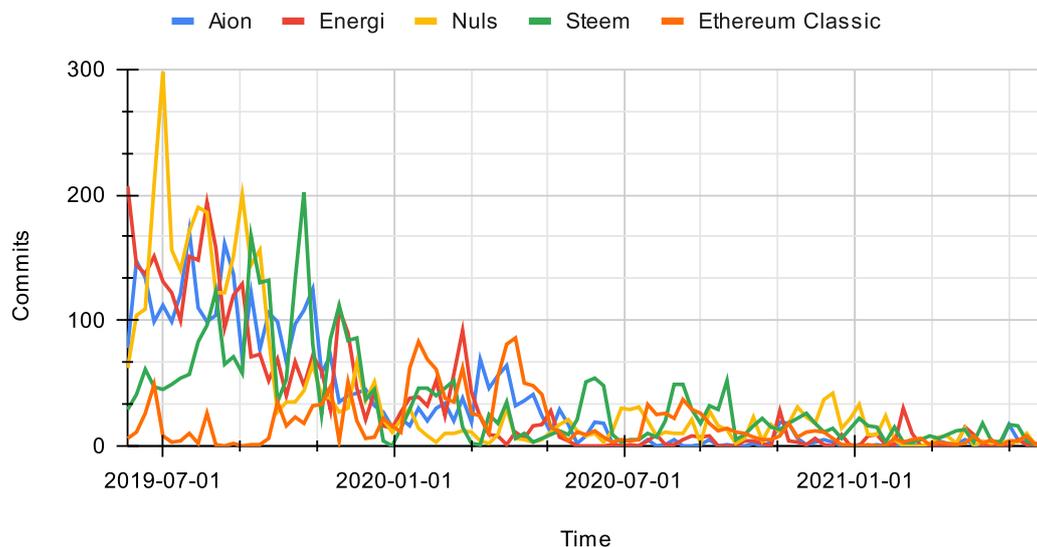| Protocols	2019/20 CPY	2020/21 CPY	Yearly Δ CPY
Avalanche	1,553	12,575	709.7%
Ocean Protocol	1,482	6,730	354.1%
Terra	1,100	3,152	186.5%
Cosmos	5,033	10,839	115.4%
Iota	10,516	20,890	98.6%
Near Protocol	6,774	10,974	62.0%
ZCash	2,768	4,393	58.7%
Arweave	560	886	58.2%
Dash	2,391	3,776	57.9%
Polkadot	7,730	11,710	51.5%

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3.1.3 Declining Commit Trends

Aion has experienced a decrease of -95.01% in yearly commit levels in the recent 12-month reporting period compared to the previous period, going from 3,465 CPY to 173 CPY in total. **Energi** exhibited a clear downward trend from 3,440 CPY to 200 CPY, leading to a -94.19% drop. **Nuls** has dropped by -80.00%, from 3,375 CPY to 675 CPY in total. Steem demonstrated a -67.96% in commit levels, and finally, **Ethereum Classic** has decreased by -65.89% in total.

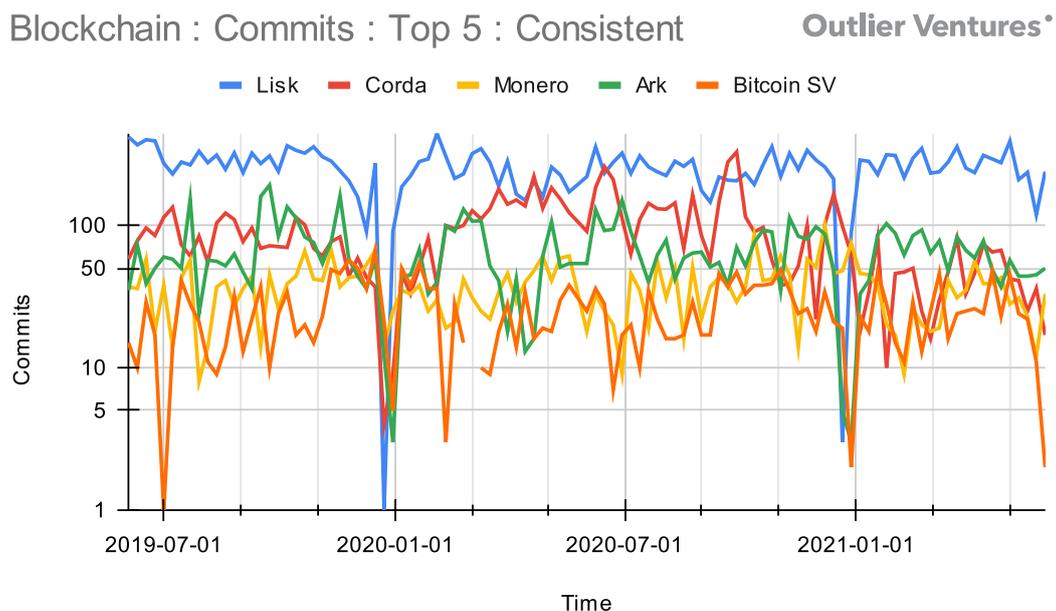Blockchain : Commits : Top 5 : Declining   **Outlier Ventures**

Protocols	2019/20 CPY	2020/21 CPY	Yearly Δ CPY
Aion	3,465	173	-95.0%
Energi	3,440	200	-94.2%
Nuls	3,375	675	-80.0%
Steem	2,734	876	-68.0%
Ethereum Classic	1,369	467	-65.9%
Kin	2,756	1,047	-62.0%
Bytom	1,109	422	-61.9%
Waves	13,055	5,169	-60.4%
Qtum	7,210	3,100	-57.0%
Ontology	1,406	659	-53.1%
			Outlier Ventures·

3.1.4 Consistent Commit Trends

Lisk demonstrated a consistent trend of commits per month with a slight decrease of -1.64% CPY, averaging 253.5 CPM. Further, we observe significant drops during the holiday season at the end of Q4 of each respective 12-month period. **Corda** experienced a decrease in commit levels going from 4,676 CPY compared to 4,741 CPY, resulting in a -1.37% total commit per year. **Monero** serves as the median across the top-five table of consistent commit projects in the given reporting period, where Monero increased by 0.36%, going from 1,952 CPY compared to 1,945 CPY in the latter 12-month period. **Ark** exhibited a slight increase of 2.10% CPY, periods, and lastly, **Bitcoin SV** demonstrated a consistent trend with a slight increase of 3.34% CPY in total.
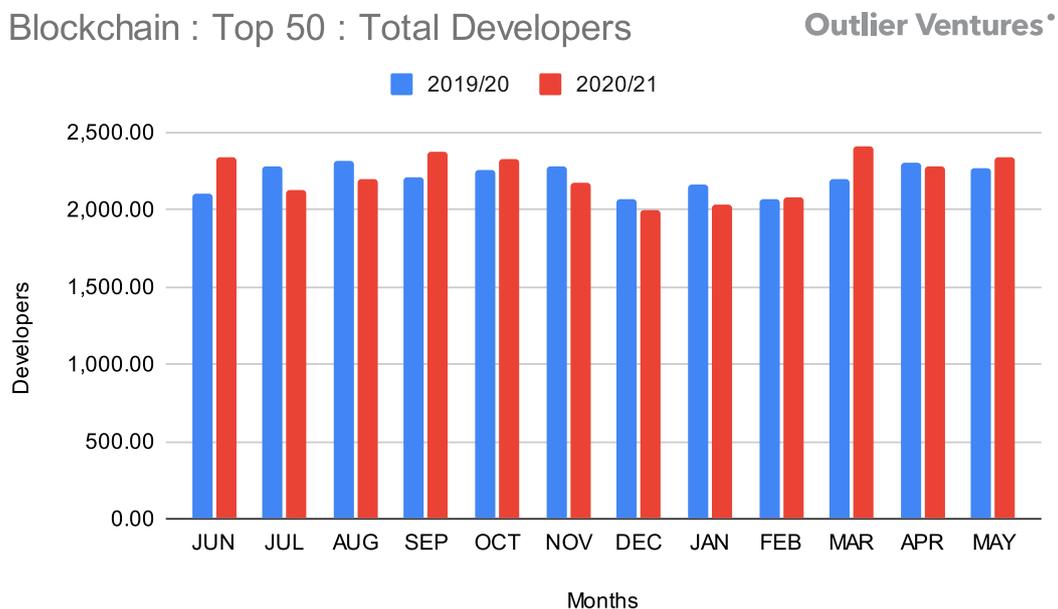

Blockchain : Commits : Top 5 : Consistent — Outlier Ventures·

Legend: Lisk, Corda, Monero, Ark, Bitcoin SV

Protocols	2019/20 CPY	2020/21 CPY	Yearly Δ CPY
The Graph	4,084	4,404	7.8%
Zilliqa	4,246	4,560	7.4%
Polygon / Matic	4,077	4,231	3.8%
Bitcoin SV	1,319	1,363	3.3%
Ark	3,481	3,554	2.1%
Monero	1,945	1,952	0.4%
Corda	4,741	4,676	-1.4%
Lisk	13,662	13,438	-1.6%
Decred	3,702	3,606	-2.6%
Stellar	5,257	4,993	-5.0%

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3.2 Developers

The top protocols (non-decentralized finance protocols) have demonstrated consistent active developer counts for each month compared with both reporting periods. Further, there is a slight increase of 0.60% MAD on average spanning across all protocols included in this report.
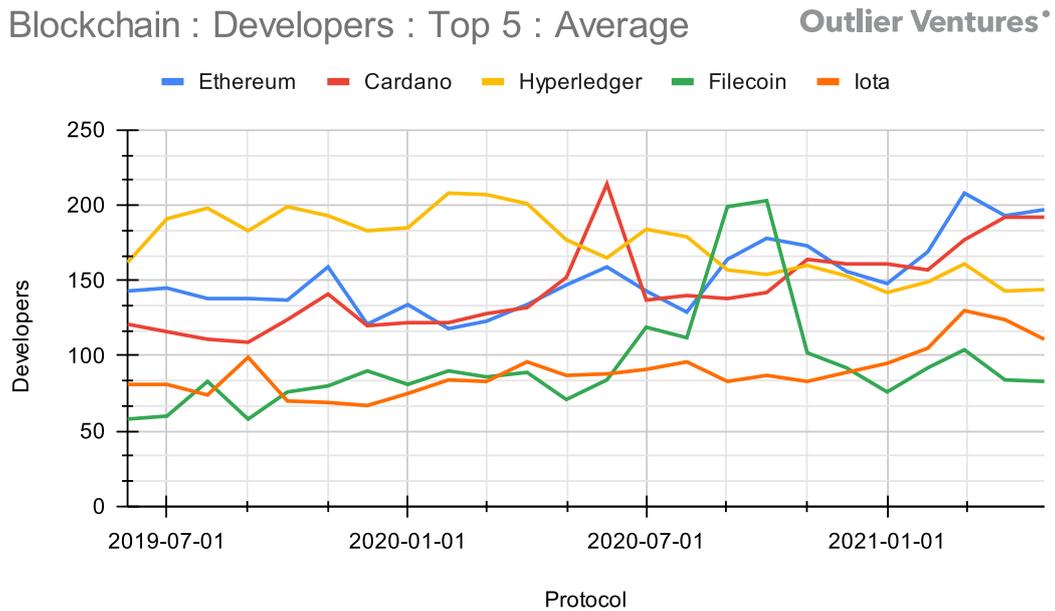

Blockchain : Top 50 : Total Developers

Further, we summarize the relevant content of sub-chapters below, first starting with projects ranked highest in terms of the highest average number of developers per month. Secondly, we summarize the top-five new protocols that have been launched this year. Thirdly, we summarize the top five projects that demonstrate an upward trend of the total developer count. Fourthly, we analyze projects that are experiencing a decline in total developers. Finally, we summarize protocols that show clear and consistent developer counts throughout the total 24-month reporting period.

- **Ethereum** demonstrated a high number of monthly active developers averaging 168 per month with a 23.2% increase compared to the previous period. Similarly, **Cardano** had 165 active developers per month with a 31.8% increase, **Hyperledger** had 157 active developers per month. **Filecoin** had a developer base of 112 active developers per month leading to a 46.4% increase. Finally, **IOTA** averaged 99 active developers per month resulting in a 22.3% increase.

- **Avalanche** experienced an explosive growth of 299% increase in monthly active developers on average per month. **Terra** exhibited a solid growth of 132.1% MAD on average. **Dfinity** experienced impressive growth of 132.1% MAD, **Flow** demonstrated a 121.4% increase of monthly active developers per month. Lastly, **Ocean Protocol** exhibited a rising trend with a 105.7% increase of MAD on average.

- **Aion** exhibited a significant drop of monthly active developers on average resulting in a -82.6% decrease overall. **Energi** declined by a total of -85.9% MAD. Further, **Kin** experienced a -73.7% decline in MAD on average. **Waves** experienced a decline of -57.4% MAD on average. Lastly, **Fetch** showed a drop of -54.6% where it went from 61 MAD to 28 MAD on average.

- **Decred** exhibited a clear, stable trend across the 12-month periods with monthly active developers, experiencing a slight growth of 1.5% with an average of 32 MAD. **ZCash** showed a stable developer count with an increase of 0.7% in the last 12-months, with an average of 26 MAD. The median of the top 5 is **Monero** that demonstrated an equal average per respective 12-month period with 26 MAD on average. Further, **Zilliqa** demonstrated a slight decrease of -0.7%, with an average of 25 MAD. Lastly, **Stellar** experienced a slight decrease where it went from 46 MAD to 45 MAD on average, resulting in a -3.8% decrease overall.

3.2.1 Top Developer Trends

Ethereum demonstrated a high number of monthly active developers averaging 168 per month with a 23.2% increase compared to the previous period. Similarly, **Cardano** exhibited relatively higher monthly active developers with 165 MAD on average, leading to a 31.8% increase. **Hyperledger** experienced a slight decrease in average MAD at -17.3% compared to the previous 12-month period. However, they still have an average of 158 monthly active developers per month. **Filecoin** demonstrated a 46.4% increase from the previous 12-month resulting in 113 MAD on average. Finally, **IOTA** averaged 99 active developers per month with a 22.3% increase in total.
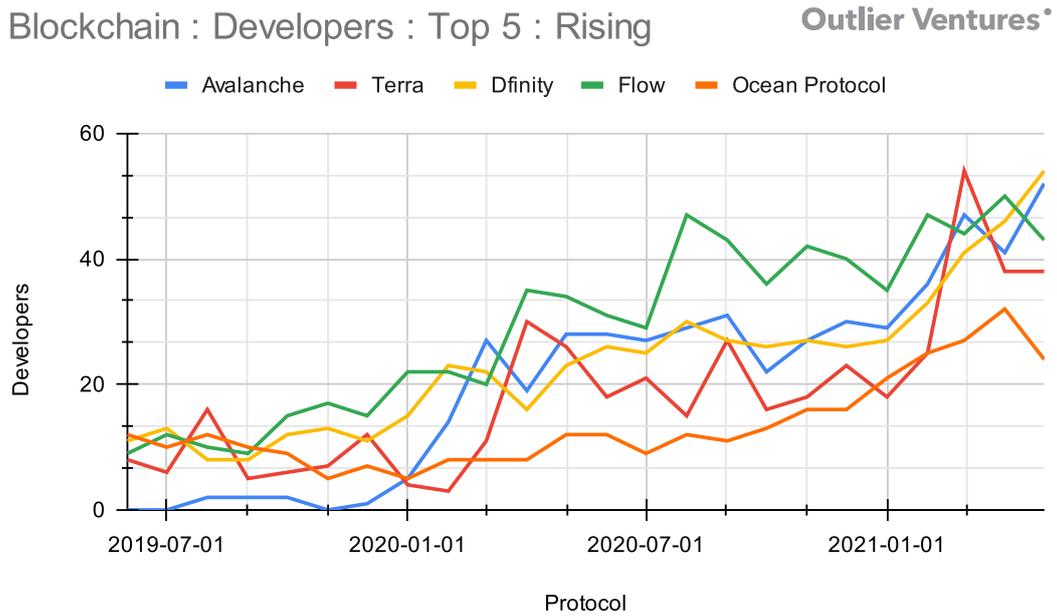
Blockchain : Developers : Top 5 : Average   **Outlier Ventures**

Protocols	2019/20 AVG MAD	2020/21 AVG MAD	Yearly Δ AVG MAD
Ethereum	136	168	23.2%
Cardano	125	165	31.8%
Hyperledger	191	158	-17.3%
Filecoin	77	113	46.4%
Iota	81	99	22.4%
Cosmos	48	83	71.5%
Celo	65	77	18.6%
Harmony	44	71	62.4%
Polkadot	35	68	96.2%
Bitcoin	57	62	7.7%

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3.2.2 Rising Developer Trends

Avalanche experienced explosive growth in the recent year where it went from an average of 8 active developers per month on average to 33 MAD on average, resulting in a 299% increase. **Terra** exhibited a solid growth of 132.1% MAD on average, going from 11 MAD to 26 MAD. **Dfinity** experienced remarkable growth where it went from 15 MAD to 32 MAD on average, resulting in a total increase of 121.7%. Further, **Flow** demonstrated

a rising trend of active developers with a 121.4% increase in MAD on average. Lastly, **Ocean Protocol** exhibited clear evidence of a rising trend in monthly active developers with a 105.7% increase from the previous 12-month period, going from 9 MAD to 18 MAD on average.

Blockchain : Developers : Top 5 : Rising

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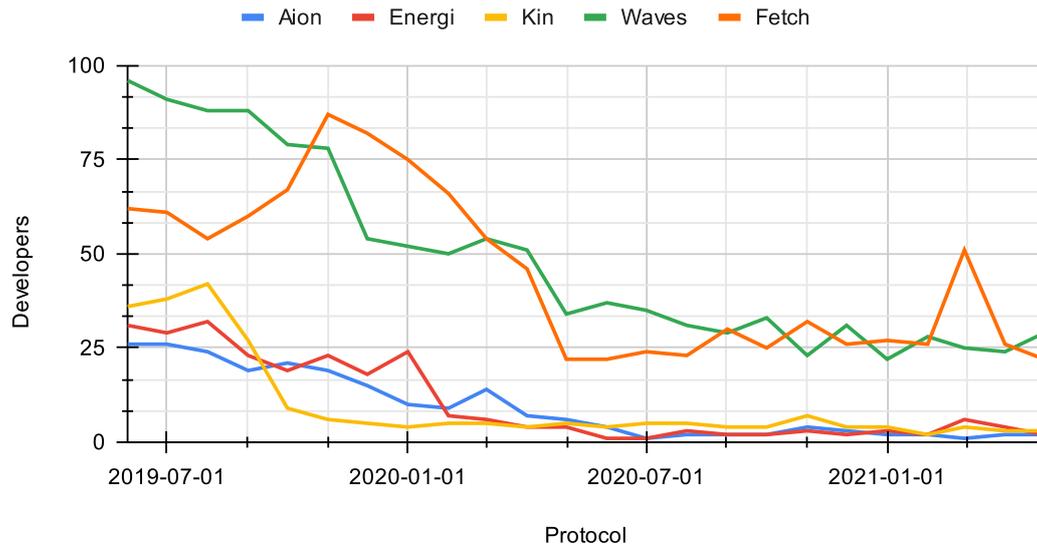| Protocols	2019/20 AVG MAD	2020/21 AVG MAD	Yearly Δ AVG MAD
Avalanche	8	33	299.0%
Terra	11	26	132.1%
Dfinity	15	32	121.7%
Flow	18	41	121.4%
Ocean Protocol	9	18	105.7%
Polkadot	35	68	96.2%
Solana	27	50	84.4%
Cosmos	48	83	71.5%
Near Protocol	33	57	70.4%
Harmony	44	71	62.4%

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3.2.3 Declining Developer Trends

Aion exhibited a significant drop in monthly active developers where it went from 16 MAD to 2 MAD on average, resulting in a -82.6% decrease overall. **Energi** declined by a total of -85.9%, going from 18 MAD to 3 MAD on average. Further, **Kin** went from 16 MAD to 4 MAD on average, resulting in -73.7% overall of monthly active developers. **Waves** experienced a decline of -57.4% MAD on average, going from 68 MAD to 29 MAD. Lastly, **Fetch** showed a drop of -54.6% where it went from 61 MAD to 28 MAD on average.

Blockchain : Developers : Top 5 : Declining

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Legend: Aion, Energi, Kin, Waves, Fetch

Y-axis: Developers (0, 25, 50, 75, 100)
X-axis: Protocol (2019-07-01, 2020-01-01, 2020-07-01, 2021-01-01)

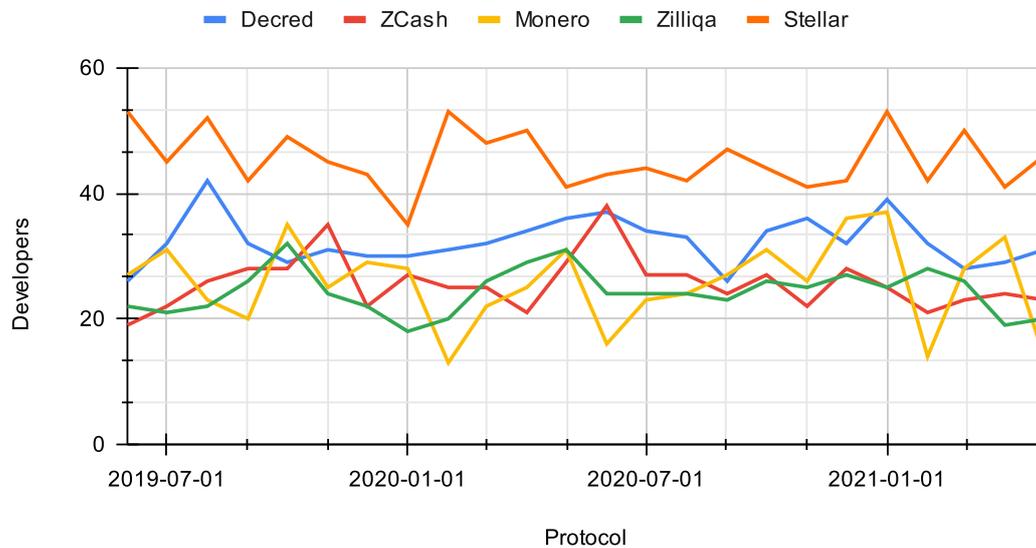| Protocols	2019/20 AVG MAD	2020/21 AVG MAD	Yearly Δ AVG MAD
Aion	16	2	-86.2%
Energi	18	3	-85.9%
Kin	16	4	-73.7%
Waves	68	29	-57.4%
Fetch	61	28	-54.6%
Ontology	17	8	-54.4%
Steem	13	6	-51.9%
Nuls	12	6	-50.3%
Litecoin	45	23	-48.9%
Qtum	70	36	-48.2%

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3.2.4 Consistent Developer Trends

Decred exhibited a clear, stable trend across the 12-month periods with monthly active developers, experiencing a slight growth of 1.5% with an average of 32 MAD. **ZCash** showed a stable developer count with an increase of 0.7% in the last 12-months, with an average of 26 MAD. The median of the top 5 is **Monero** that demonstrated an equal average per respective 12-month period with 26 MAD on average. Further, **Zilliqa** demonstrated a slight decrease of -0.7%, with an average of 25 MAD. Lastly, **Stellar** experienced a slight decrease where it went from 46 MAD to 45 MAD on average, resulting in a -3.8% decrease overall.

Blockchain : Developers : Top 5 : Consistent

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Legend: ■ Decred ■ ZCash ■ Monero ■ Zilliqa ■ Stellar

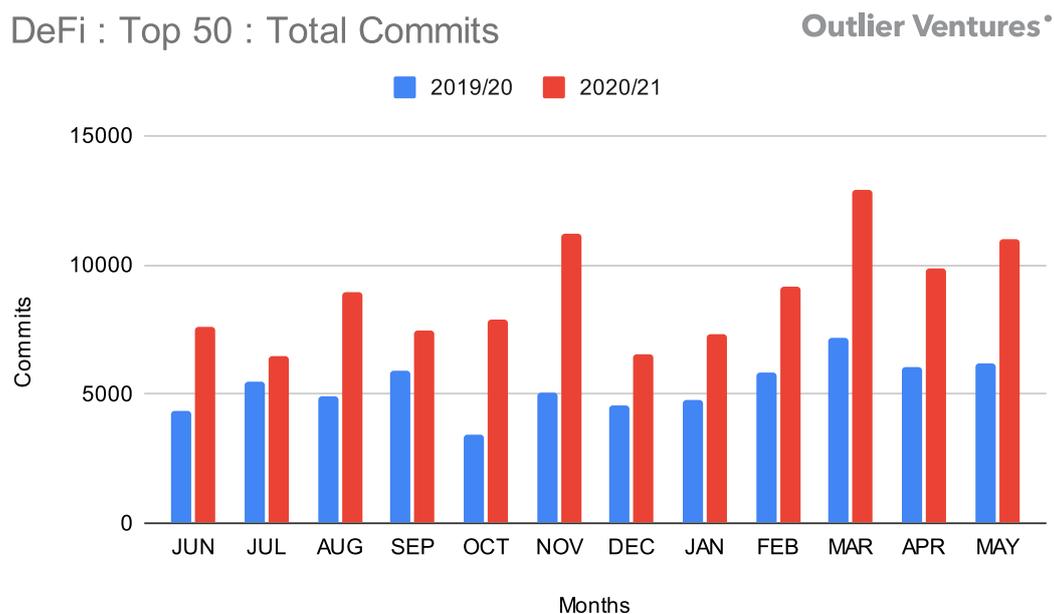| Protocols	2019/20 AVG MAD	2020/21 AVG MAD	Yearly Δ AVG MAD
VeChain	9	10	6.5%
Komodo	25	27	6.3%
Handshake	7	7	6.2%
Decred	32	33	1.6%
ZCash	26	26	0.7%
Monero	26	26	0.0%
Zilliqa	24	24	-0.7%
Stellar	46	45	-3.8%
Bitcoin Cash	32	31	-3.9%
Ark	22	21	-4.5%

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4. Decentralized Finance Protocols

In this section, we summarize our analysis of the top 50 open-source decentralized finance protocols by market capitalization. We summarize our main discoveries in relevant subsections such as protocols with rising commits, declining commits, and other relevant categories as described in the chapter above.

4.1 Commits

We have observed that decentralized finance (DeFi) protocols have experienced substantial growth from the previous year. In the previous year, the selected protocol range had 63 807 total commits; the current year results in 106 157 total commits. The two respective periods compared to each other results in a 66.4% increase in commit level in the latter period. During the summer of 2020, we experienced an exponential increase in the general interest in decentralized finance protocols from a consumer perspective; this is consistent with our main findings, as indicated in the graph below.

DeFi : Top 50 : Total Commits

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■ 2019/20   ■ 2020/21

Further, we summarize the relevant content of sub-chapters below as done in the previous chapter of this report.
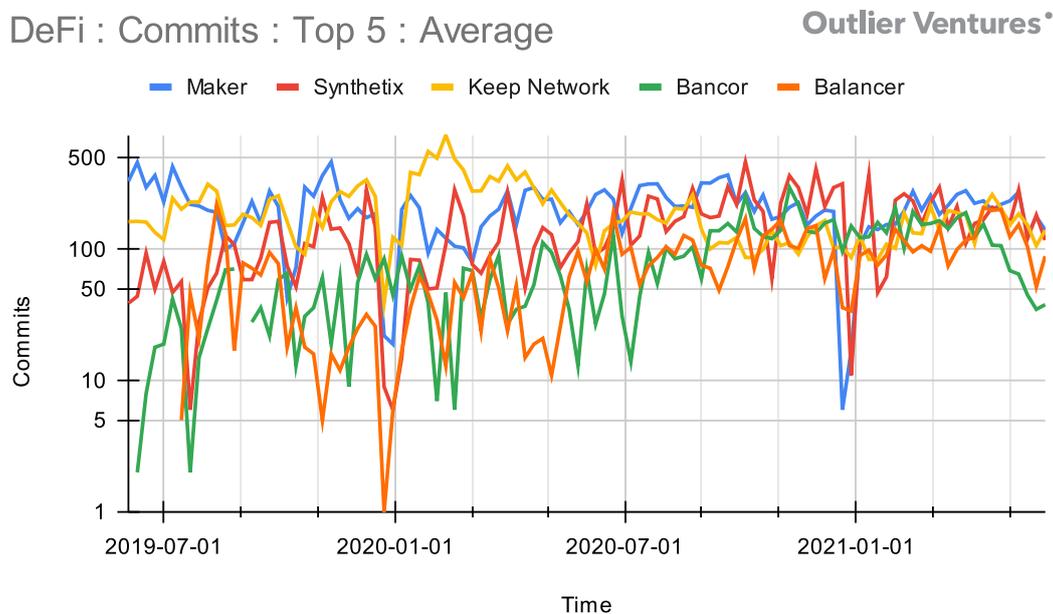
- **Maker** protocol exhibited clear evidence of consistent and high-average throughput of 216 average CPM with a 3.1% growth from the previous period. **Synthetix** protocol demonstrated explosive growth in commits at 106.8% and showed a high-average throughput of 205 average CPM. **Keep Network** ranks third with 145 average CPM while falling -43.7% in commit levels compared to last year. **Bancor** displayed both an impressive growth of 185.4% and high average monthly throughput of 122 CPM. **Balancer** exhibited an impressive growth of 180.4% and a high monthly throughput of commits at 107 CPM.

- **Aave** displayed explosive growth at 1,794.3% in CPY. **Nexus** demonstrated consistent development with the exponential growth of 582.8% CPY. Finally, **mStable** exhibited stable development activity month by month, eventuating in a 487.5% growth of CPY. **Liquity** had grown 463.0% CPY and **Uma** exhibited a 374.1% increase of total commits in the recent year

- **Metronome** experienced a drop in commit levels per year of -88.1%, where we report a total of 663 CPY compared to 79 CPY in the latter period. **Sablier** showed a drop of -85.4% in CPY. **Enzyme** experienced a total drop of 50.9%. **Kyber** showed relatively high levels of commits throughout the reporting period; however, its commit levels decreased by -50.5% CPY. **Loopring** displayed a drop of -49.3% CPY.

- Both Compound and Maker have demonstrated a consistent commit history. **Maker** shows a high average monthly commit throughput at 215.7 CPM with an increase of 5.11% CPY. Compared to the previous period, **Compound** averaged at 44.1 CPM, with a slight decrease of -2.17% CPY.

4.1.1 Top Commit Trends

Maker protocol exhibited clear evidence of consistent and high-average throughput of 216 CPM with a 3.1% growth from the previous period. Maker commit levels dropped substantially during the new year transition. It is generally observed that activity levels drop during the primary holiday seasons like Christmas consistently across projects. **Synthetix** protocol demonstrated a 106.8% growth in commits with a high-average throughput of 205 CPM. **Keep Network** ranks third with 145 average CPM while falling -43.7% in commit levels compared to last year. **Bancor** displayed growth of 185.4% and high average monthly throughput of 122 CPM. **Balancer** exhibited a 180.4% growth with a high monthly throughput at 107 CPM.

DeFi : Commits : Top 5 : Average

Protocols	2019/20 AVG CPM	2020/21 AVG CPM	Yearly Δ AVG CPM
Maker	209	216	3.1%
Synthetix	99	205	106.8%
Keep Network	259	145	-43.7%
Bancor	43	122	185.4%
Balancer	38	107	180.5%
Uma	17	79	365.2%
renVM	95	78	-18.1%
Uniswap	32	76	138.1%
Liquity	11	59	452.4%
Set Protocol	16	46	197.3%

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4.1.2 Commits on New Protocols

The landscape of DeFi is constantly changing and is undergoing rapid innovation in a wide area of applications. We have identified numerous protocols that have recently launched and have attracted attention from the market by being ranked in the top section of external information sources listing relevant projects. **SushiSwap** showed initial commits in early August 2020 and has pushed an impressive 4,485 commits in a short period of time. **Yearn Finance** displayed early commits in early July 2020 then resulting in 3,120 total commits. *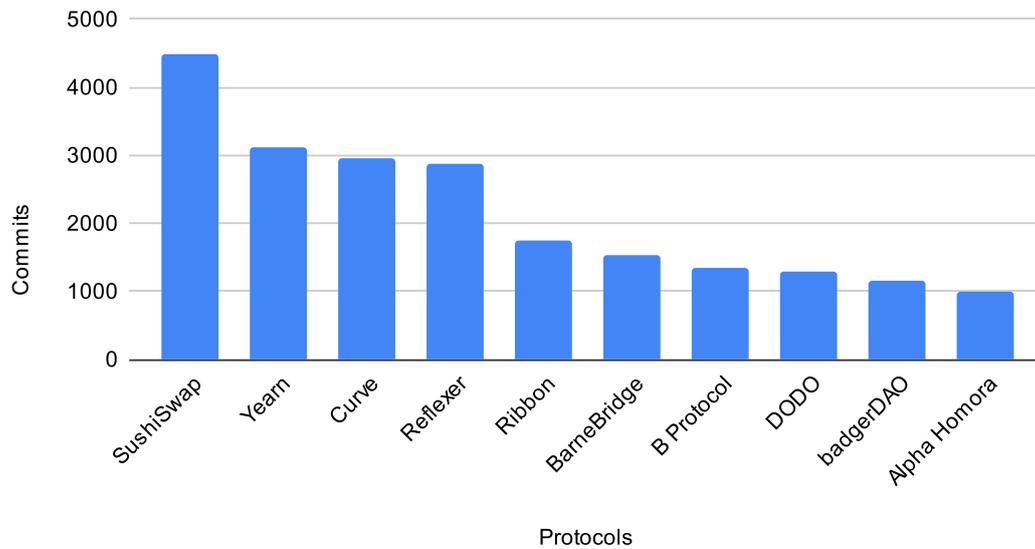*Curve** launched officially in January 2020 where we observed earlier activity from the core developer team resulting in 2,965 total commits by the end of the recent 12-month period. **Reflexer** exhibited stable commit levels from project inception resulting in 2,883 total commits. Lastly, **Ribbon Finance** demonstrated initial commit activity in late October 2020 and grew exponentially from project inception, resulting in 1,733 commits during the 12 months.

DeFi : Commits : Top 5 : Newcomers

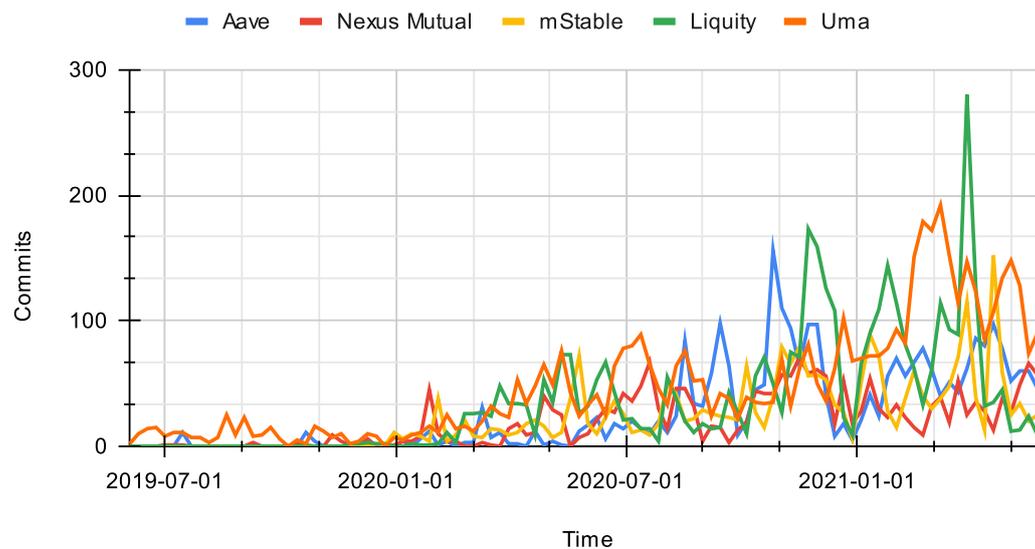## DeFi : Commits : Top 10 : Newcomers

4.1.3 Rising Commit Trends

We have observed explosive growth in development activities across decentralized finance protocols and projects. In the top five, **Aave** displayed explosive growth at 1,794.3% going from 142 CPY to 2,690 CPY in total. **Nexus** demonstrated consistent development with the exponential growth of 582.77%. Further, **mStable** exhibited stable development activity month by month, eventuating in 487.47% growth. **Liquity** had grown 463.0% compared to last year, going from 552 CPY to 3,108 CPY. Lastly, **Uma** went from 885 CPY to 4,196 CPY resulting in a 374.1% increase of total commits in the recent year.

DeFi : Commits : Top 5 : Rising

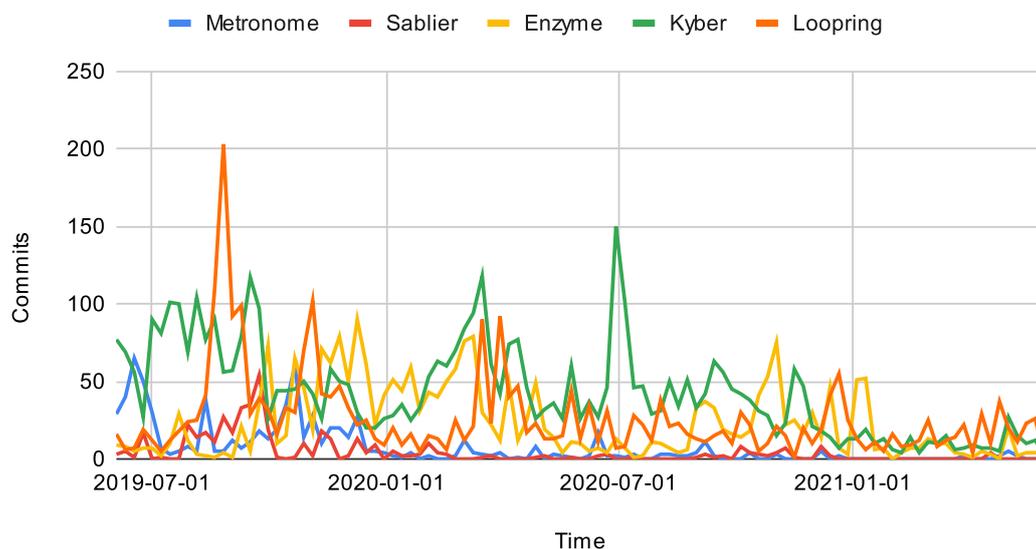| Protocols	2019/20 CPY	2020/21CPY	Yearly Δ CPY
Aave	142	2,690	1794.4%
Nexus Mutual	267	1,823	582.8%
mStable	359	2,109	487.5%
Liquity	552	3,108	463.0%
Uma	885	4,196	374.1%
Set Protocol	807	2,445	203.0%
Bancor	2,221	6,460	190.9%
Balancer	1,991	5,693	185.9%
Uniswap	1,670	4,053	142.7%
Synthetix	5,149	10,853	110.8%
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4.1.4 Declining Commit Trends

Metronome experienced a drop in commit levels of -88.1% compared to the previous period, as indicated in the graph below, going from 663 CPY to 79 CPY. **Sablier** exhibits a drop of -85.4% CPY. **Enzyme** experienced a total drop of 50.9%. Kyber shows relatively high levels of commits throughout this report. However, the protocol has decreased by -50.5% CPY. Lastly, in the top-five table of this section, **Loopring** displayed a drop of -49.3%, going from 1,829 CPY to 928 CPY in total.

DeFi : Commits : Top 5 : Declining

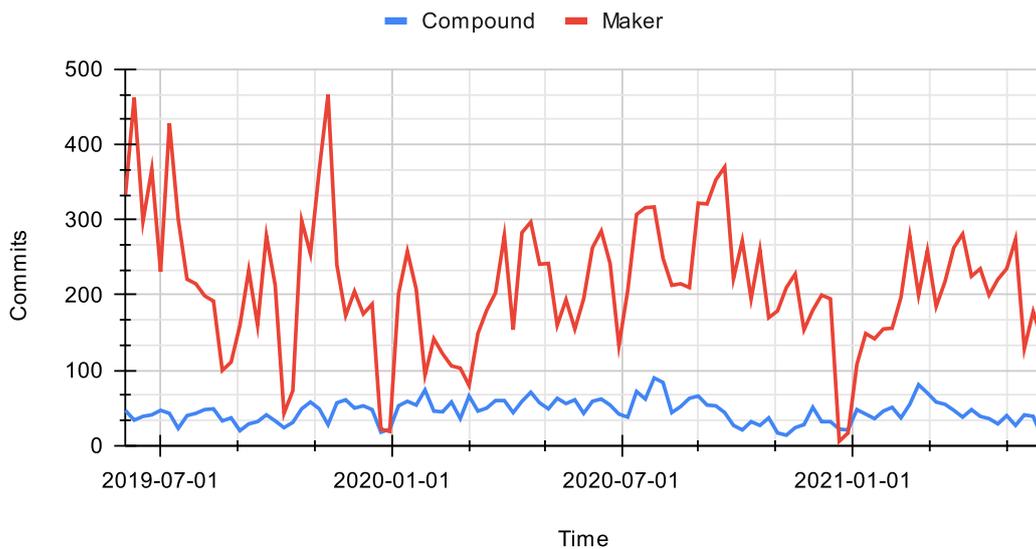| Protocols	2019/20 CPY	2020/21 SUM CPY	Yearly Δ CPY
Metronome	663	79	-88.1%
Sablier	385	56	-85.5%
Enzyme	1,644	808	-50.9%
Kyber	3,019	1,496	-50.4%
Loopring	1,829	928	-49.3%
Keep Network	13,443	7,711	-42.6%
Lightning Network	2,386	1,635	-31.5%
dYdX	537	436	-18.8%
renVM	4,959	4,142	-16.5%
Compound	2,394	2,342	-2.2%
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4.1.5 Consistent Commit Trends

Primarily, protocols in decentralized finance have mainly shown explosive growth in commit levels (CPY). However, the early and established protocols such as Compound and Maker already had their repositories well-developed to a state before the explosive interest in DeFi services, as previously mentioned. Both Compound and Maker have demonstrated a consistent commit history. **Maker** showed a high average monthly commit throughput at 215.7 CPM with an increase of 5.11% CPY. **Compound** averaged at 44.1 CPM, with a slight decrease of -2.17% CPY compared to the previous period.
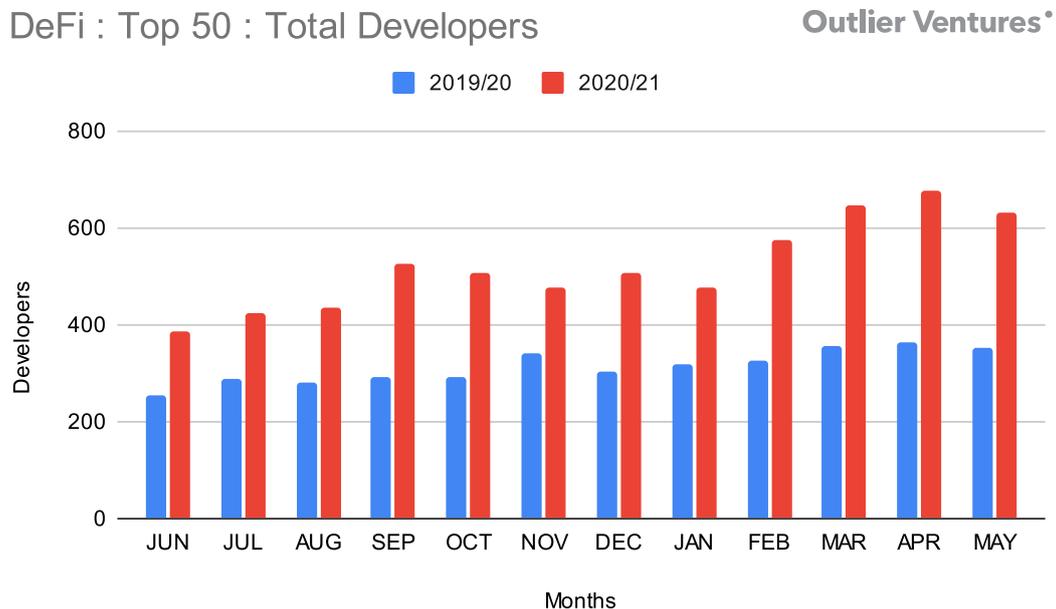
DeFi : Commits : Consistent

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4.2 Developers

We observed a quite impressive growth of monthly active developers in the recent 12-month period compared to last year, resulting in a 66.7% increase of developers onboarded DeFi protocols.

DeFi : Top 50 : Total Developers

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■ 2019/20   ■ 2020/21

Developers (y-axis: 0, 200, 400, 600, 800)

Months (x-axis): JUN, JUL, AUG, SEP, OCT, NOV, DEC, JAN, FEB, MAR, APR, MAY

Further, we summarize the relevant content of sub-chapters below as done in the previous chapter of this report.

- **Maker** demonstrated steady growth in active developers per month with an increase of 12.0% compared to previous year. **Compound** experienced a slight increase similar at 12.2%. Further, **Synthetix** demonstrated growth at 44.4%, **Uniswap** exhibited great growth of 195.0% increase in average MAD. Lastly, **Balancer** displayed an impressive increase at 283.9% MAD on average.

- **Aave** experienced an impressive growth at 636.0% of monthly active developers on average. Further, **mStable** displayed a 320.0% increase of MAD on average. **Dfyn Network** experienced an increase of 220.0% on average, and lastly, **Set Protocol** grew by 204.8% growth of monthly active developers on average.

- **Metronome** declined by -63.1% on monthly active developers per month on average. **Keep Network** displayed a -46.6% decrease of MAD on average Just beneath comes **Sablier** with a decrease of -41.2% in MAD on average. Further, the **dYdX** project experienced a -23.8% decline in average MAD. Lastly, **Kyber** displayed a steady decrease in the number of monthly active developers on average, leading to a -20.2% decrease of average MAD.

- Loopring and Enzyme have demonstrated a consistent trend across both periods where **Loopring** performed consistently across the total report period of 24 months where it exhibited an average of 11 active developers per month in both of the respective 12-month periods. **Enzyme** displayed a slight decrease of -3.2% in average developers active per month compared to the previous period, however, this does not indicate any downward trend.
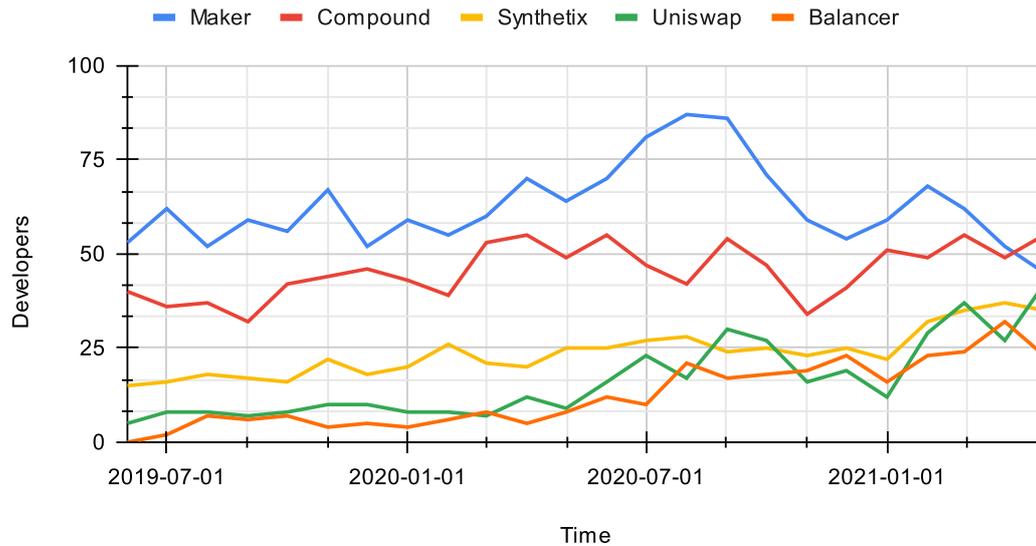
4.2.1 Top Developer Trends

Maker demonstrated steady growth in active developers per month (MAD) with an increase of 12.0%; they have an average of 66 developers active per month. **Compound** experienced a slight increase at 12.2%, with 48 active developers per month on average. Further, **Synthetix** demonstrated growth at 44.4% where they have 28

MAD on average. **Uniswap** exhibited good growth in the last 12-month period, most likely due to their V3 launch, effectively leading to a 195.0% increase, with 25 MAD on average. Lastly, **Balancer** displayed an impressive growth rate at 283.9%, going from an average of 5 MAD to 20 MAD in the recent period.

DeFi : Developers : Top 5 : Average — Outlier Ventures

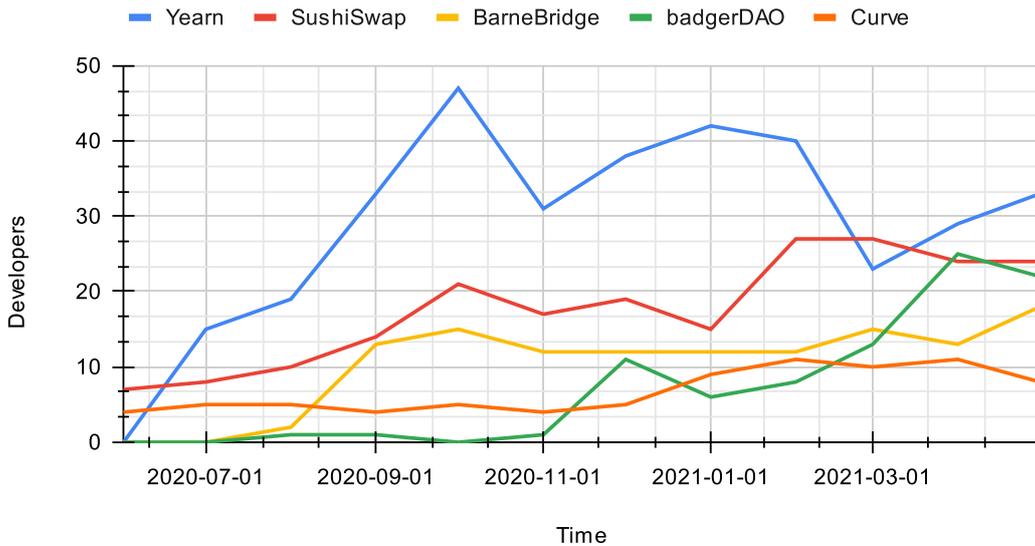| Protocols	2019/20 AVG MAD	2020/21 AVG MAD	Yearly Δ AVG MAD
Maker	59	66	12.0%
Compound	43	48	12.2%
Synthetix	20	28	44.4%
Uniswap	8	25	195.0%
Balancer	5	20	283.9%
Keep Network	37	20	-46.6%
Uma	6	18	213.0%
Lightning Network	21	18	-13.4%
Set Protocol	5	16	204.8%
Aave	2	15	636.0%

Outlier Ventures

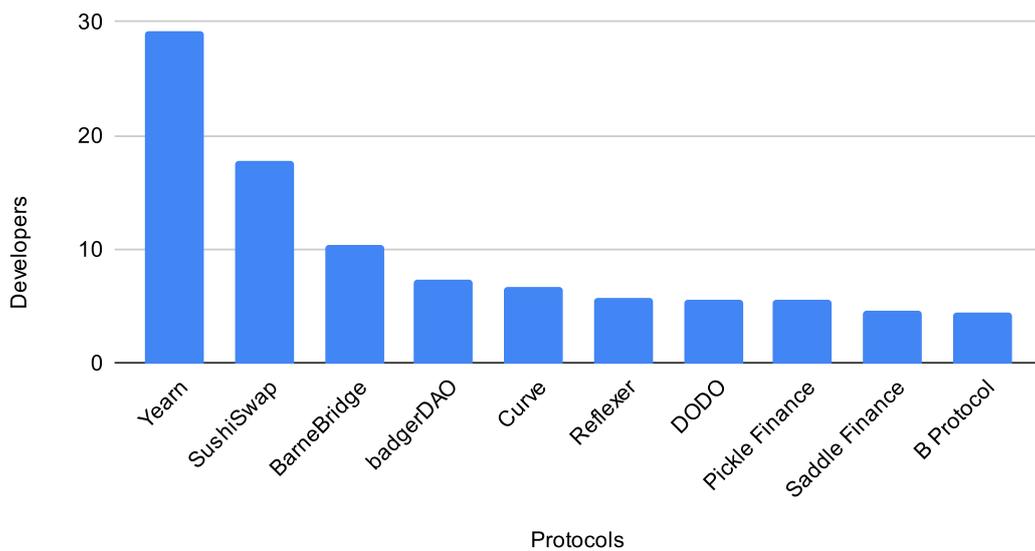## 4.2.2 Developers on New Protocols

This section summarizes the top-five table of total onboarded developers for the new protocols, which started in the last twelve months. **Yearn Finance** displayed an average active monthly developer count of 29 developers. **SushiSwap** averaged 18 developers per month. **BarneBridge** exhibited an average developer base of 10 developers per month. **BadgerDAO** averaged at 7 active developers per month. Lastly, **Curve** showed an average developer base of 8 developers per month.

DeFi : Developers : Top 5 : Newcomers

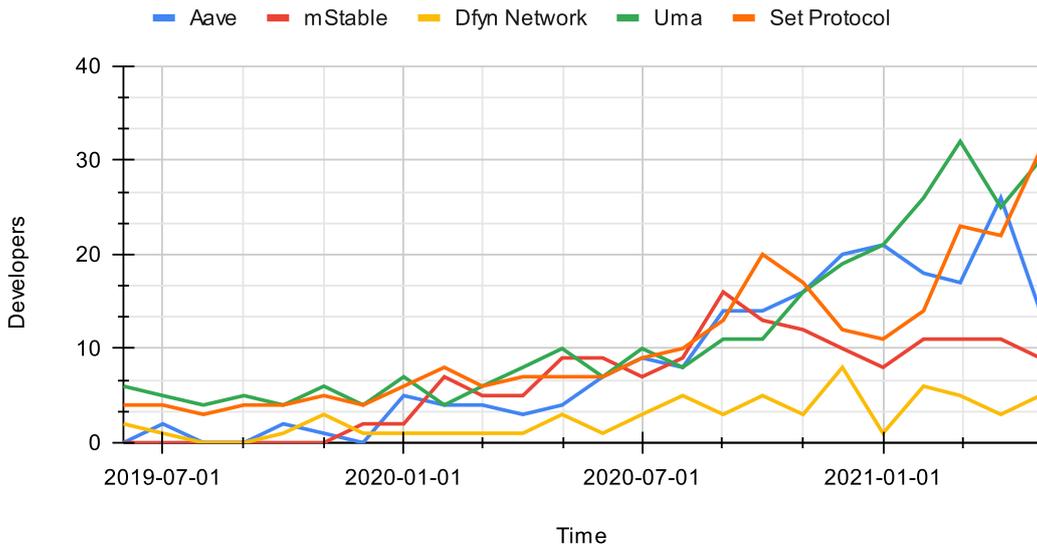DeFi : Developers : Top 10 : Newcomers

4.2.3 Rising Developer Trends

Aave experienced an impressive growth at 636.0% going from an average of 2 MAD to 15 MAD on average. Further, **mStable** went from 3 MAD on average to 15 MAD in the recent period, resulting in a 320.0% increase of monthly active developers on average. **Dfyn Network** experienced a 220.0% increase going from 1 MAD on average to 11 MAD on average. **Uma** displayed a 213.0% growth, going from 6 MAD to 18 MAD on average. Lastly, **Set Protocol** went from 5 MAD to 16 MAD on average resulting in a 204.8% growth of monthly active developers on average.

DeFi : Developers : Top 5 : Rising

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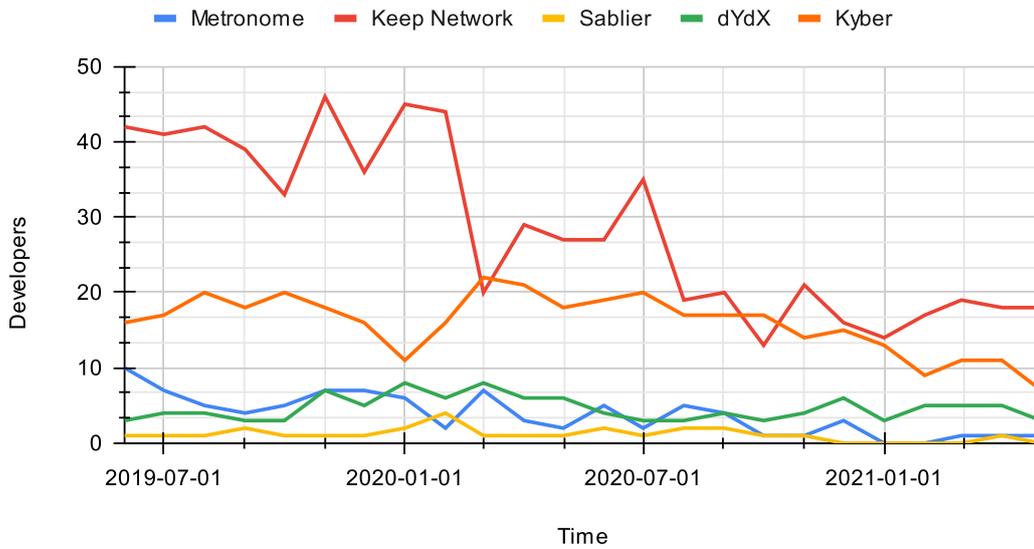| Protocols	2019/20 AVG MAD	2020/21 AVG MAD	Yearly Δ AVG MAD
Aave	2	15	636.0%
mStable	3	11	320.0%
Dfyn Network	1	4	220.0%
Uma	6	18	213.0%
Set Protocol	5	16	204.8%
Uniswap	8	25	195.0%
TrueFi	3	9	188.9%
Nexus Mutual	2	6	168.0%
Bancor	6	13	115.5%
InstaDapp	4	6	52.0%
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4.2.4 Declining Developer Trends

Metronome declined by -63.1% where it went from 65 MAD to 24 MAD on average in the recent 12-month period. **Keep Network** displayed a -46.6% decrease of monthly active developers on average. Just beneath comes **Sablier** with a decrease of -41.2% in MAD on average. Further, the **dYdX** project experienced a -23.8% decline in average MAD. Lastly, **Kyber** displayed a steady decrease in the number of monthly active developers on average, leading to a -20.2% decrease of average MAD.
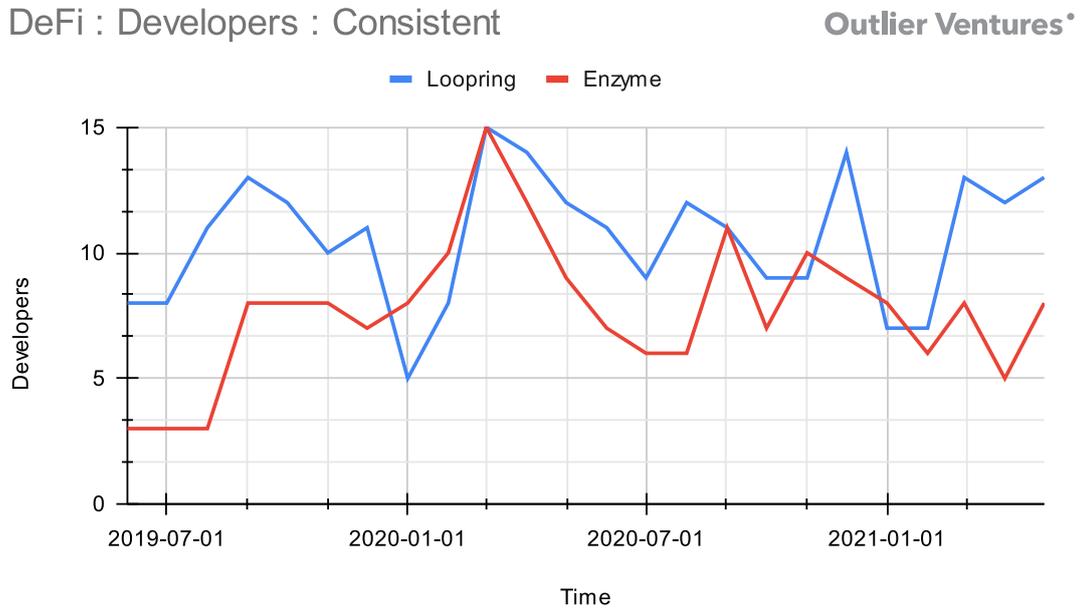
DeFi : Developers : Top 5 : Declining

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Protocols	2019/20 AVG MAD	2020/21 AVG MAD	Yearly Δ AVG MAD
Metronome	65	24	-63.1%
Keep Network	444	237	-46.6%
Sablier	17	10	-41.2%
dYdX	63	48	-23.8%
Kyber	213	170	-20.2%
Lightning Network	247	214	-13.4%
Enzyme	94	91	-3.2%

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4.2.5 Consistent Developer Trends

Loopring and Enzyme have demonstrated a consistent trend across both periods where **Loopring** performed consistently across the total report period of 24 months where it exhibited an average of 11 active developers per month in both of the respective 12-month periods. **Enzyme** displayed a slight decrease of -3.2% in average developers active per month compared to the previous period, however, this does not indicate any downward trend.

DeFi : Developers : Consistent

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Appendix

A.1 Notes and Caveats

- In this report, we have focused on including core repositories of each respective protocol meaning that the primary organization has been included. In some cases, we have included third-party organizations such as PolkadotJS due to the organizational structure of the Polkadot ecosystem. We would like to note that this change in inclusion and exclusion criteria may slightly differ in reported numbers of commits and developers compared to previous reports. Further, we would like to point out that we have adjusted the methodology of this report from the previous reports of similar nature by changing the tooling and timelines of indexed repositories.

- We have included repositories that are exclusively hosted on GitHub for this release of the report. However, we would like to note that in the next release, we will include sources such as GitLab to include projects such as Tezos.

- Repositories that have been forked from other repositories have been excluded from our analysis such that some genuine development activities may not have been included. Some projects may be affected more than others.

- Some repositories have been forked but not marked forked by GitHub; such projects are mainly Bitcoin Cash, Ethereum Classic, and SushiSwap. These repositories have been included in the report.

- In this report, we have exclusively included activity of the main branch such that commits that have not yet reached the main branch or are for any reason kept out from the main branch have been excluded.

- Projects may use automated agents such as "Dependabot" that will inflate the number of commits and developers for a project. We aim to exclude such automated agents in future releases.

- Organizations such as IOKH work on several projects such as Ethereum Classic. However, since most of the activity is related to Cardano, we mainly attribute all activities to Cardano.