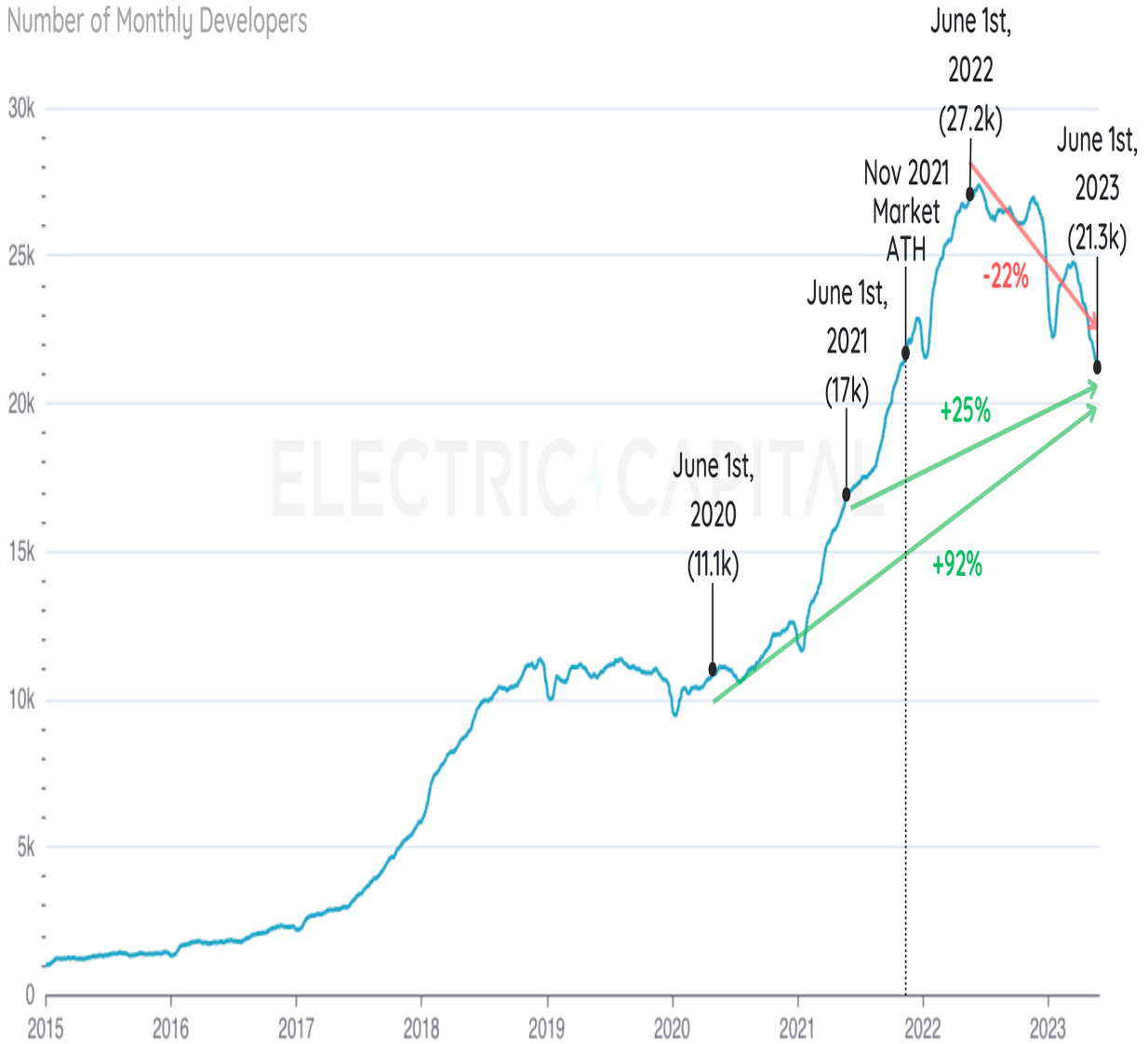# Developer Report 2023 Mid-Year Update

Executive Summary:

- There are 21.3K monthly active open source developers as of June 1, 2023.
- Developers have decreased -22% year-over-year (since June 1, 2022).
- Developers who left crypto recently were Newcomers who worked in crypto less than 12 months and were only responsible for less than 20% of all code commits.
- In contrast, developers who have worked in crypto for 12 months or more continue to build. They contribute 80%+ of commits.

There are 21.3K monthly active open source developers as of June 1, 2023. There are more monthly active developers today than before crypto markets hit an all-time-high in Nov 2021. However, developers have declined over the past one year.

- -22% from June 1, 2022 (1 year ago)
- +25% from June 1, 2021 (2 years ago)
- +92% from June 1, 2020 (3 years ago)

Number of Monthly Developers

June 1st, 2022 (27.2k)

June 1st, 2023 (21.3k)

Nov 2021 Market ATH

June 1st, 2021 (17k)

June 1st, 2020 (11.1k)

-22%

+25%

+92%

@eherrerosj (Electric Capital)
June 2023

Despite long-term growth, what happened since June 2022?

Developers in Crypto 1+ Years Continue to Contribute While Many Newcomers Have Left

We can segment monthly active developers by how long they have worked in crypto by comparing the time between their first and last commits.

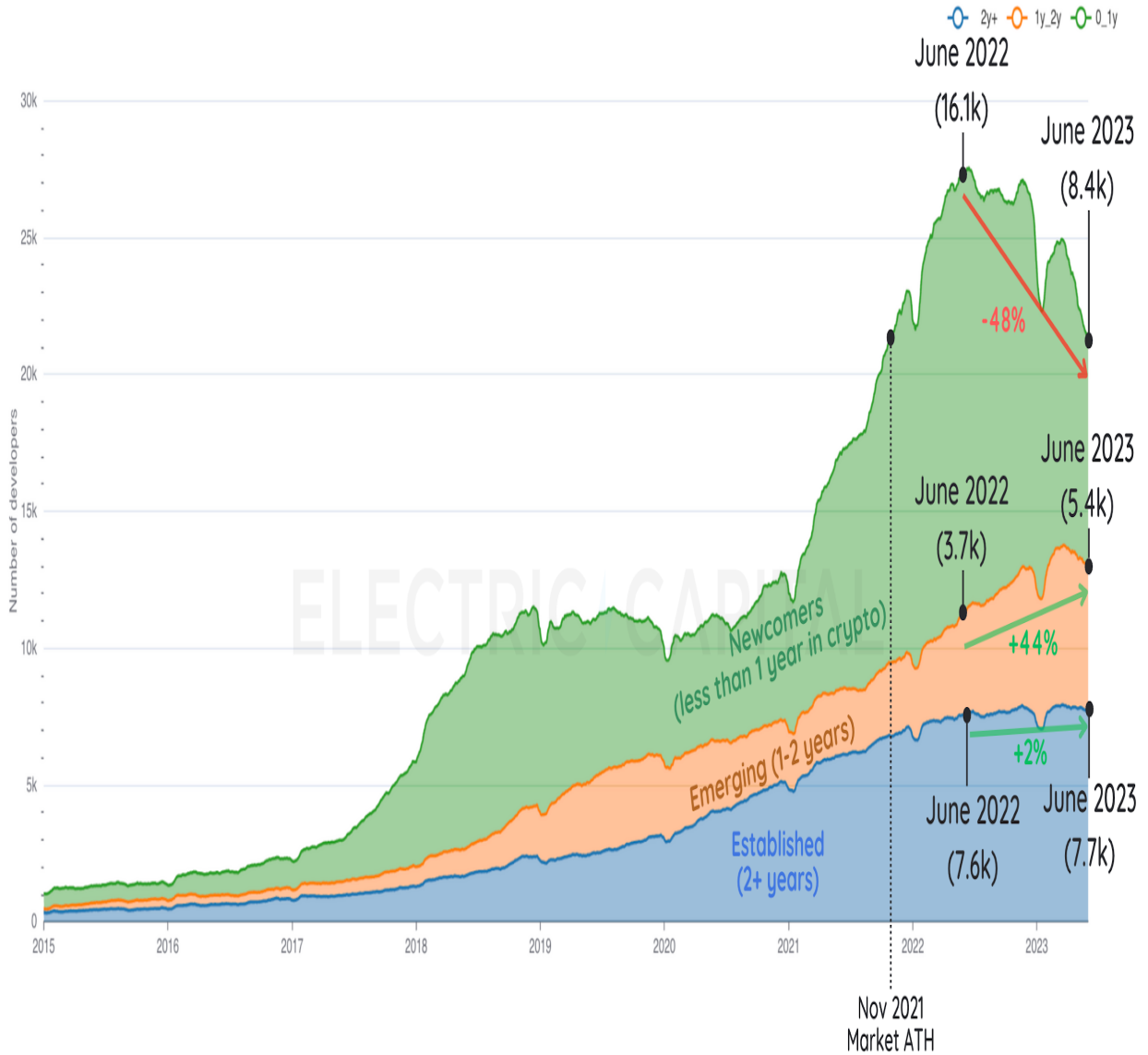- Newcomers: developers who worked in crypto less than 1 year

- Emerging Developers: developers who worked in crypto 1 to 2 years
- Established Developers: developers who worked in crypto 2+ years

Emerging Developers are growing and Established Developers are steady. The decline in monthly active developers in the last year came from Newcomers.

From June 2022 to June 2023:

- -48% Newcomers (-7.73K developers)
- +44% Emerging Developers (+1.65K developers)
- +2% Established Developers (+0.15K developers)
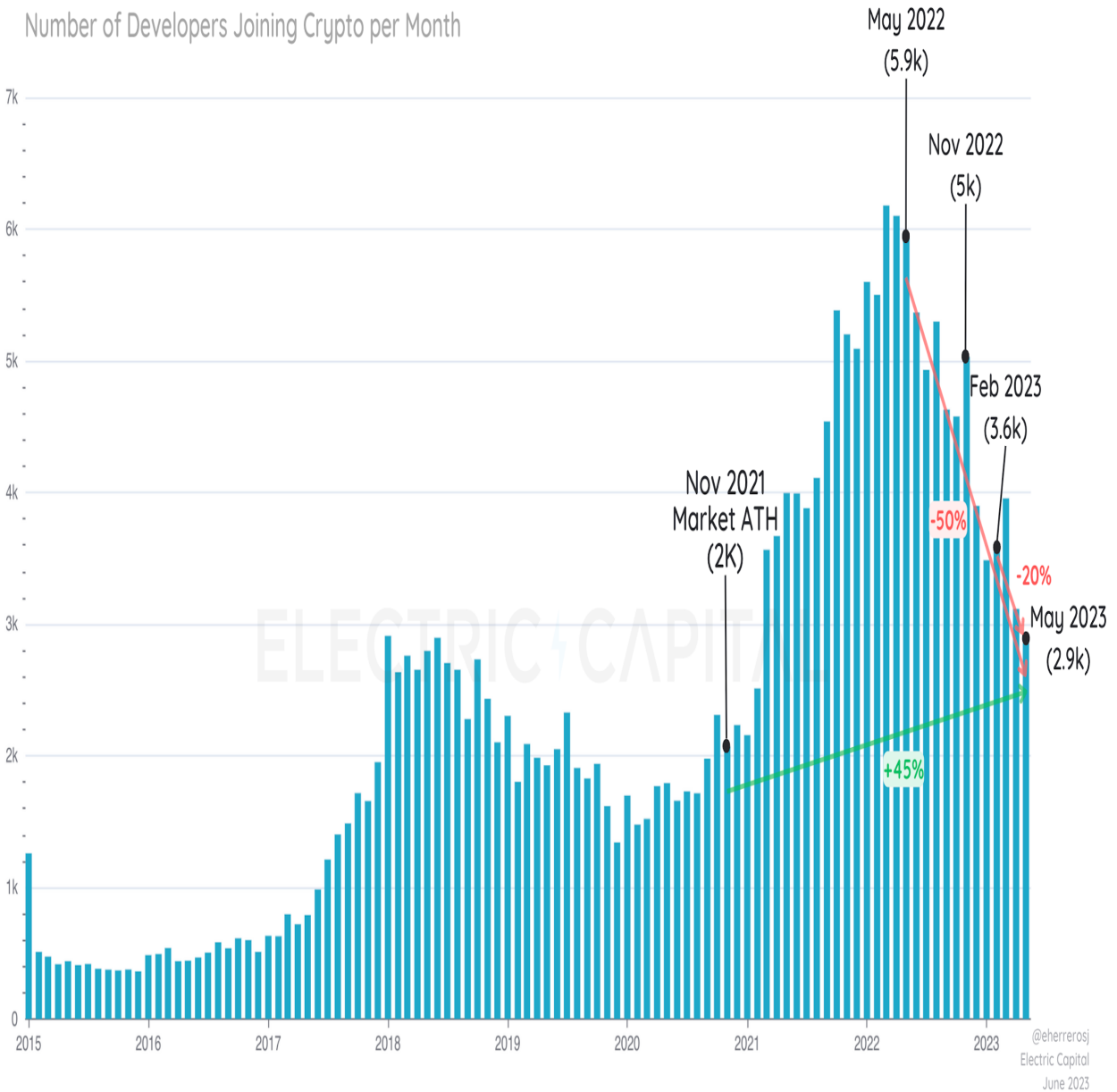
Number of Monthly Devs by Years in Crypto

June 2022
(16.1k)

June 2023
(8.4k)

-48%

June 2022
(3.7k)

June 2023
(5.4k)

+44%

June 2022
(7.6k)

June 2023
(7.7k)

+2%

Newcomers
(less than 1 year in crypto)

Emerging (1-2 years)

Established
(2+ years)

Nov 2021
Market ATH

Why did Newcomers decrease?

Fewer New Developers Exploring Crypto

First, Newcomer developers have decreased because fewer new developers are trying crypto.

Let's look at new developers by month. 2.9K new developers tried crypto in May 2023:

- -20% from Feb 2023 (3 months ago)
- -42% from Nov 2022 (6 months ago)
- -50% from May 2022 (12 months ago)

Number of Developers Joining Crypto per Month

May 2022
(5.9k)

Nov 2022
(5k)

Feb 2023
(3.6k)

Nov 2021
Market ATH
(2K)

-50%

-20%

May 2023
(2.9k)

+45%

@eherrerosj
Electric Capital
June 2023

Historically, Developers in Bear Markets Have Lower Retention

Second, Newcomer developers have decreased because new developers who joined in 2023 have not stayed long.

We can graph developer monthly cohort retention from Jan 2021.

How many months does it take for most new developers in the cohort to leave (<20% retention)?

- 2021: 6 to 10 months
- 2022: 3 to 6 months
- 2023 (so far): 3 to 4 months

Developer retention by cohort (since 2021)
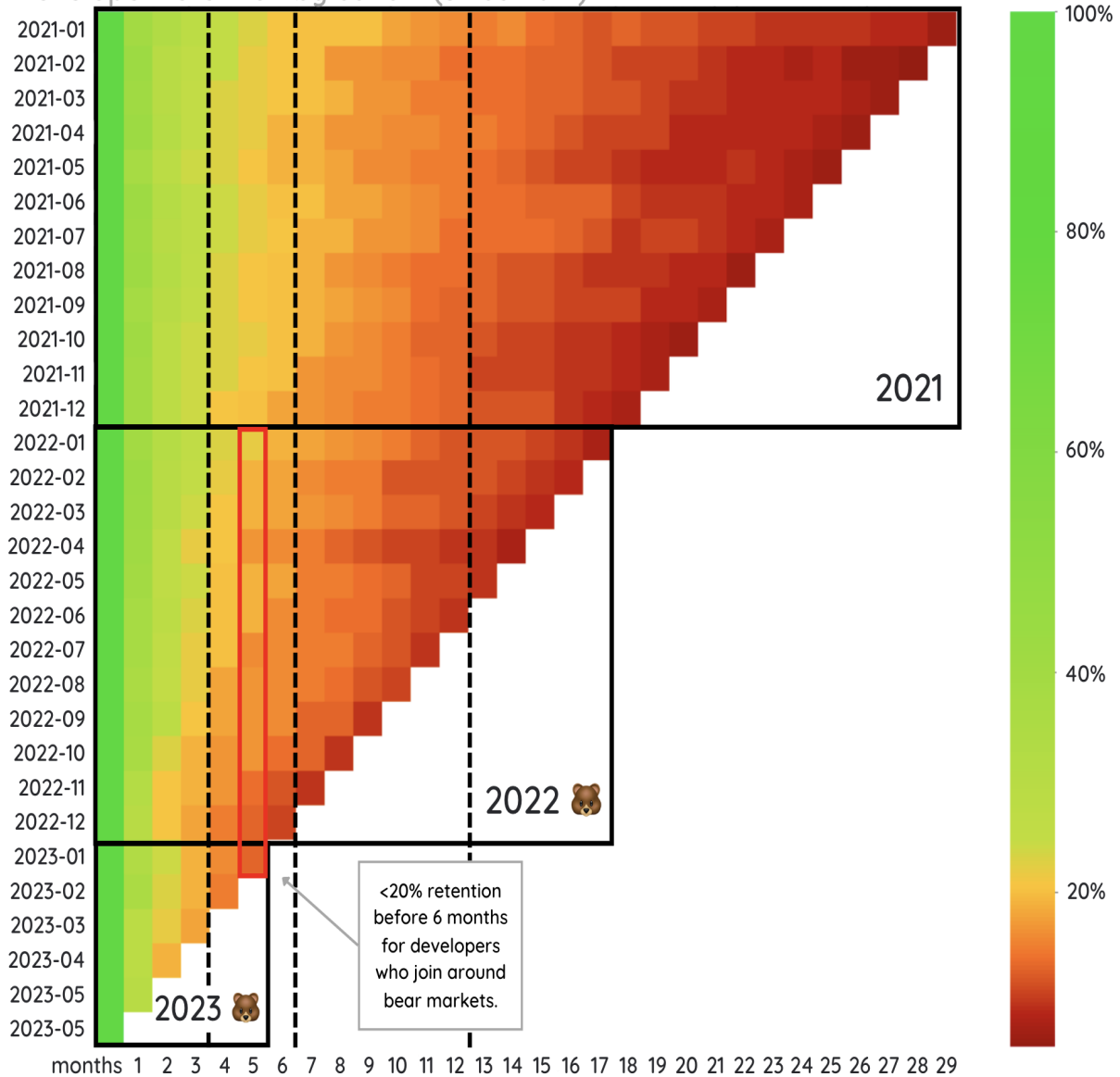
2023 retention is worse than 2022 or 2021. But 2023 retention is not abnormal if we zoom out.

If we look at cohort retention analysis starting from 2015, we see that developers who join during bear markets leave faster.

New developers left faster in 2023 than in 2022 or 2021, which is typical for the bear market.

Developer retention by year cohort (since 2015)
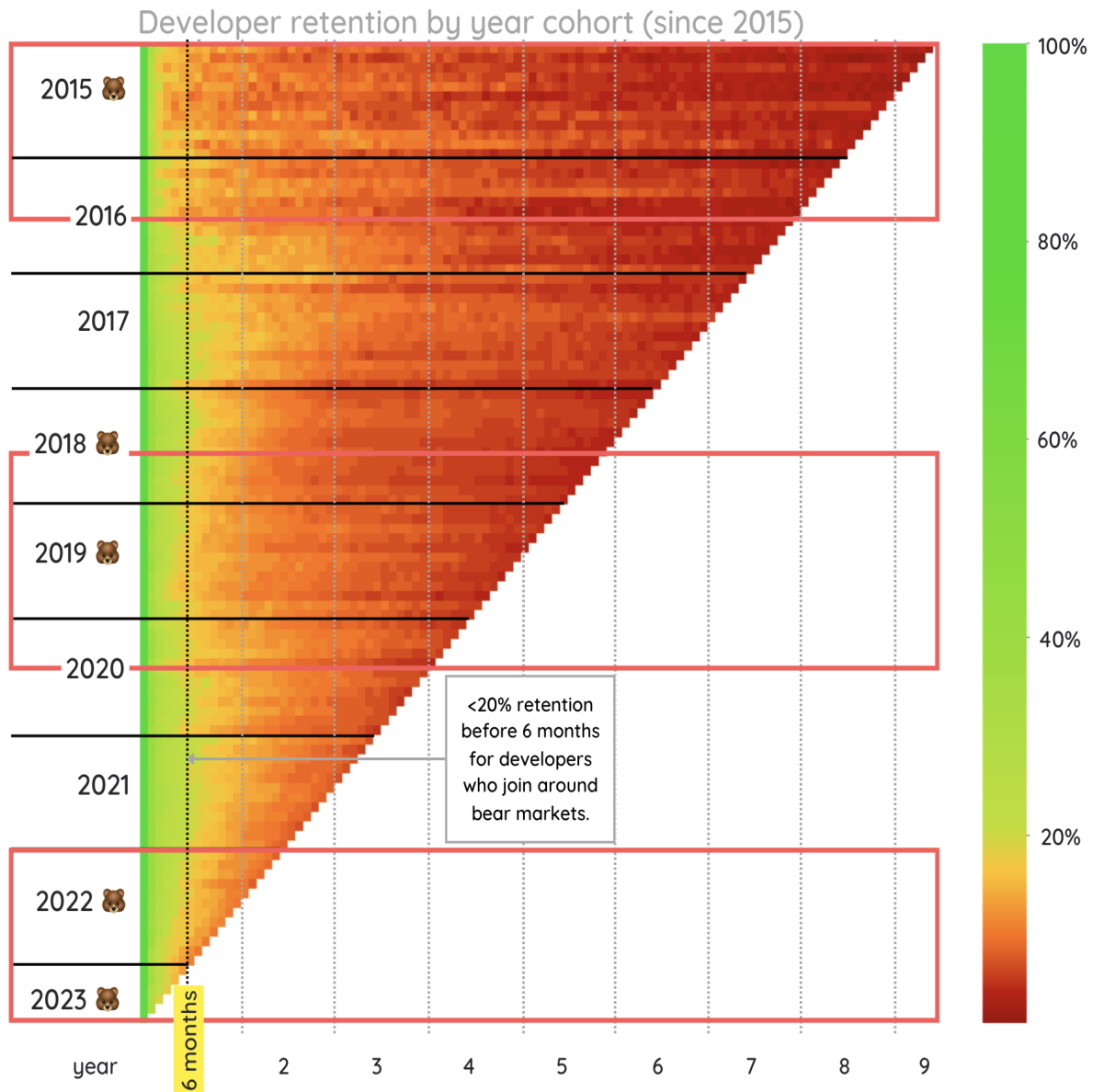
Newcomers Tend to Dominate Around Market Peaks

Market cycles also explain dominance between Newcomers, Emerging, and Established crypto developers.
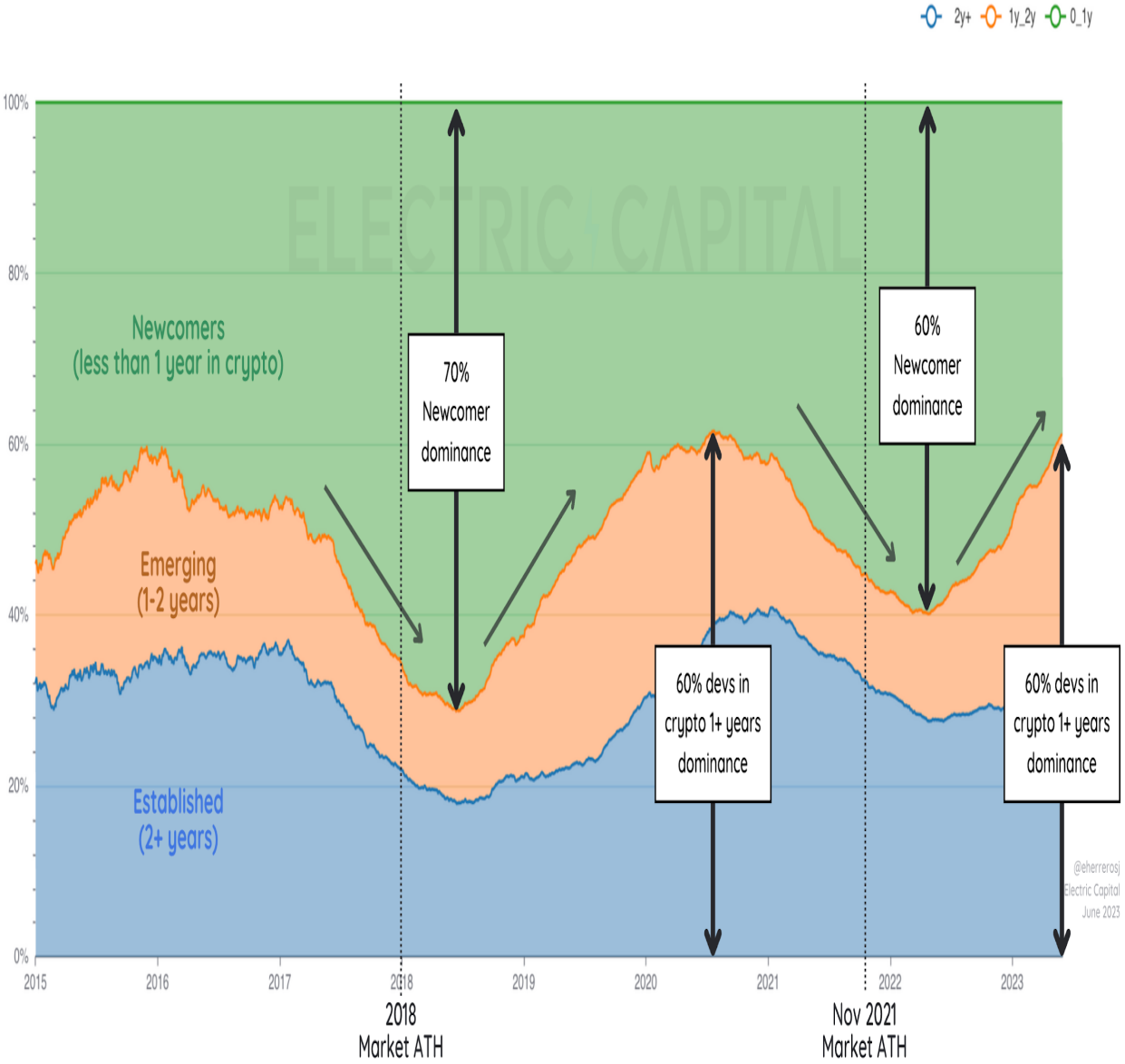
Newcomers dominate around market peaks:

- 6 months after Jan 2018 market peak (June 2018): 70% dominance
- 7 months after Nov 2021 market ATH (June 2022): 60% dominance

Developers who work in crypto over one year (Emerging and Established developers) dominate once we are firmly in a bear market:

- 24 months after Jan 2018 market peak (Jan 2020): 60% dominance
- 18 months after Nov 2021 ATH (June 2023): 60% dominance

Number of Monthly Devs by Years since they Joined (normalized)

Newcomers
(less than 1 year in crypto)

Emerging
(1-2 years)

Established
(2+ years)

70%
Newcomer
dominance

60%
Newcomer
dominance

60% devs in
crypto 1+ years
dominance

60% devs in
crypto 1+ years
dominance

2018
Market ATH

Nov 2021
Market ATH

But though monthly active developers declined overall, how critical are the developers who left?

Devs Who Stayed in Crypto Commit More Code, Push Code on More Days, & Have Been in Crypto for Longer Than Devs Who Left

We can say a developer "left" if they haven't contributed code in 2 months.

Developers who stopped contributing after March 2023 account for less than 20% of commits historically!
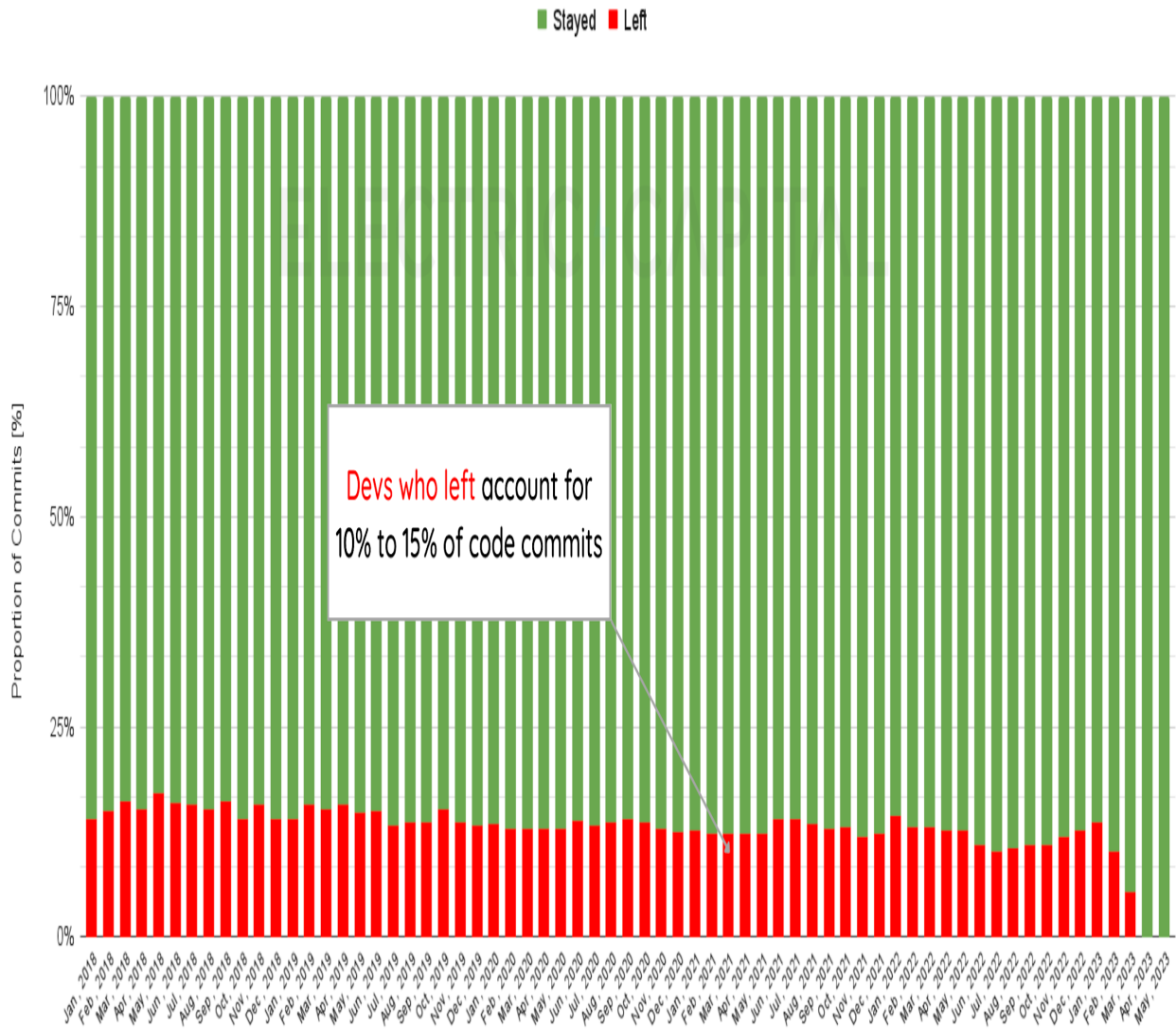
Q1 2023 Developers - Number of commits

Stayed vs Left after Q1 2023
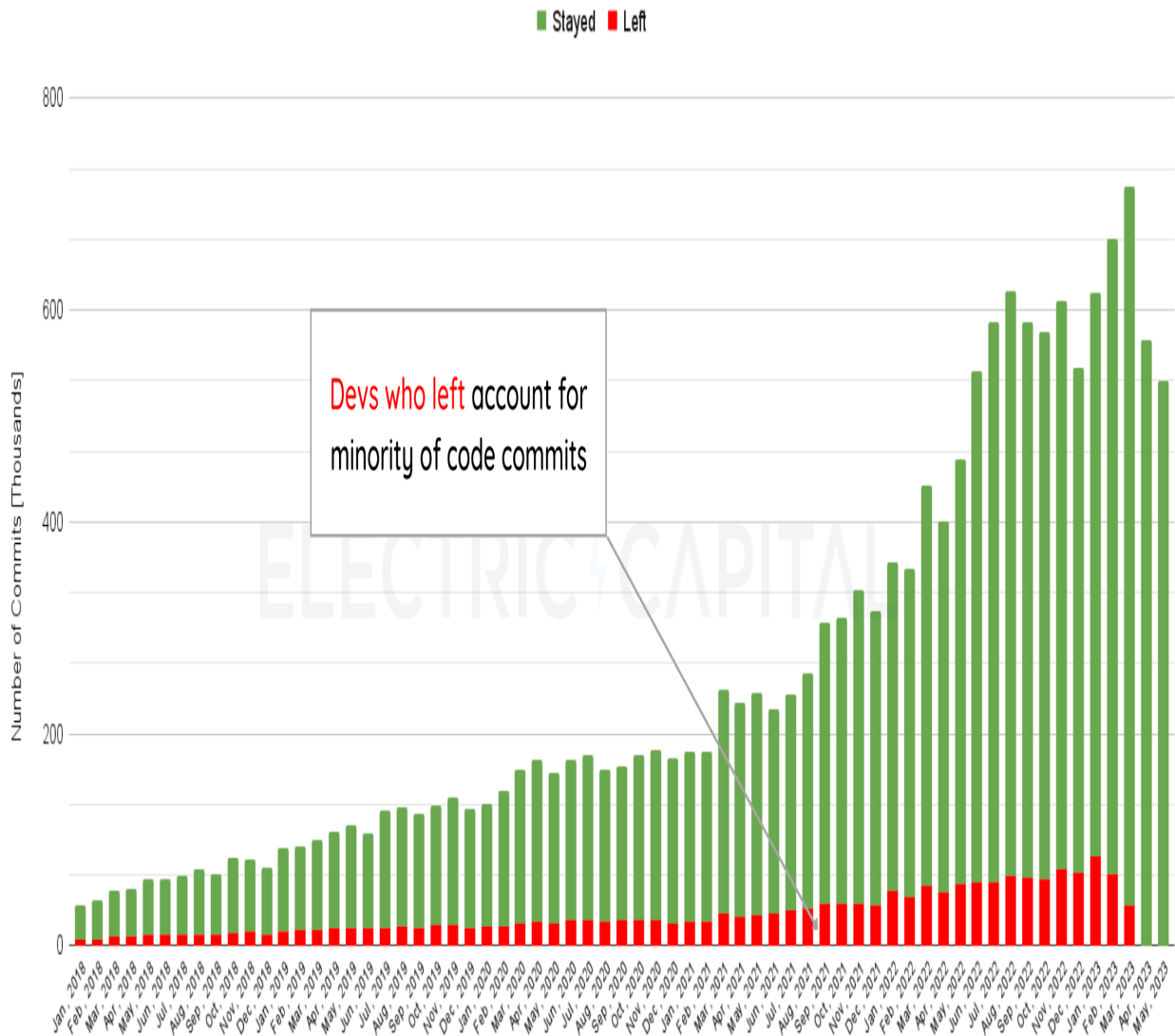
Q1 2023 Developers - Proportion of commits

Stayed vs Left after Q1 2023

Stayed ■ Left

Proportion of Commits [%]

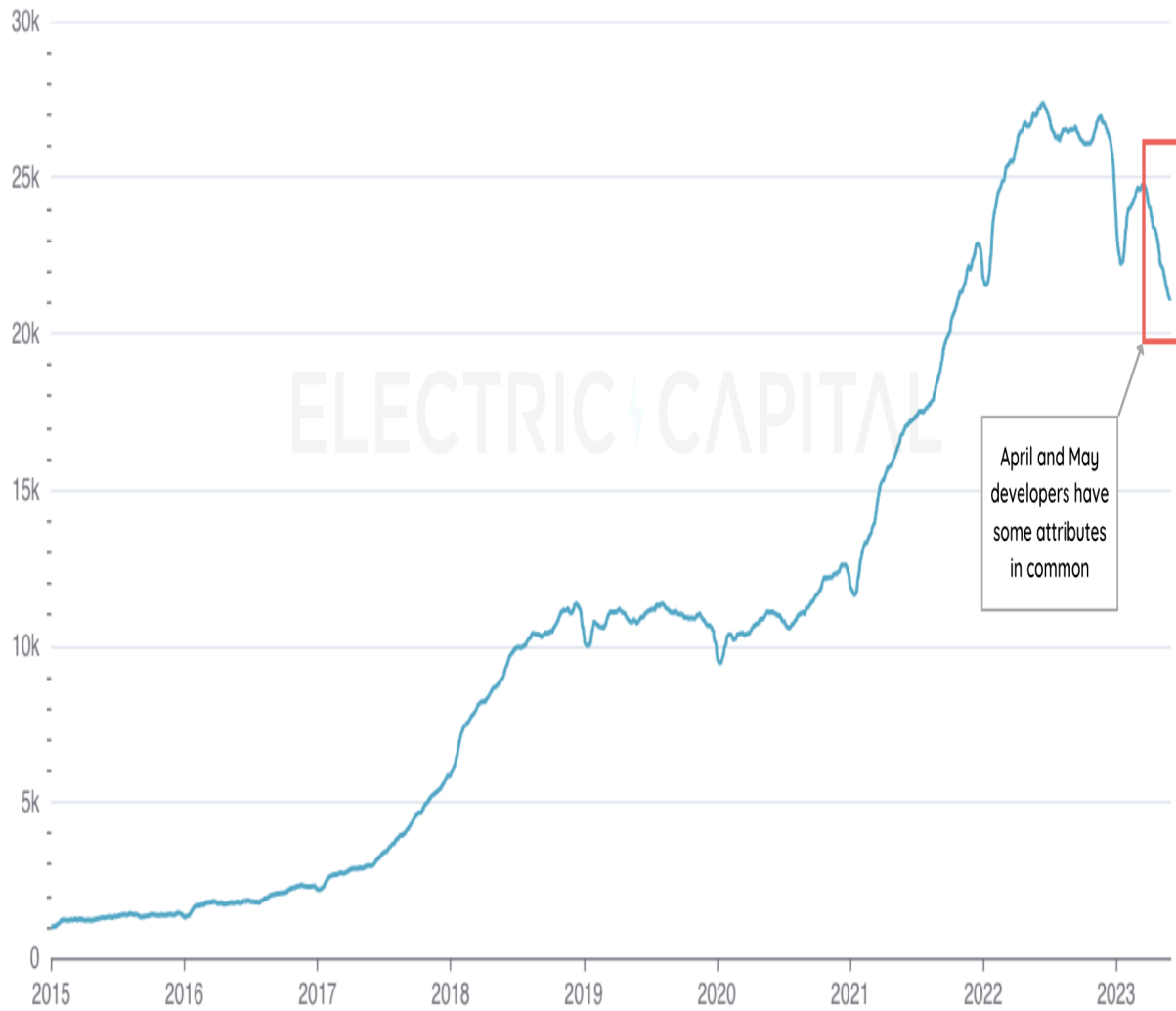Devs who left account for
10% to 15% of code commits

What are the characteristics of the developers who continue to contribute code?

Let's zoom in to the developers who contributed recently. Developers who contributed in April and May 2023:

- Contribute majority of code
- Are active more days
- Have been in crypto longer

Number of Monthly Developers
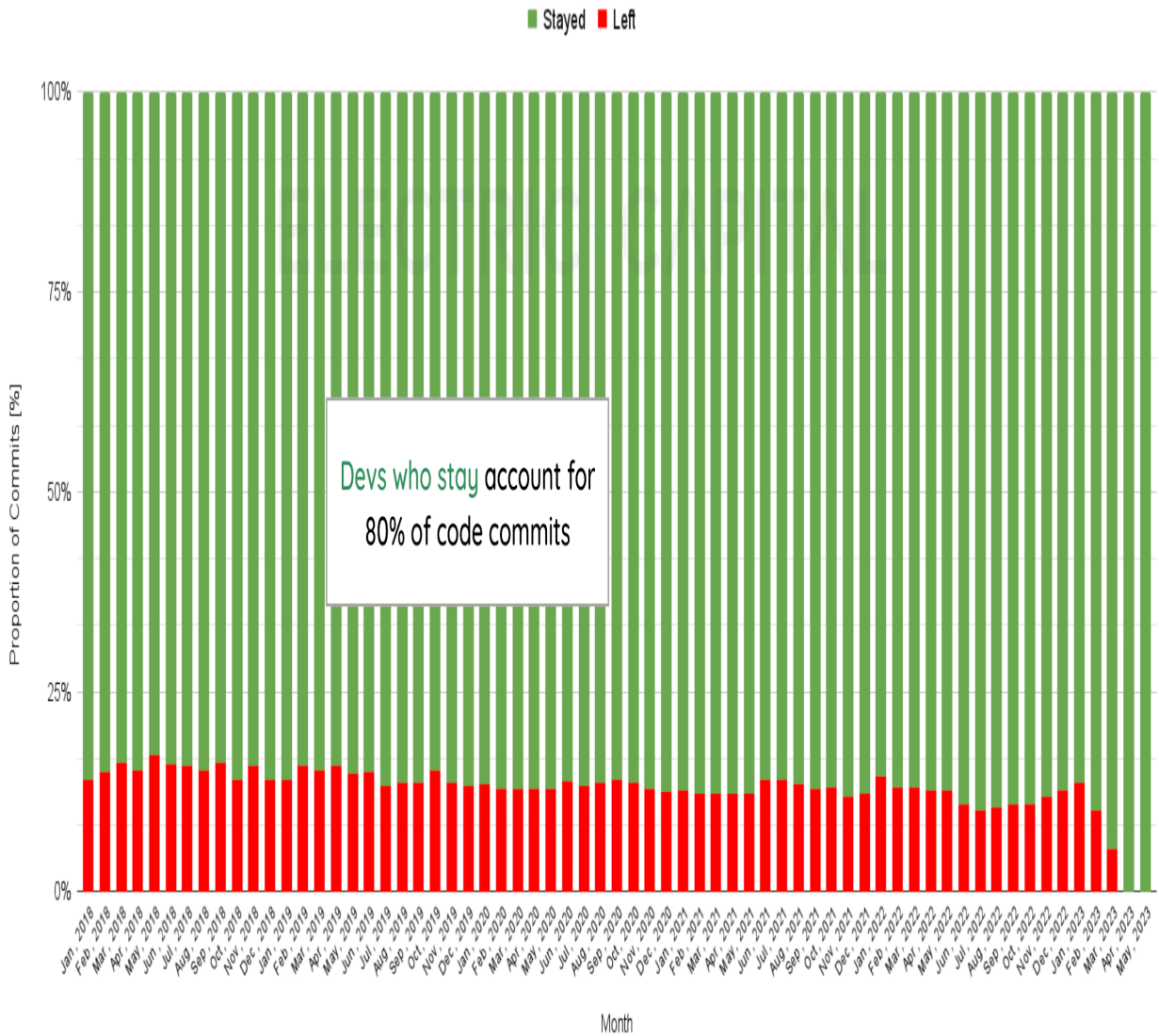

April and May
developers have
some attributes
in common

Let's look at the specifics...

First, developers who contributed recently in April and May 2023 historically contribute the majority of code commits (80%+).
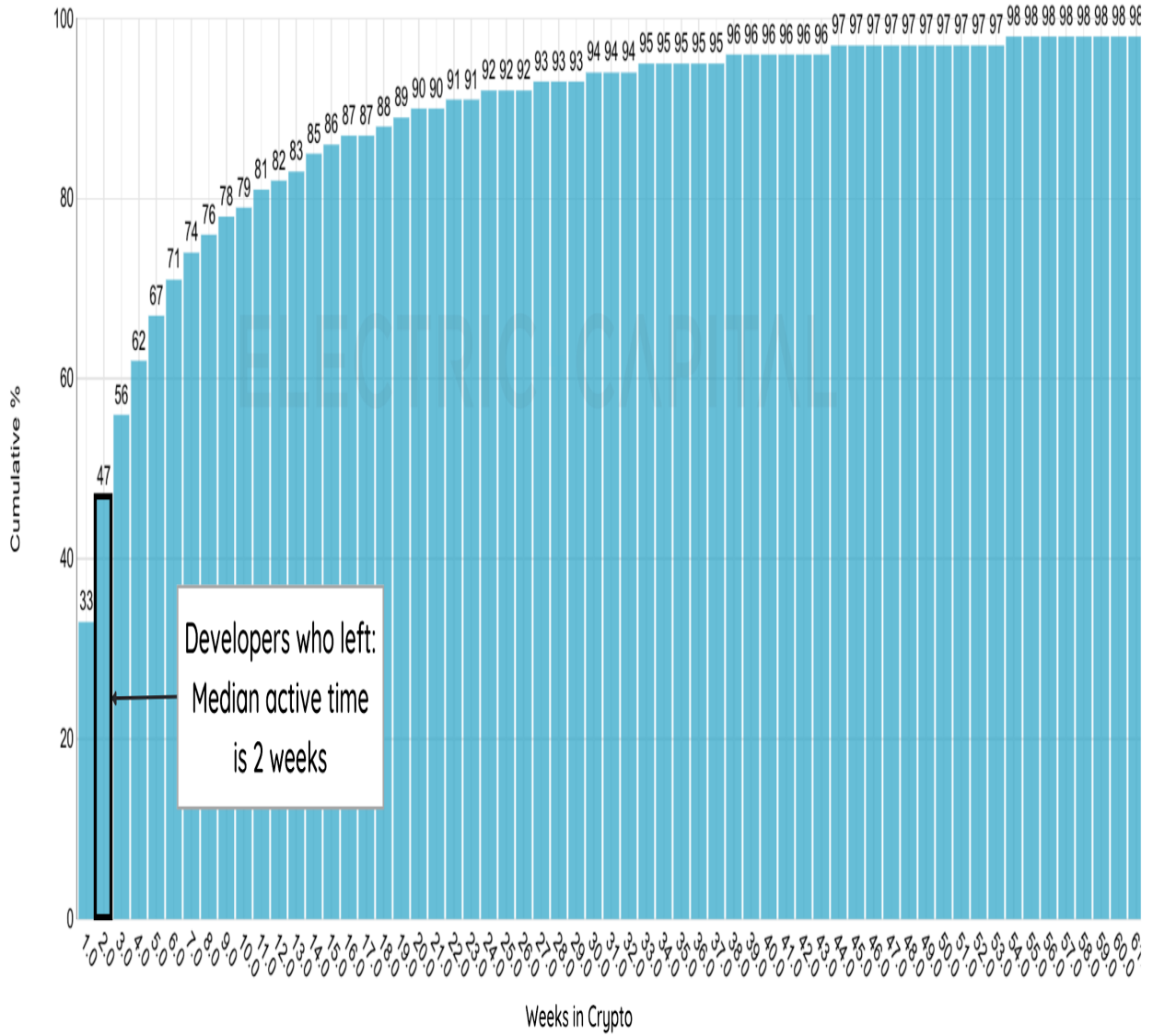
Second, developers who contributed April and May 2023 push code on more days.

We can separate developers who recently left from those who stayed and graph the number of days they actively push code.
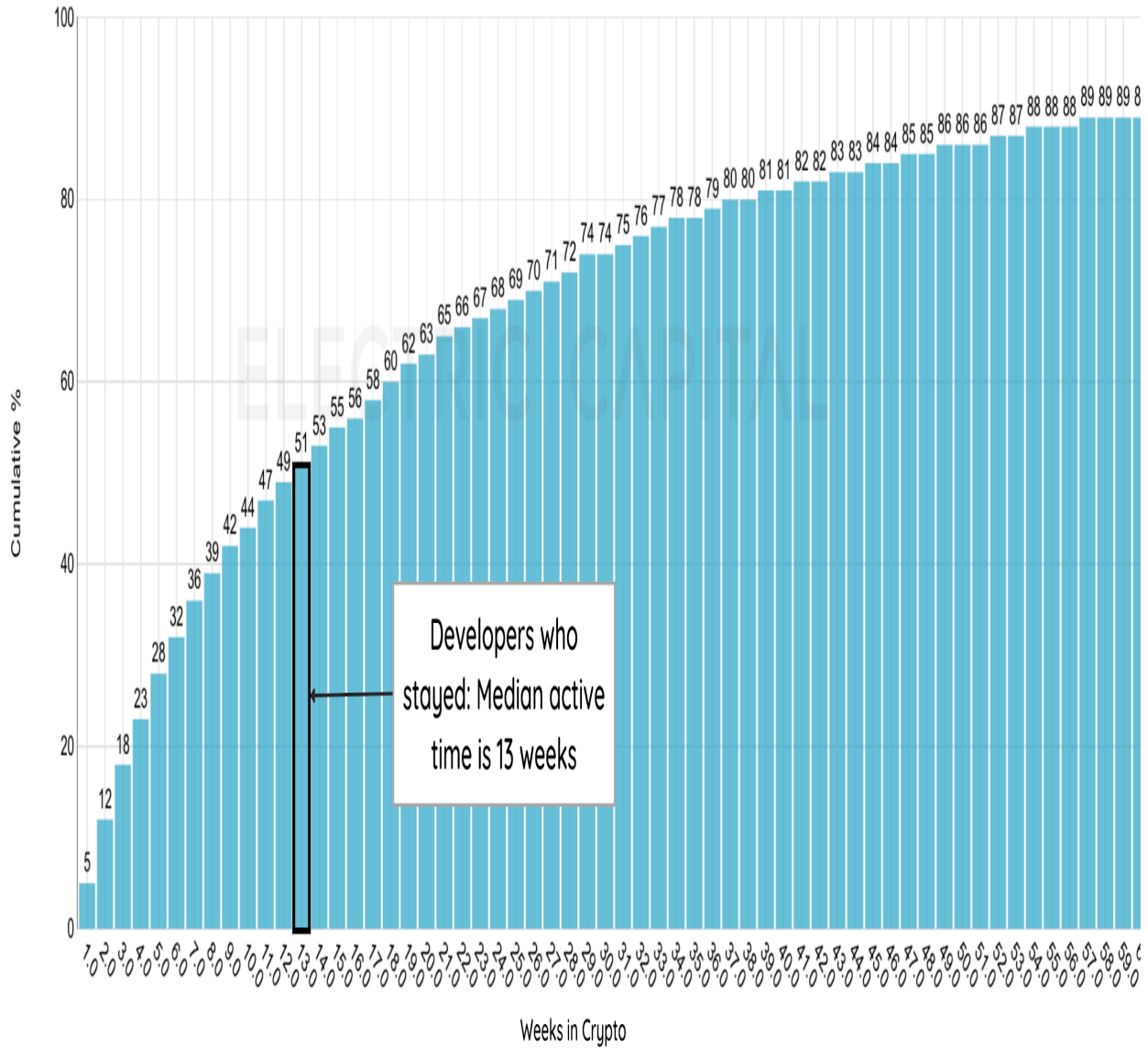
Median number of days developers actively pushed code:

- Developers who continue to work: 13 active weeks
- Developers who left: 2 active weeks

Developers that Left - Cumulative of weeks active in Crypto

Cumulative %

Developers who left:
Median active time
is 2 weeks

Weeks in Crypto

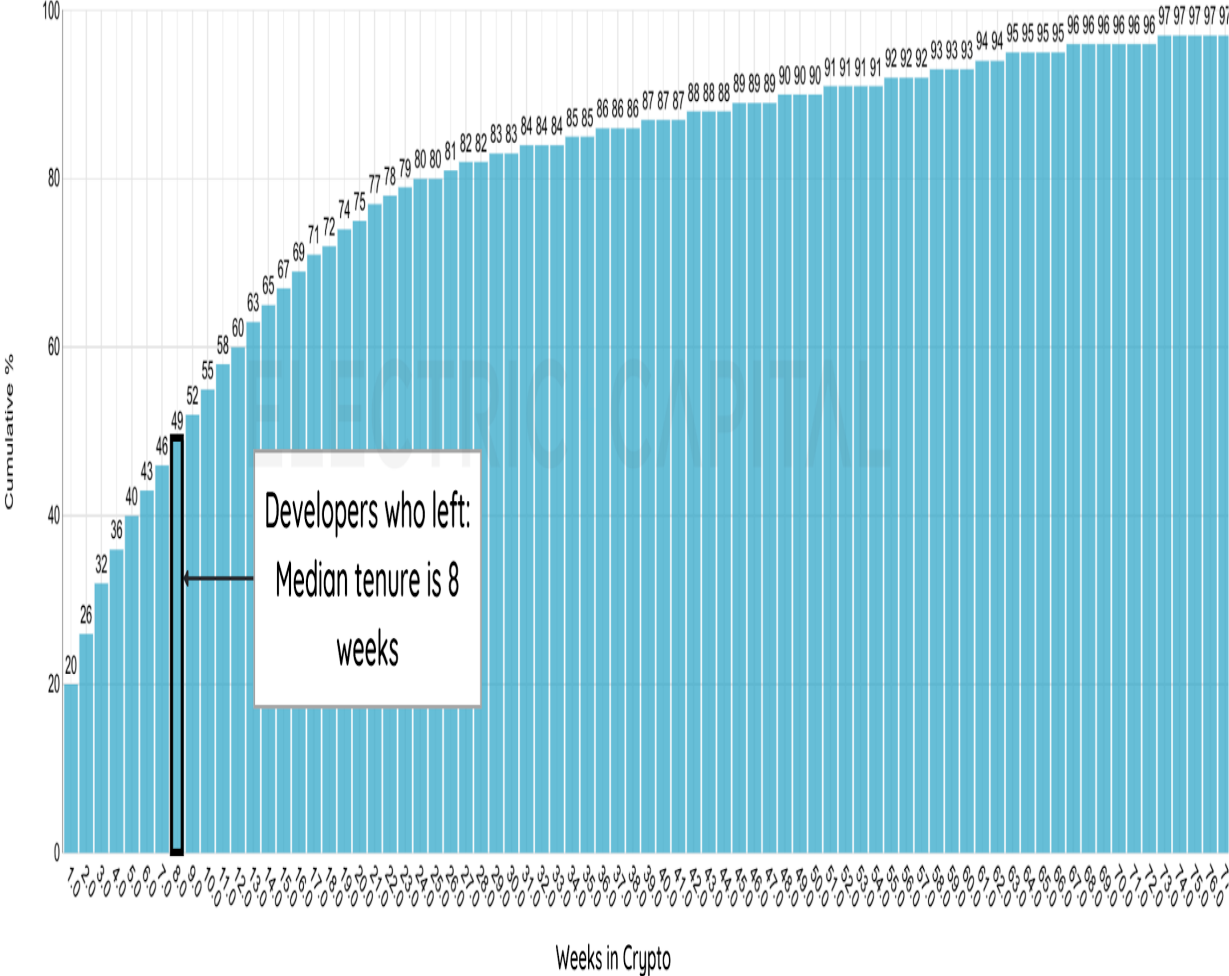Developers that Stayed - Cumulative of weeks active in Crypto

Third, developers who contributed April and May 2023 have been in crypto for longer.

We can separate developers who recently left from those who stayed and then graph their tenure in crypto.

Median number of days developers worked in crypto:

- Developers who continue to work: 19 weeks
- Developers who left: 8 weeks

Developers that Left - Cumulative of weeks since joined Crypto

Cumulative %

Developers who left:
Median tenure is 8
weeks

Weeks in Crypto

Developers that Stayed - Cumulative of weeks since joined Crypto
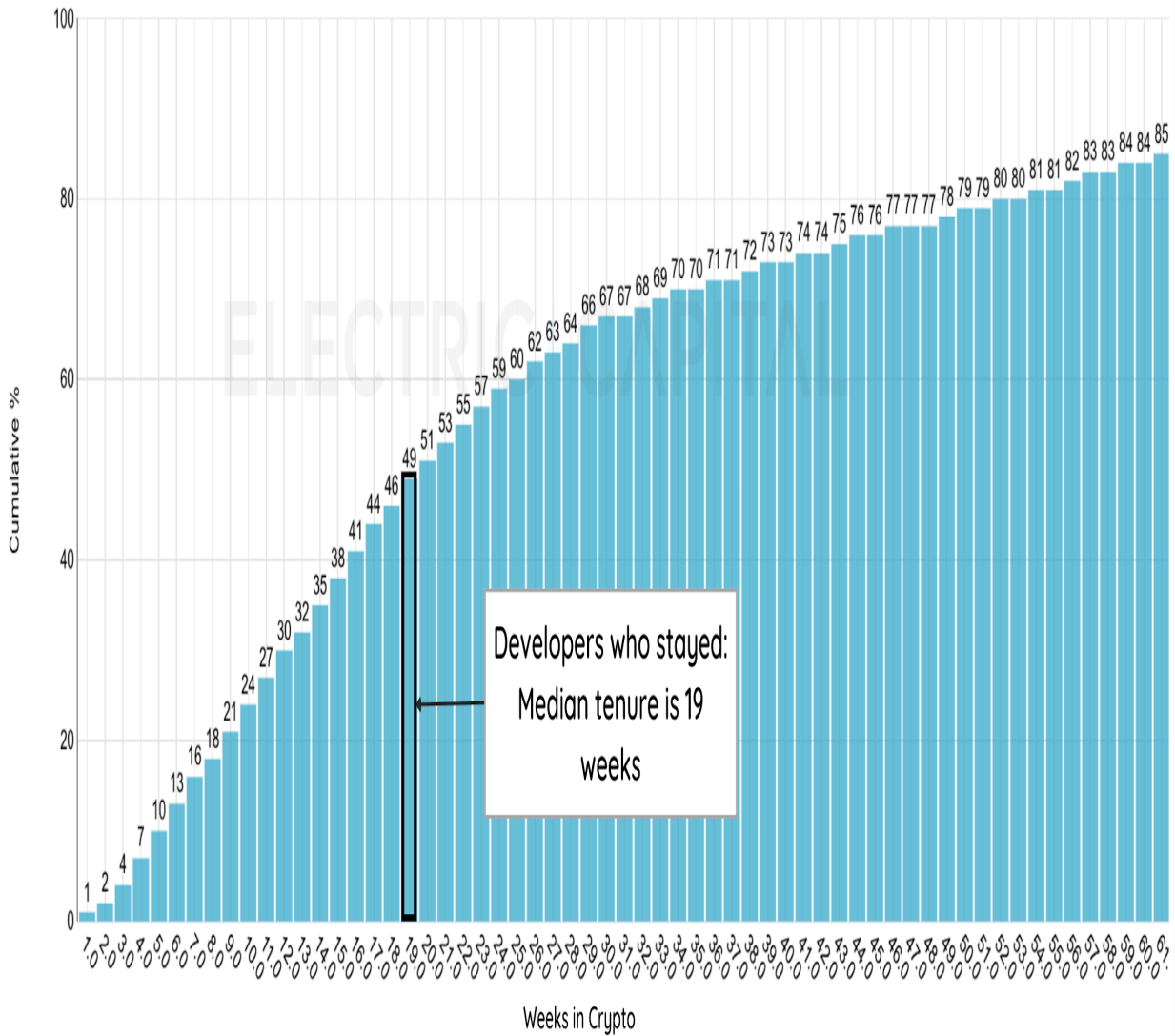
Switching from developers, which ecosystems have grown so far in 2023?

Osmosis, Sui, Aptos, TON, Optimism, and Aztec Protocol Have Grown YoY

Ecosystems with highest growth in monthly developers (June 2023 vs June 2022):

- Osmosis: +56%
- Sui: +159%
- Aptos: +90%
- TON: +102%
- Optimism: +27%
- Aztec Protocol: +267%

	Total Monthly Developers		Full-Time Monthly Developers	
@eherrerosj Electric Capital June 2023	June 1st, 2023	1 year change %	June 1st, 2022	1 year change %
Osmosis	372	56%	83	12%
Sui	197	159%	87	444%
Aptos	200	90%	64	191%
TON	174	102%	39	86%
Optimism	269	27%	95	34%
Aztec Protocol	66	267%	31	520%
Celestia	103	84%	30	131%
Gnosis	169	32%	55	2%
Decentraland	73	30%	46	18%
Starknet	407	4%	132	38%
Chainlink	119	11%	38	-5%
XRP	135	9%	36	24%
ZKSync	131	8%	32	-11%
Cosmos	1684	0%	524	0%
Chia	108	-1%	33	-23%
Mina Protocol	74	-1%	19	-30%

Thank You to Community Contributors

As always, thank you to all our community contributors. The Developer Report now covers over 215K crypto repositories thanks to hundreds of contributors. To contribute new open source crypto repositories, go to https://github.com/electric-capital/crypto-ecosystems

	2019	2023	Growth Multiple
Code Repos	20,000	215,000	11x
Code Commits	16M	160M	100x
# of Ecosystems	1,000	11,000	11x

Contributors to our Open Source Crypto Taxonomy

■ Estimation ■ Number of contributors

- 2019: 14
- 2020: 25
- 2021: 75
- 2022: 109
- 2023: 96 (Number of contributors), 96 (Estimation)

Report compiled by BitKE