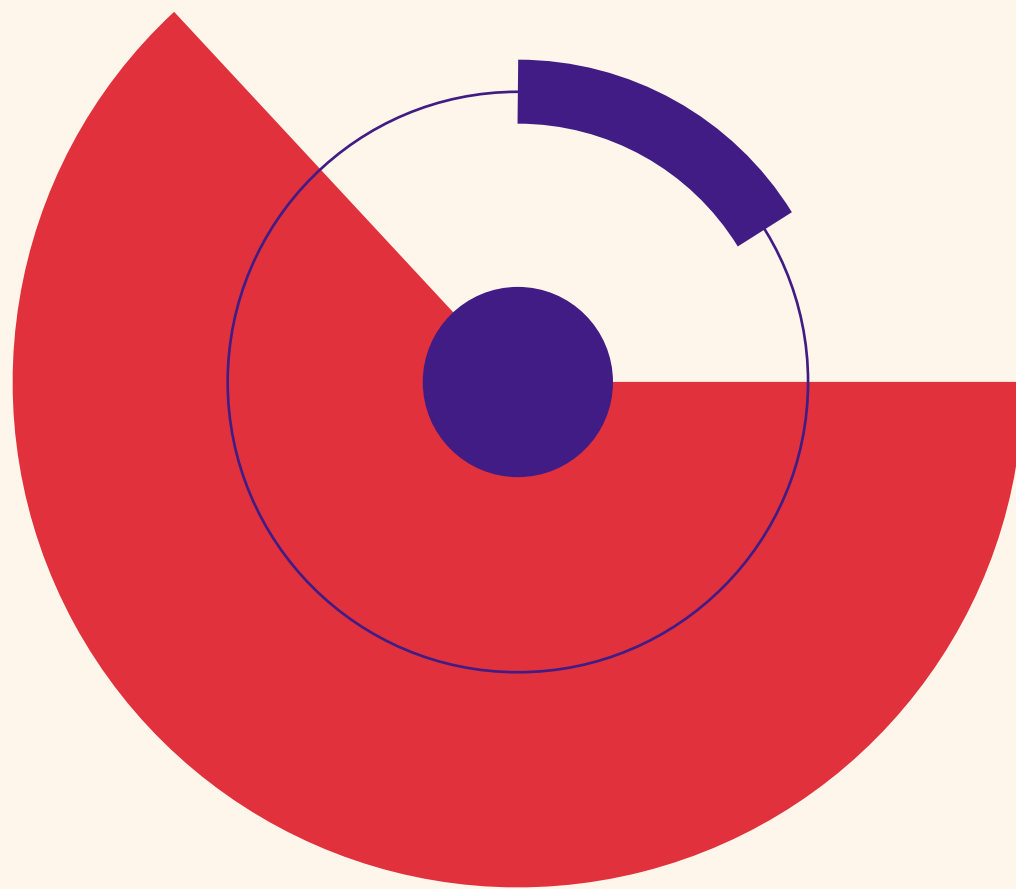


MEV  
Outlook  
..... 2023



EigenPhi offers detailed research and analysis into on-chain behaviors, structures, and networks behind MEV and liquidity data to facilitate decision-making and identify opportunities and risks in the DeFi industry.

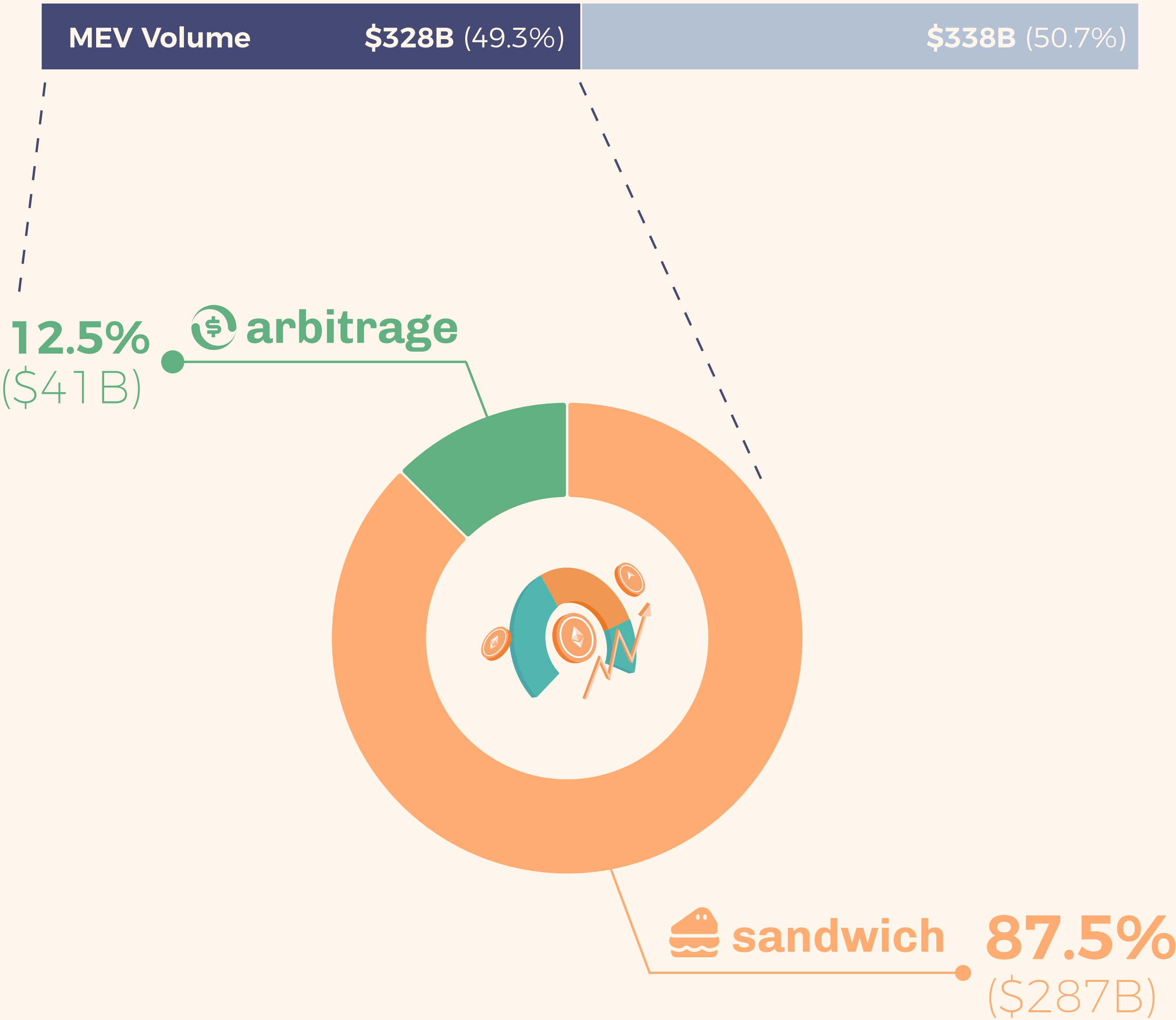


• • • • • • •

***In 2022, MEV activities have contributed to nearly half of DEX's total trading volume.***



Total DEX Trading Volume in 2022: \$666B



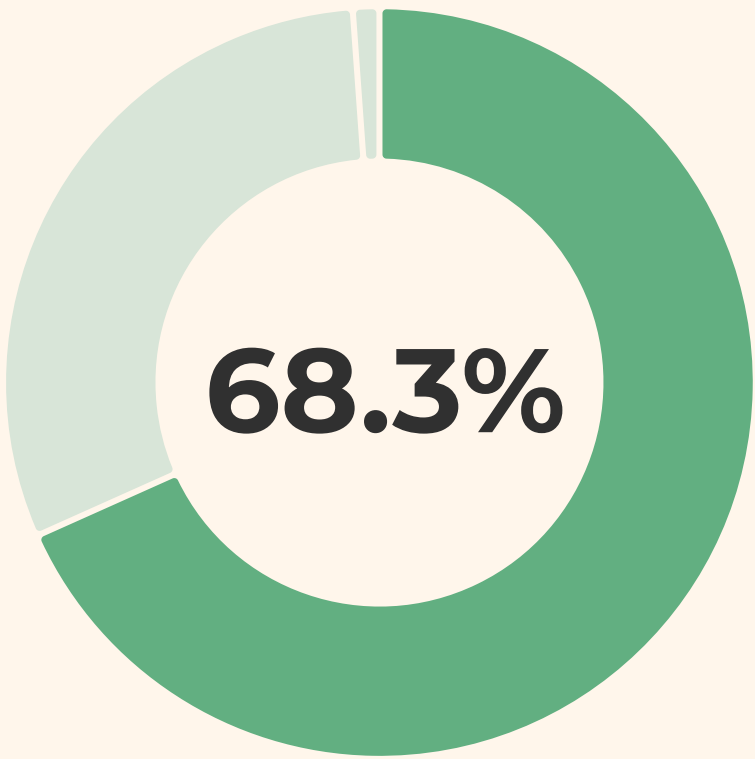
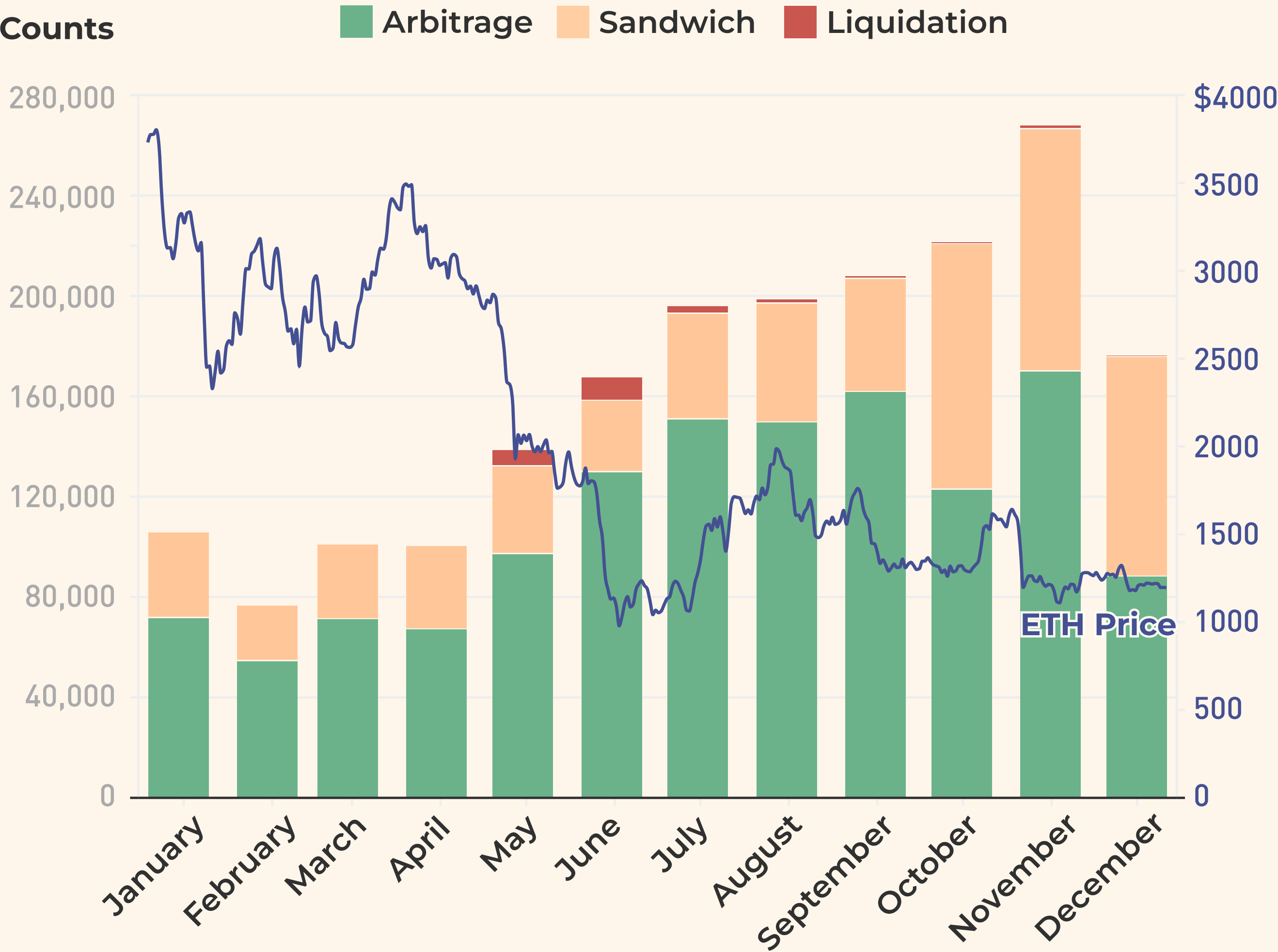


# EigenPhi

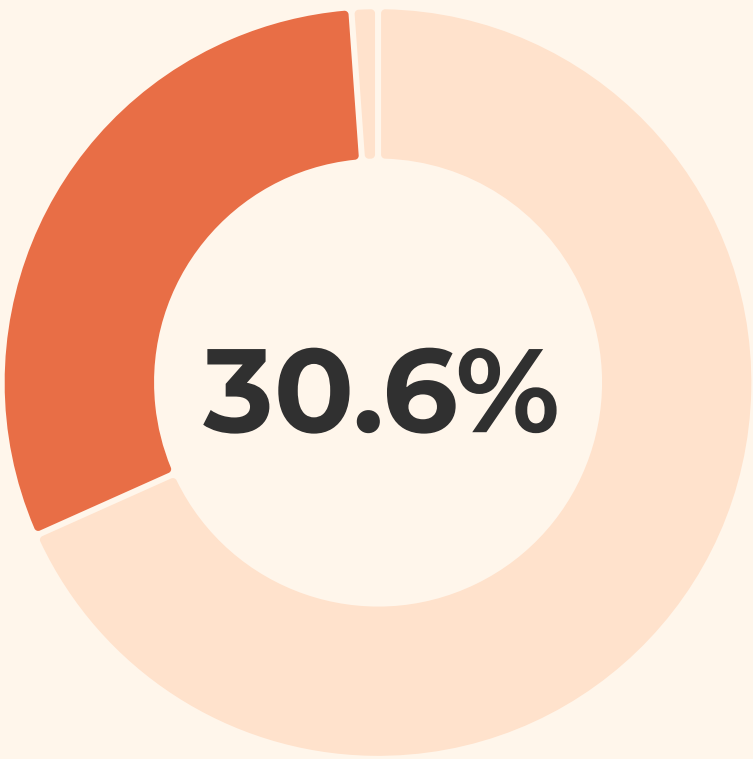
The logo for Sandwich, featuring a stylized white sandwich icon with a face and the word "sandwich" in a white, lowercase, sans-serif font, all set against an orange background.

|                                                                                       |                   |                |
|---------------------------------------------------------------------------------------|-------------------|----------------|
|    | <b>Uniswap V3</b> | <b>\$53.4B</b> |
|   | <b>Uniswap V2</b> | <b>\$8.1B</b>  |
|  | <b>DODO</b>       | <b>\$5.3B</b>  |
|                                                                                       | SushiSwap         | \$3B           |
|                                                                                       | Curve             | \$2.9B         |
|                                                                                       | ShibaSwap         | \$386.6M       |
|                                                                                       | Defi Swap         | \$105.1M       |
|                                                                                       | Balancer V1       | \$68.2M        |
|                                                                                       | RadioShack        | \$11.3M        |
|                                                                                       | Convergence       | \$3.2M         |
|                                                                                       | Bancor            | \$2.3M         |
|                                                                                       | SakePerp          | \$1.9M         |
|                                                                                       | Swerve            | \$1.5M         |
|                                                                                       | Uniswap           | \$1.3M         |
|                                                                                       | Equalizer         | \$1M           |
|                                                                                       | Verse             | \$688.2K       |
|                                                                                       | Frax              | \$65.2K        |
|                                                                                       | Elk               | \$53.7K        |
|                                                                                       | KyberSwap         | \$39.8K        |
|                                                                                       | BakerySwap        | \$24.8K        |

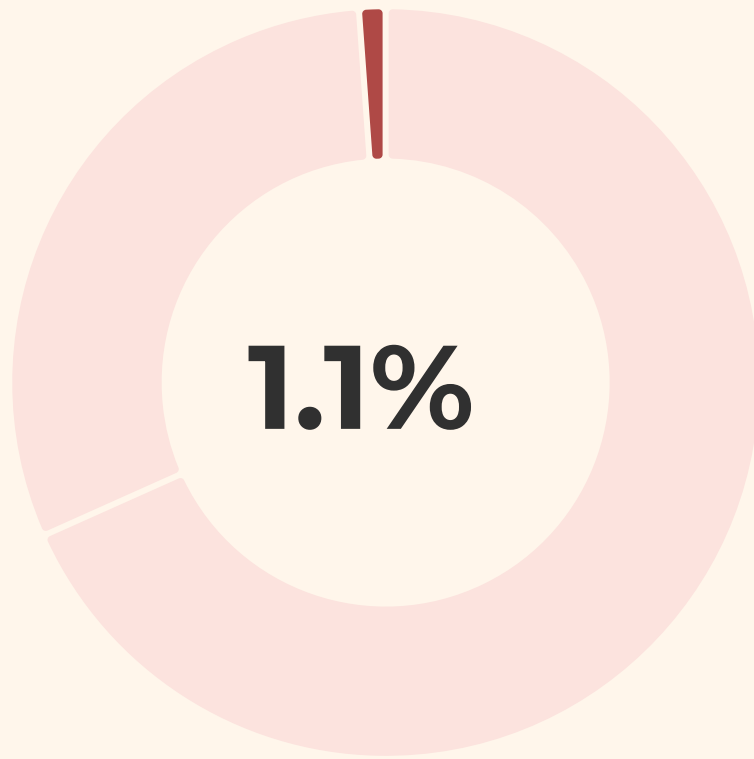
# In 2022, the number of MEV transactions increased over time.



**arbitrage**



**sandwich**



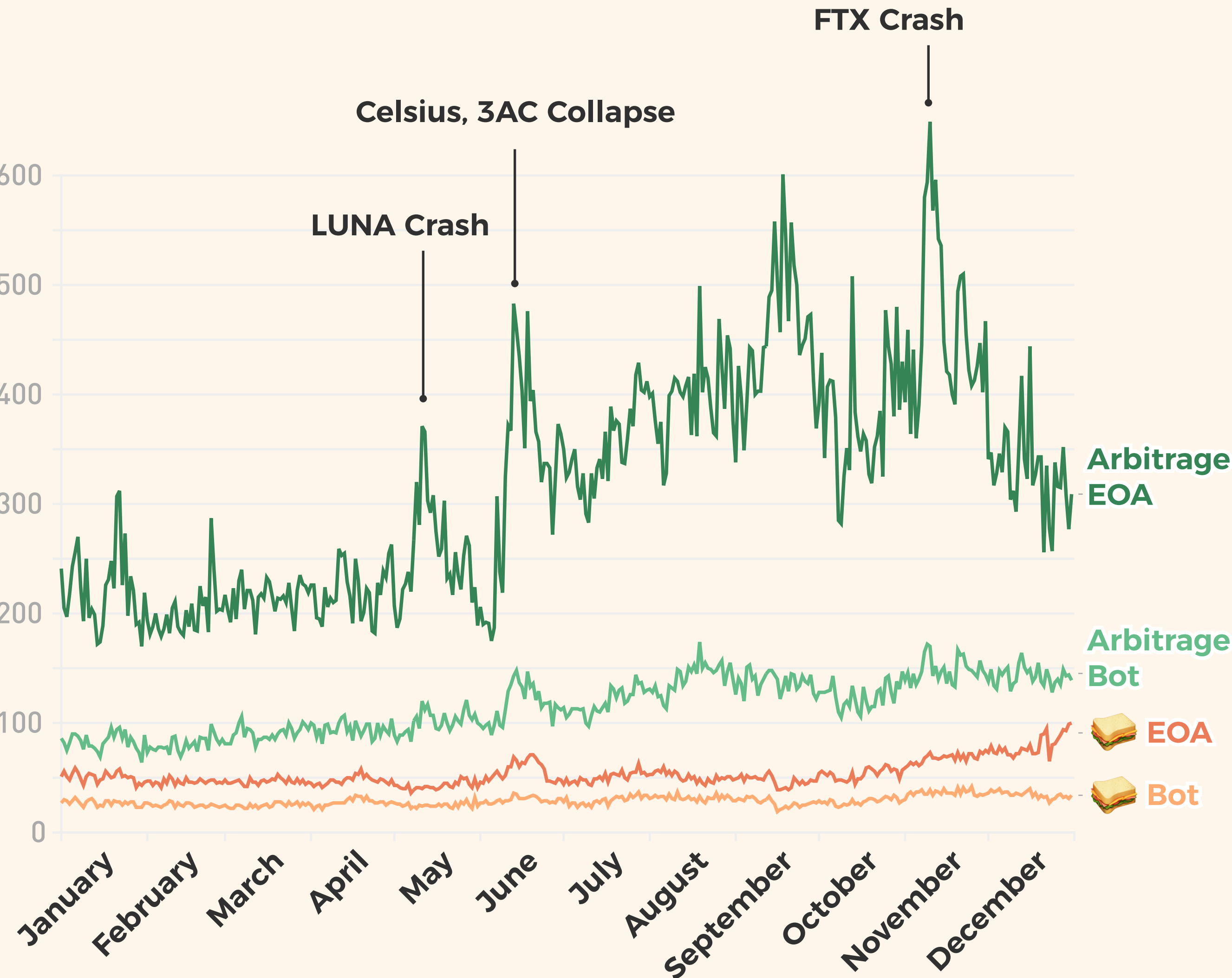
**liquidation**

*Note. Typically, arbitrage bots trade more frequently than sandwich bots and liquidation bots. Liquidation opportunities are more likely to be dependent on intense market fluctuation rather than conventional arbitrage ones. (The data for liquidation is starting from May.)*

***In 2022, crisis breeds creativity of MEV searchers.***



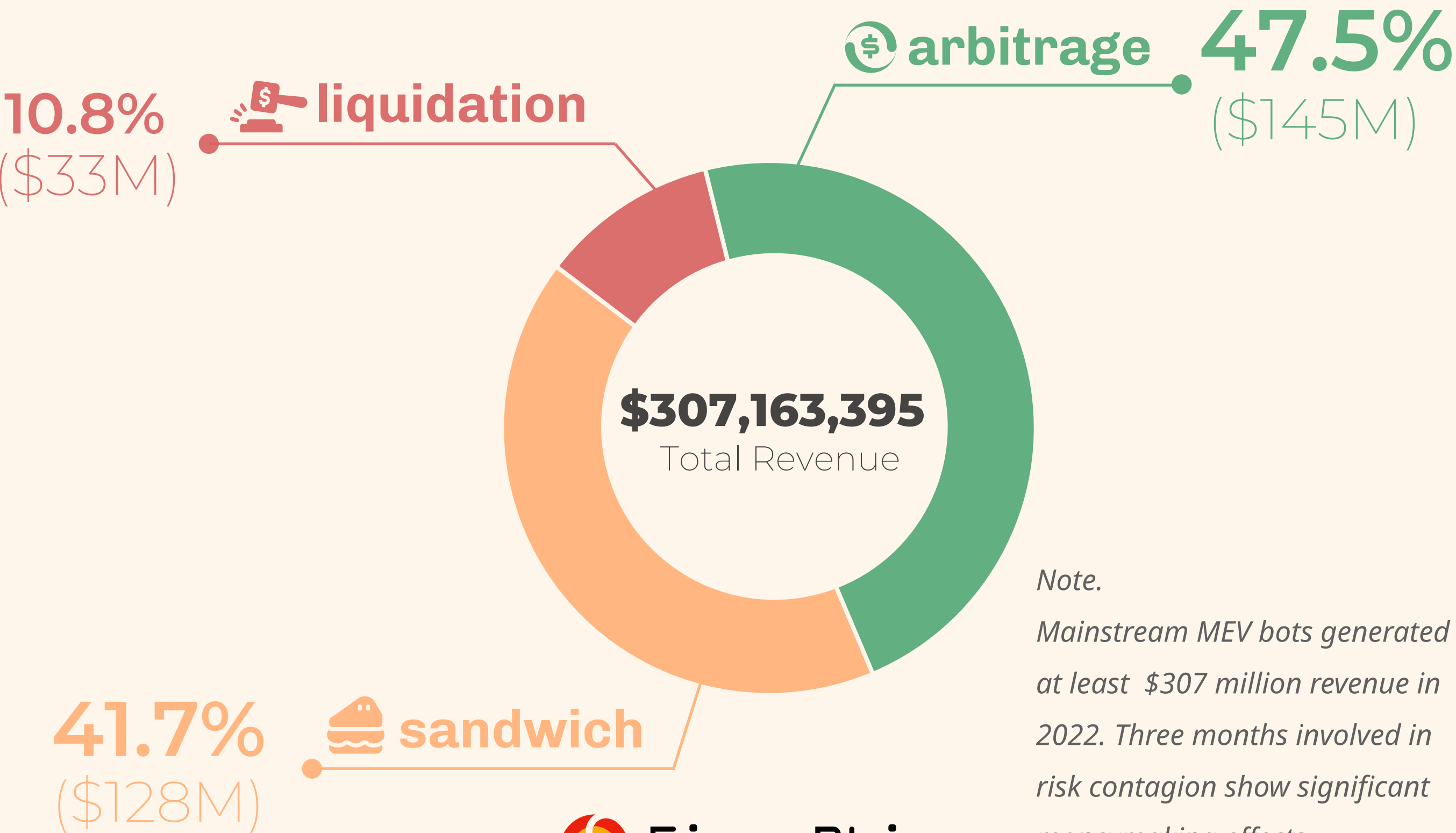
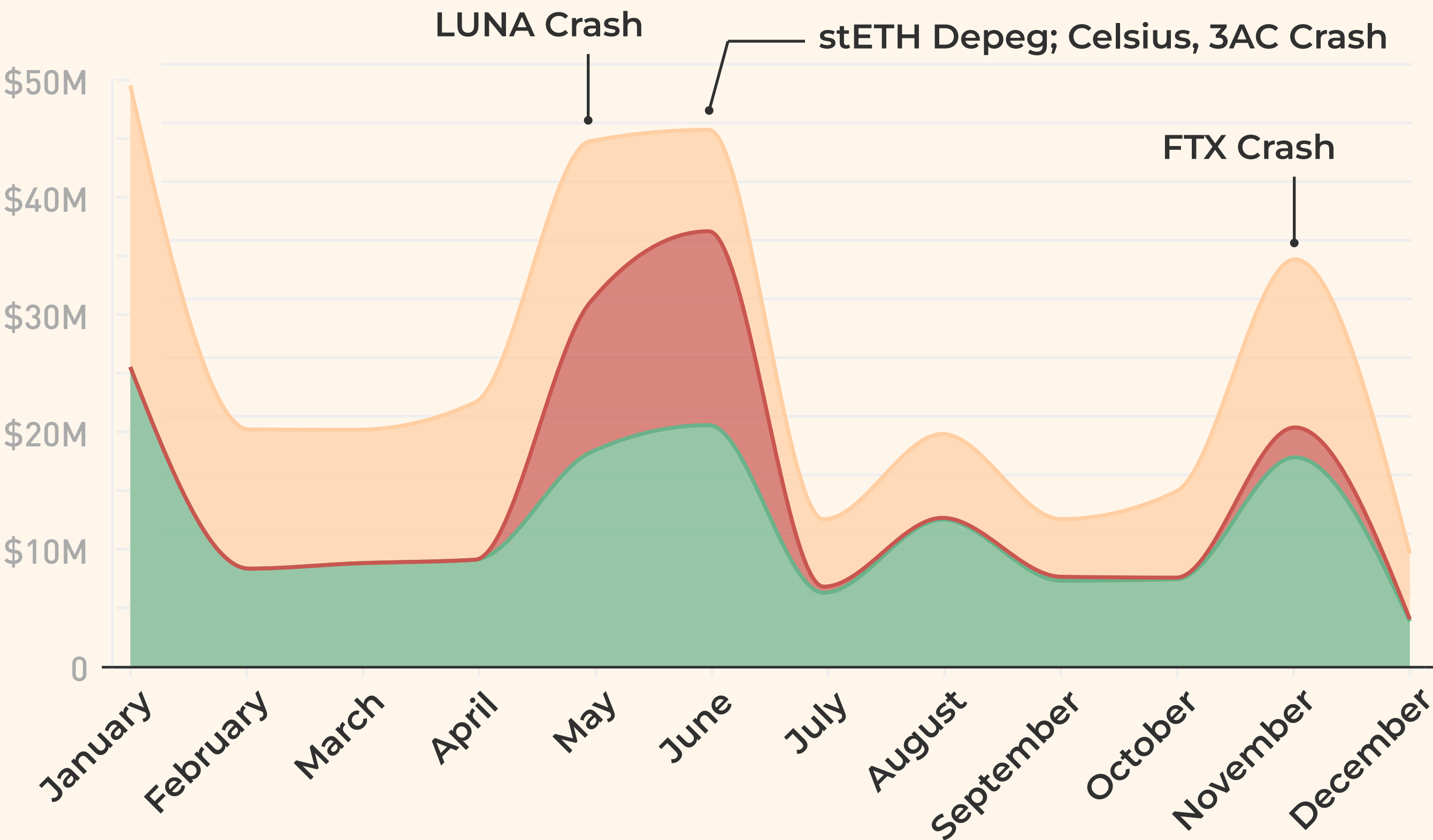
**MEV Searcher Activities Over Time**



# In 2022, over 47.5% of total revenue was generated by arbitrages.



Arbitrage Sandwich Liquidation

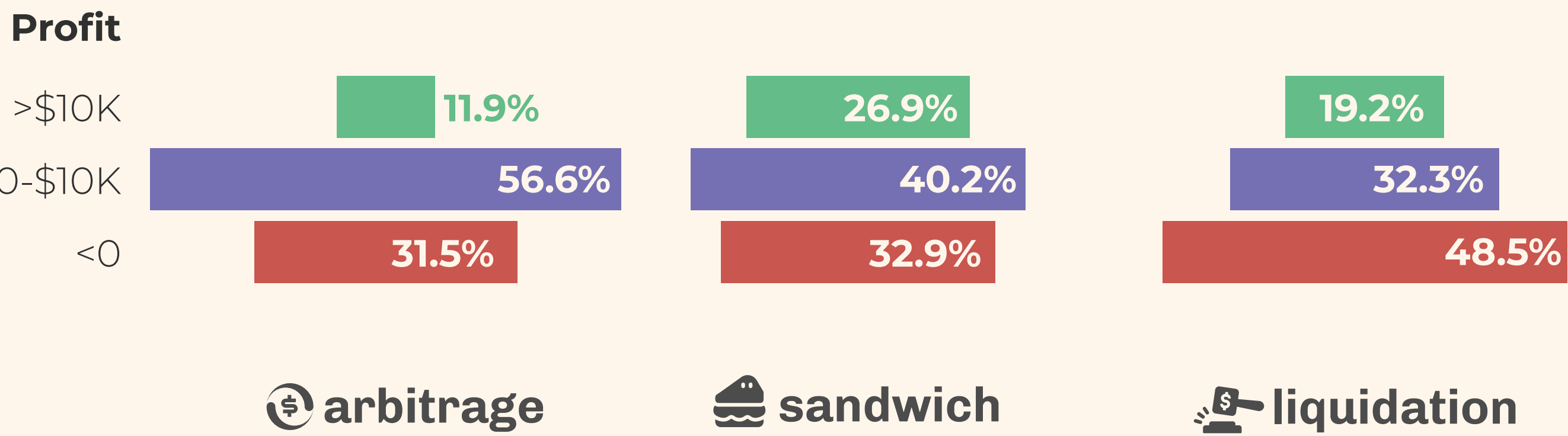


Note.  
Mainstream MEV bots generated at least \$307 million revenue in 2022. Three months involved in risk contagion show significant moneymaking effects.

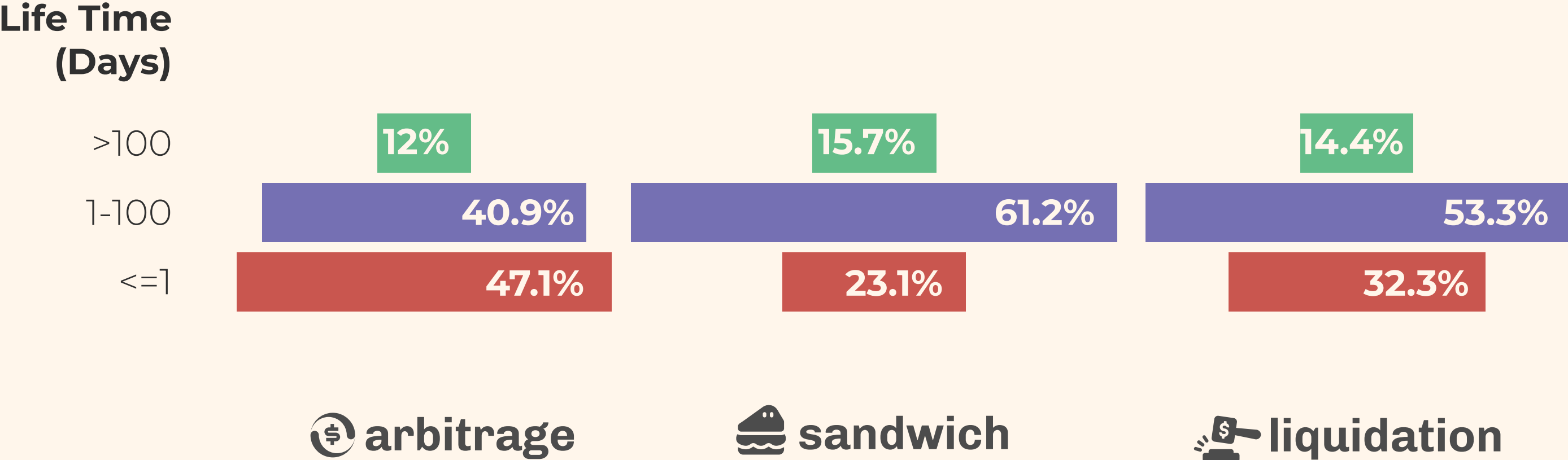


# MEV is a fierce battlefield, while winners take the most.

## Profit distribution by different MEV types



## MEV bots life time duration by types

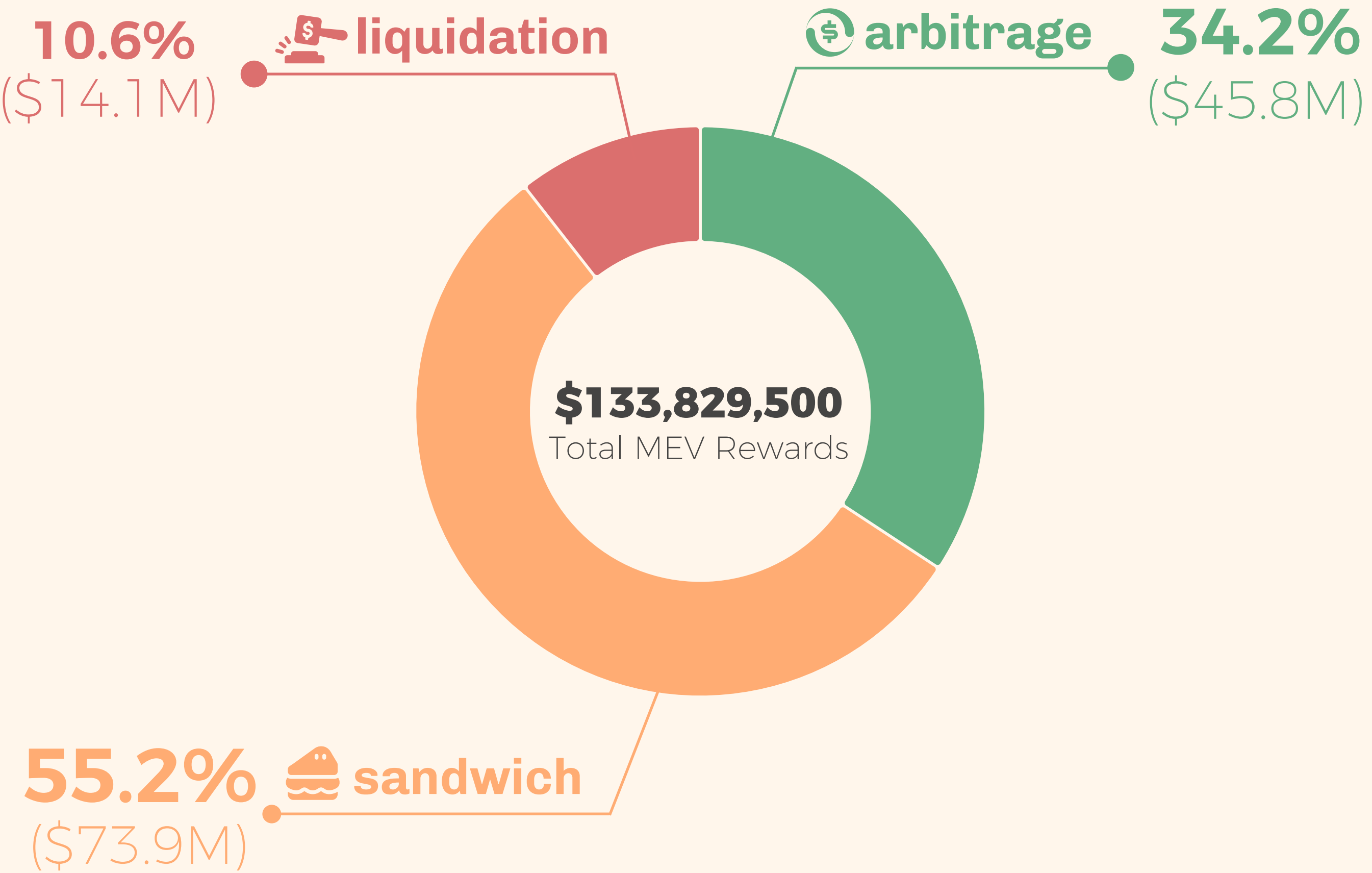


*Note. The total number of unique bot addresses for three MEV types are 2267 (arbitrage), 286 (sandwich), and 167 (liquidation) respectively. The most profitable MEV bot profited less than \$10 million in 2022.*

# Sandwich contributed nearly half of MEV rewards for builders .



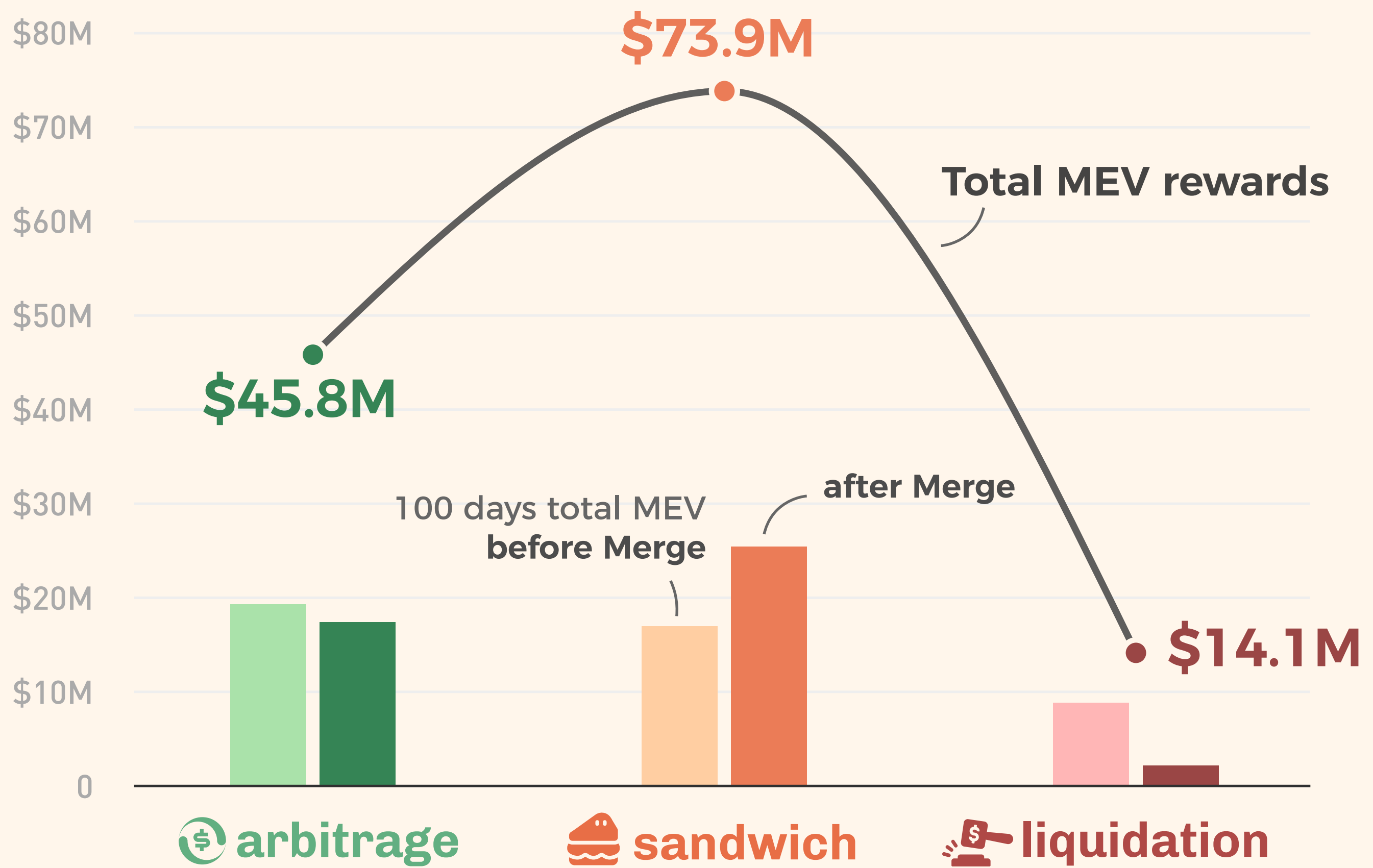
## MEV Rewards for Builders by Types 🛑



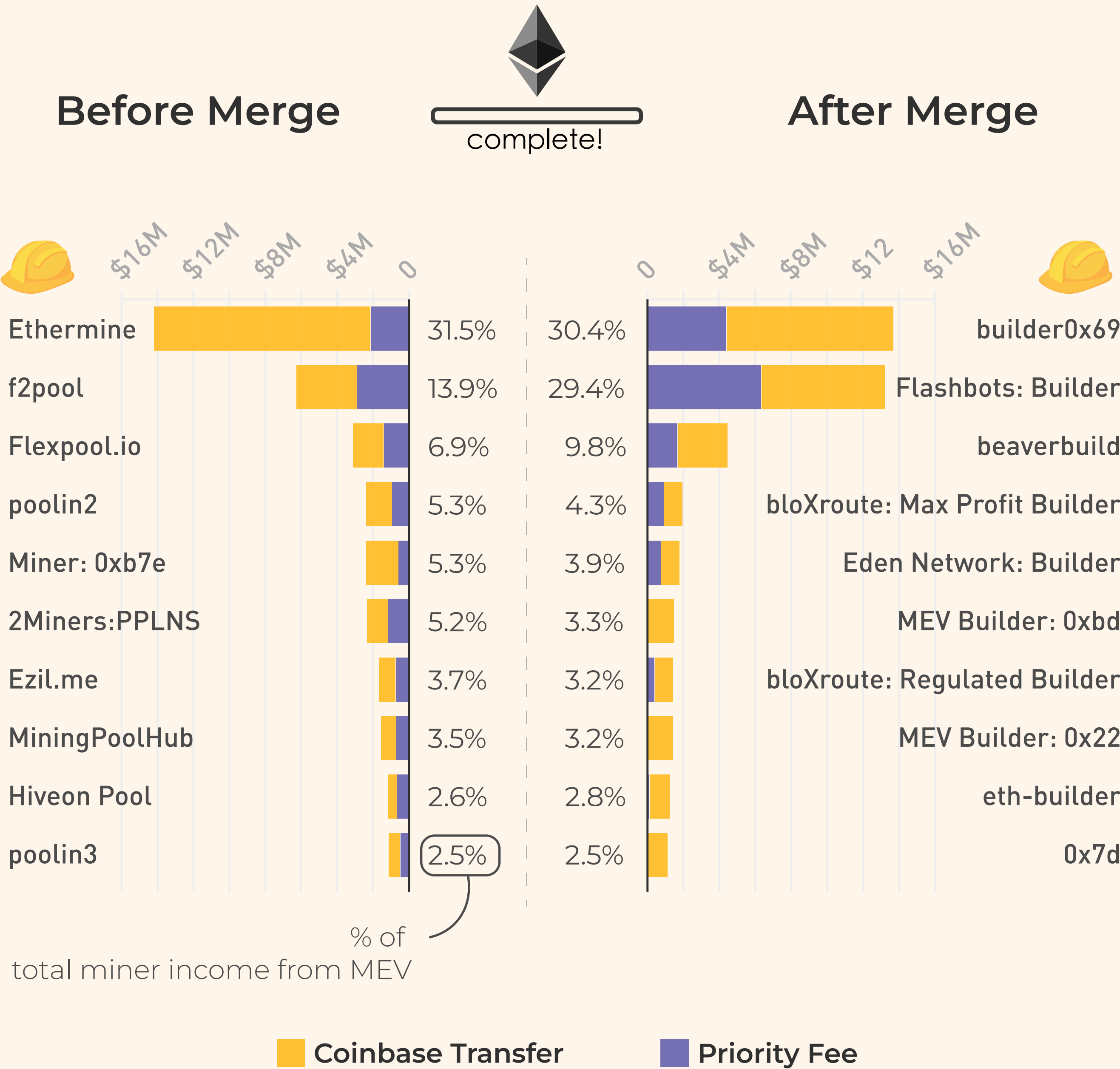
**Builders earned more from sandwiches after The Merge, but less from arbitrgaes and liquidations.**



**MEV Rewards Before & After The Merge 🛑**



# Block builders emerge after the Merge, with the top 2 capturing over half of MEV.



Note. Changes in the off-chain auction market for block space affected the allocation of MEV. However, the oligopoly pattern remains unchanged.

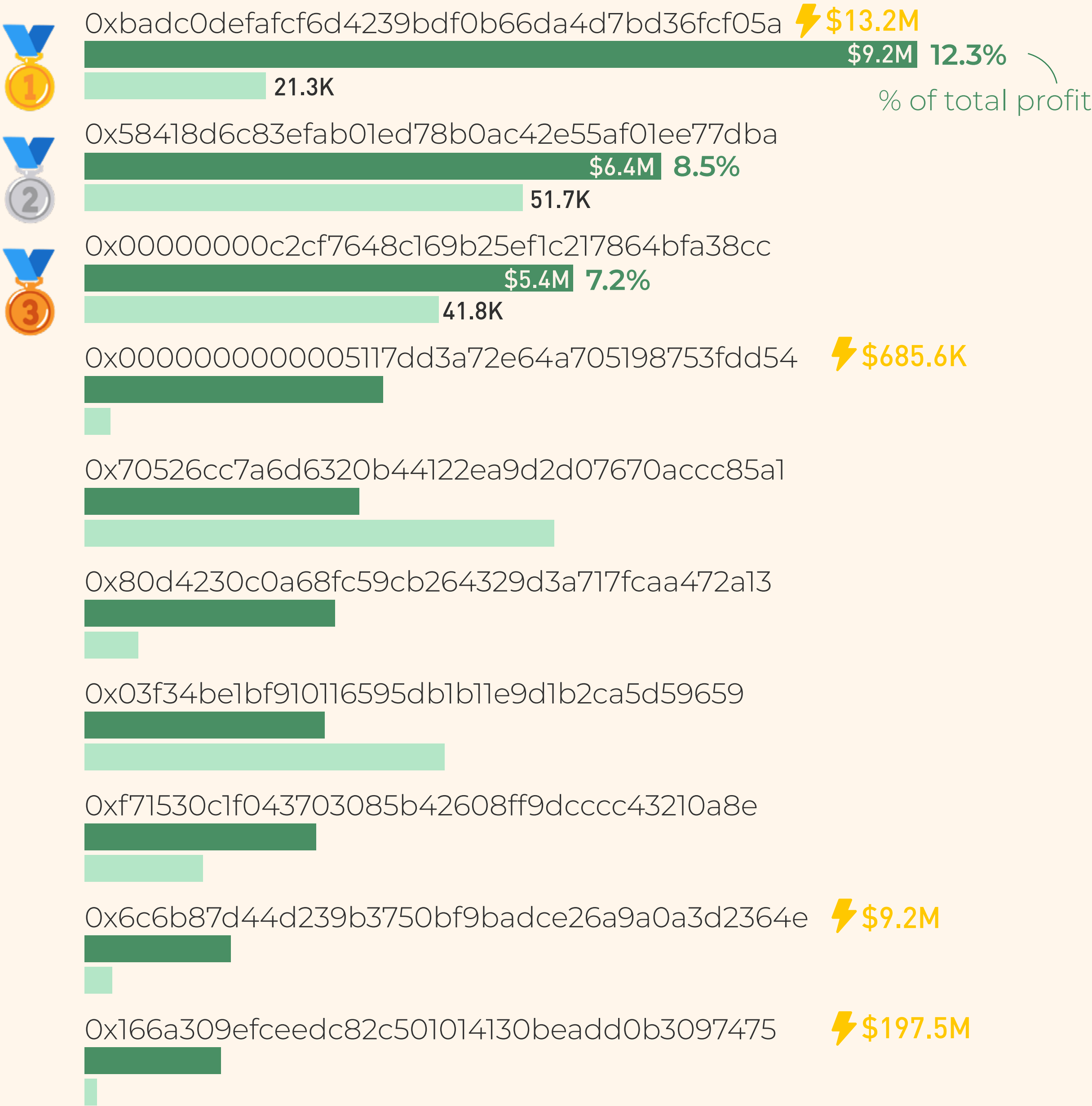


In 2022, the most profitable arbitrageurs made \$9.2M from 21.3K transactions.



Arbitrage Profit Leaderboard

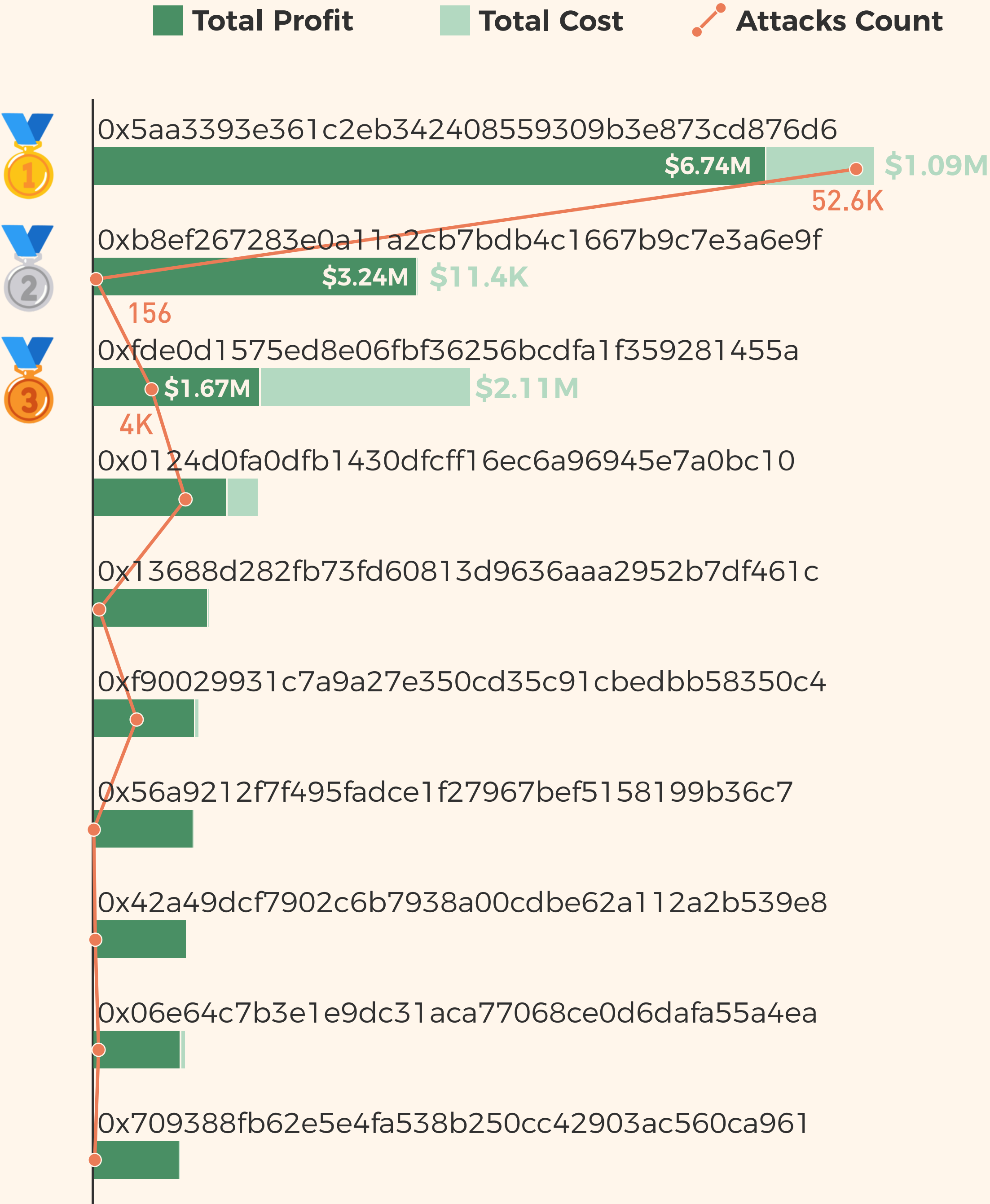
Total Profit Transaction Count Flash Loan



In 2022, the Top arbitrage EOA profited over \$6.74M.



# Arbitrage EOA Profit Leaderboard



In 2022, the most profitable sandwich  
attackers made \$7.5M from 55.8K  
transactions.

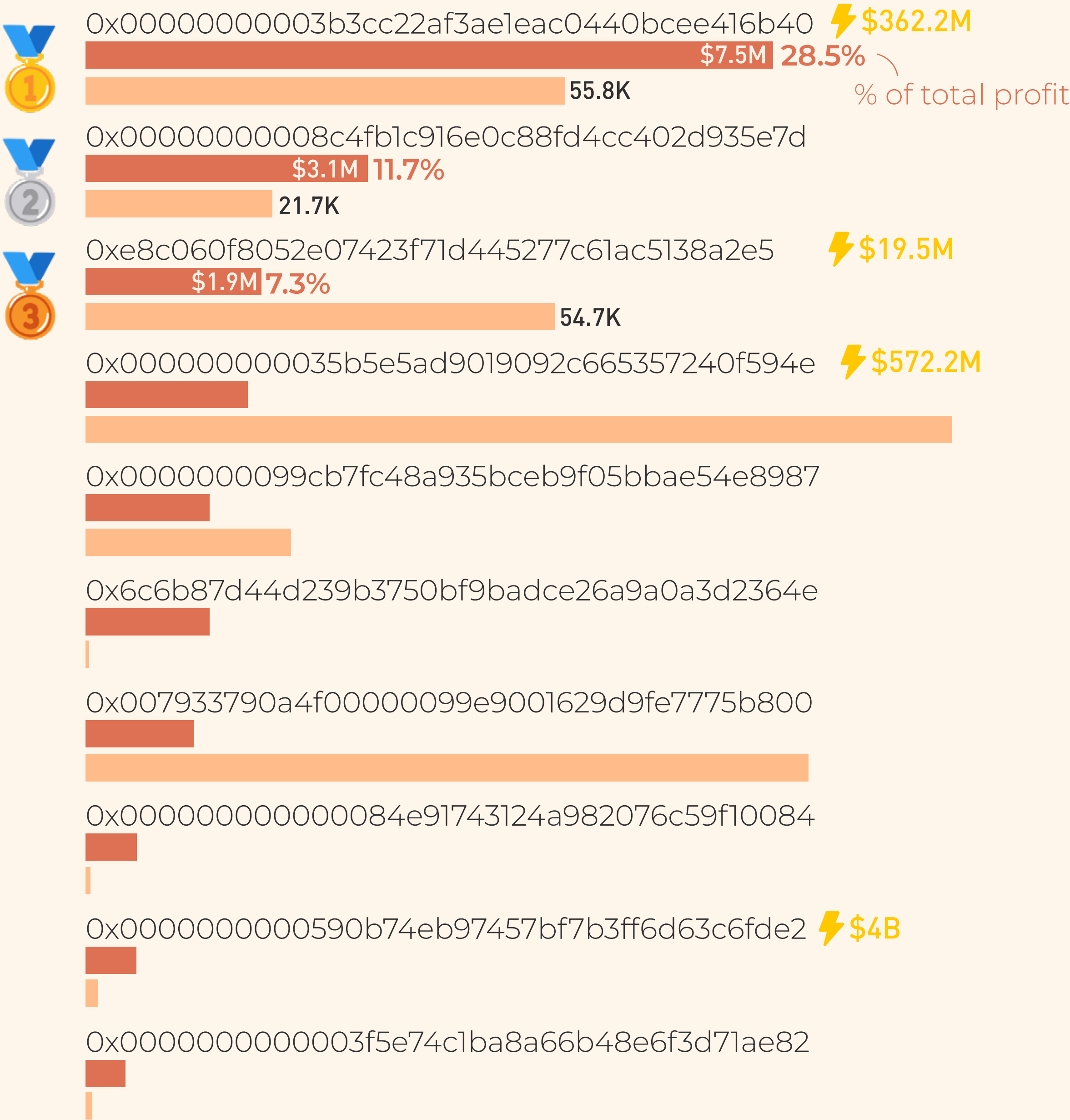
 EigenPhi

 sandwich  Profit Leaderboard

 Total Profit

 Transaction Count

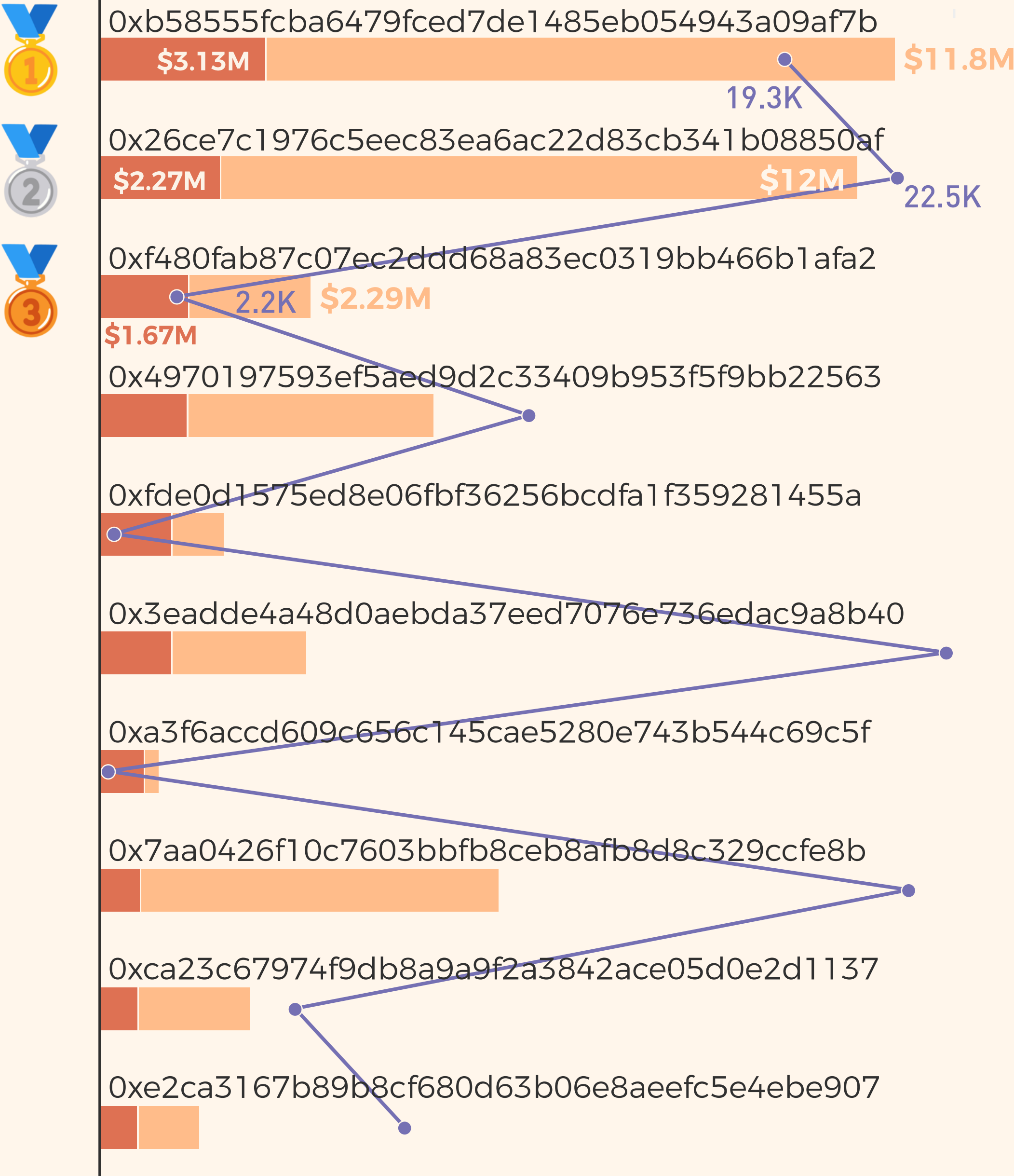
 Flash Loan



# The Top 10 sandwich attacker EOA profited millions of dollars in 2022.

## Sandwich EOA Profit Leaderboard

 Total Profit     Total Cost     Attacks Count



The Top 10 victim of the Year all suffered a loss of more than \$360K.

 Sandwich Victim Board

 Total Loss  Attacks Count



# In 2022, the most profitable liquidators made \$6.9M from 8.4K transactions.



## liquidation Profit Leaderboard

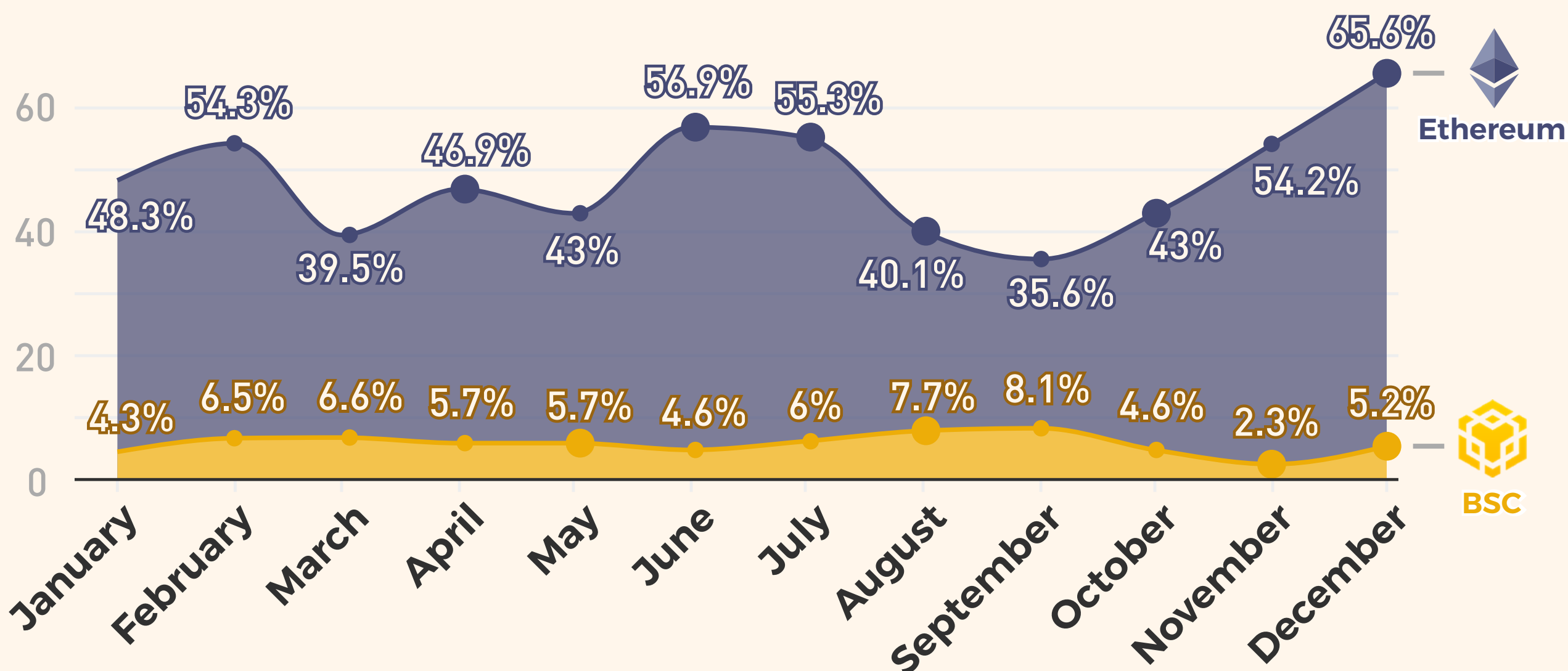
Total Profit Transaction Count Flash Loan

|  |                                            |        |       |      |            |
|--|--------------------------------------------|--------|-------|------|------------|
|  | 0xd911560979b78821d7b045c79e36e9cbfc2f6c6f | \$6.9M | 41.3% | 8.4K |            |
|  | 0x80d4230c0a68fc59cb264329d3a717fcaa472a13 | \$2M   | 11.8% | 1K   |            |
|  | 0x5e767aa6204ece873c7d9405c4bca49cd3e0bf39 | \$1.9M | 11.5% | 908  |            |
|  | 0xabcf5d4be599f1c7f71fcbcae4643a2aa849f4c8 |        |       |      | ⚡ \$37.9K  |
|  | 0x33334570f7e1df34a09377c7f327feb65e2b3faf |        |       |      |            |
|  | 0xb5c7ad3cb6506c65da01f2fac2e667dcb9e66e9c |        |       |      |            |
|  | 0xbadc0defafcf6d4239bdf0b66da4d7bd36fcf05a |        |       |      | ⚡ \$478.3K |
|  | 0x7d2768de32b0b80b7a3454c06bdac94a69ddc7a9 |        |       |      | ⚡ \$3.9K   |
|  | 0x3d0086d7db9b7e7b599b6161876ec1e10fe6647c |        |       |      |            |
|  | 0x8ceb117f98cebf18b3fb97181a8a2067fad700d7 |        |       |      |            |

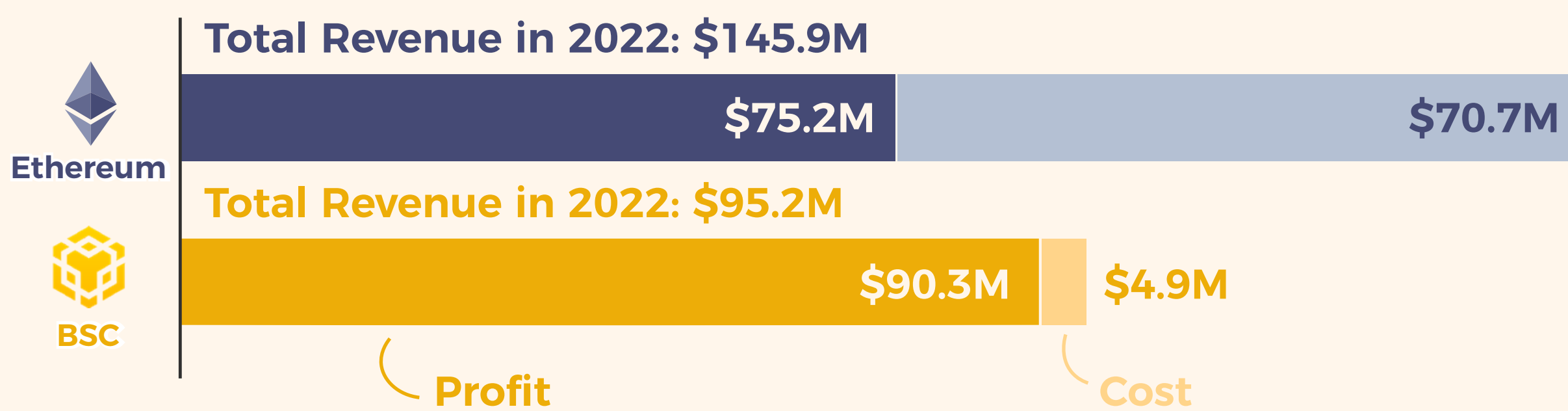
# Arbitrage opportunities on BSC were much more cost-effective than on ETH.

EigenPhi

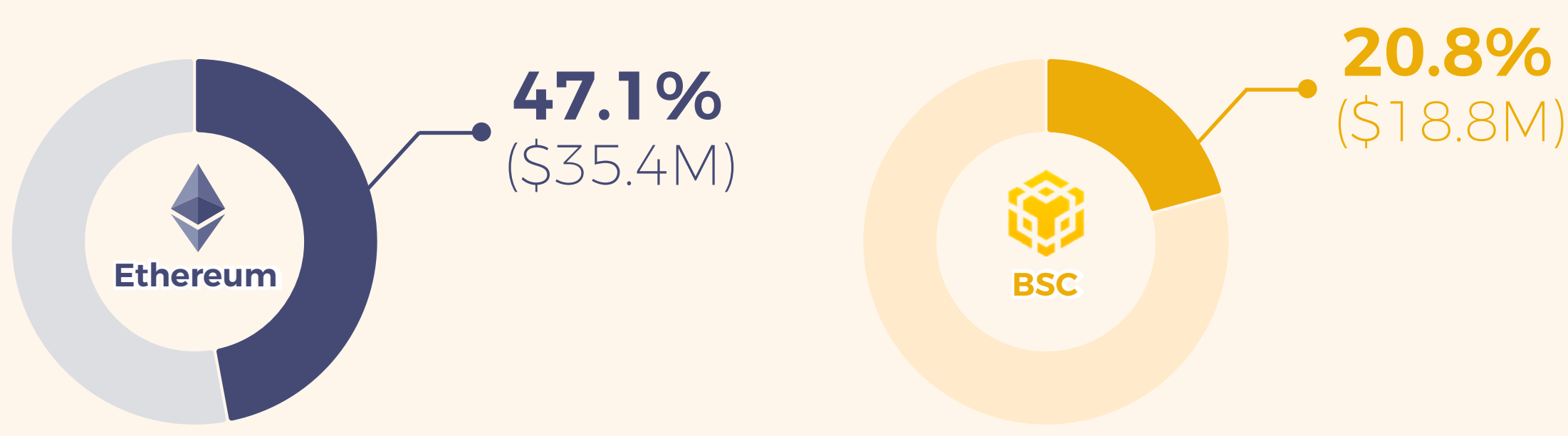
## Cost of revenue ratio (CRR) of Arbitrage on Ethereum & BNB Smart Chain



Note. CRR is calculated based on the revenue and cost data of arbitrage transactions on both Ethereum and BNB Smart Chain.



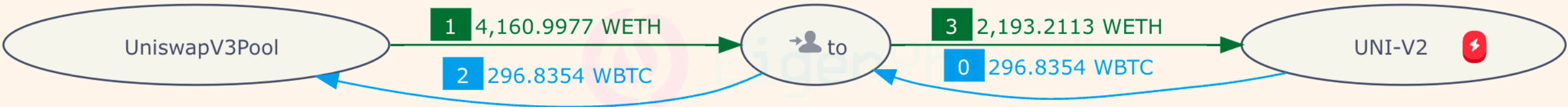
## % of profits generated by Top 8 Arbitrage 🤖



Profit

\$ 3,197,682.38

[View Transaction](#)



This bot,0xbaDc,made a profit of \$3.197 million from a simple arbitrage, back-running large swap transactions during the Nomad bridge exploit.



# SUPER 56 Victims sandwich



BlockNumber: 16091980

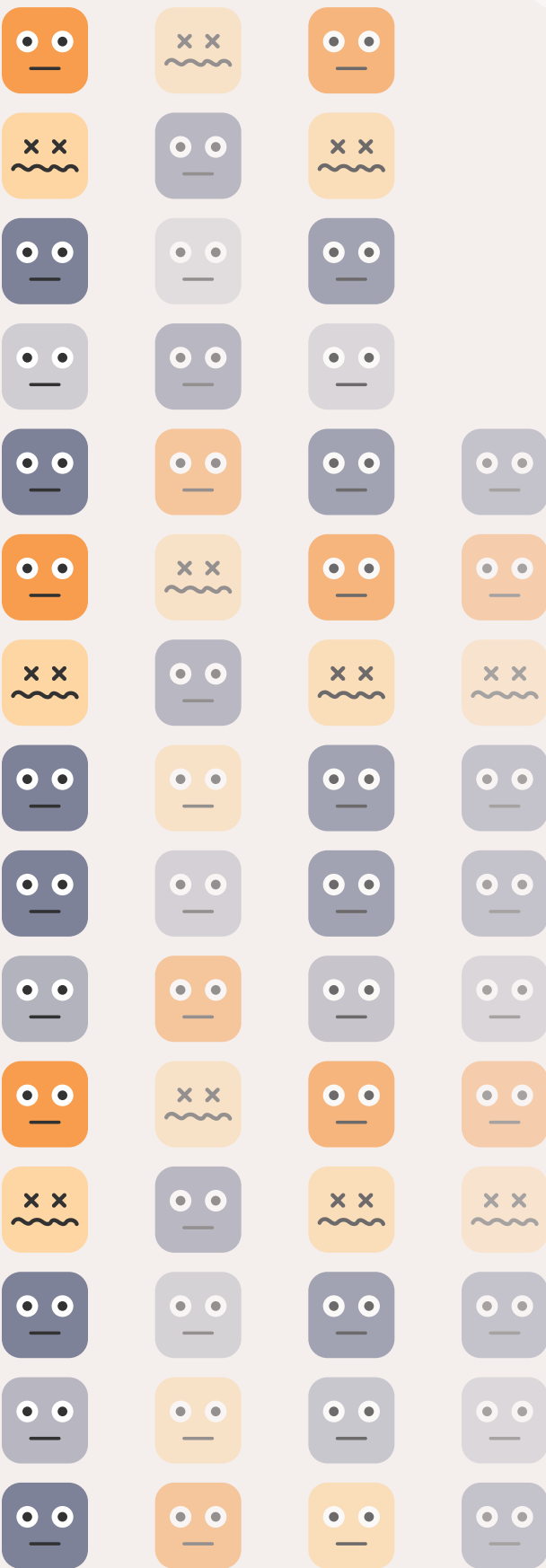
[View Transaction](#)

FrontRun

Position In Block: 41



Victim = 56



BackRun

Position In Block: 233

# Long-tail MEV trades

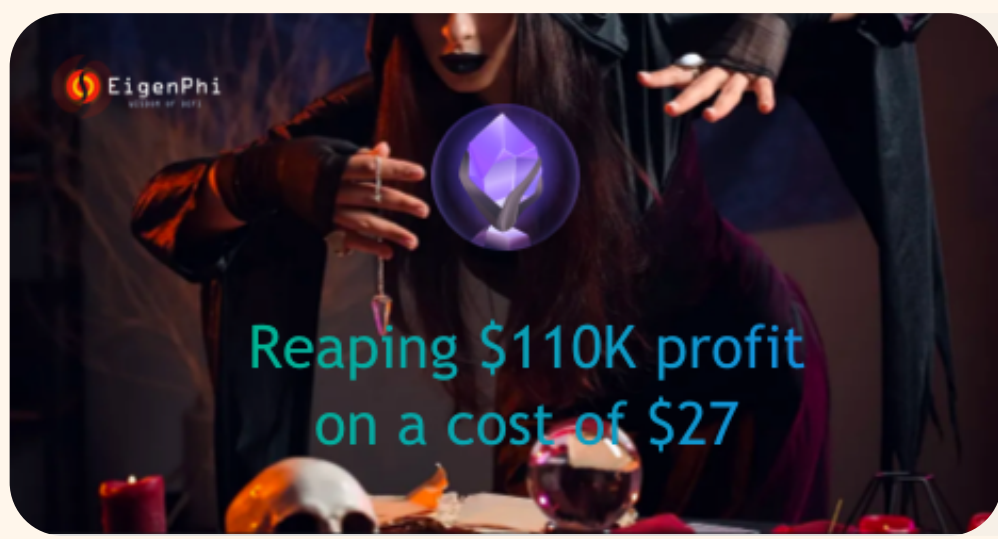
The types of MEV are not limited to arbitrage, liquidation, sandwich, or JIT that is emerging.

The **multiple attacks** that occurred in 2022 can also be classified as Long-Tail MEV trades.

Here are a few examples:

2022-11-8

[EigenTx](#) [Research Report](#)



An arbitrageur took advantage of Abracadabra Cauldron's price caching design defect

2022-11-22

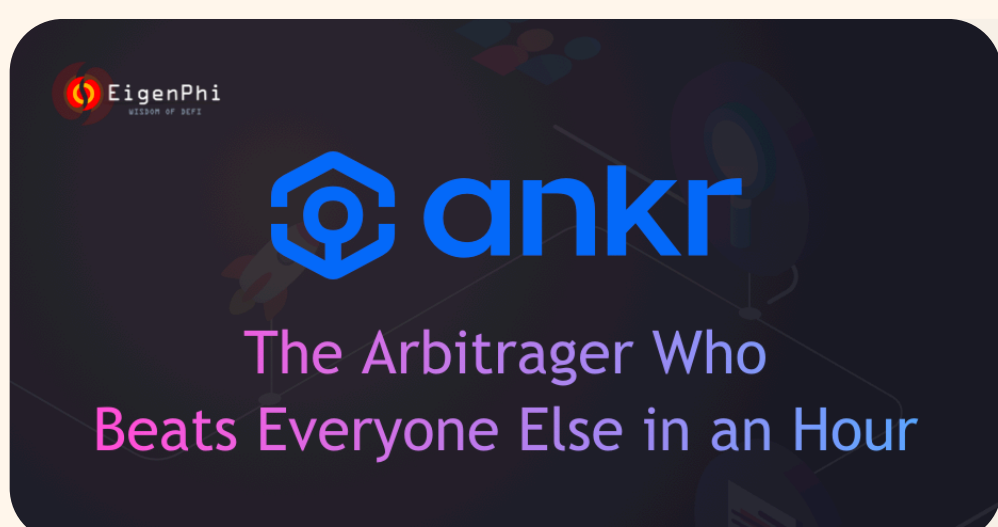
[Research Report1](#) [Research Report2](#)

CRV short-squeeze event triggered a death spiral on liquidating Aave's lending position



2022-12-2

[EigenTx](#) [Research Report](#)



Helio arbitrageur profited \$15.5 million from Ankr's private key breach in one hour



# EigenPhi

WISDOM OF DEFI

EigenPhi is the leading on-chain MEV and liquidity data analysis platform in the DeFi industry.

We are committed to providing the best analytical tools for seeking trading opportunities and tackling emerging financial problems in the blockchain world with state-of-the-art data science approaches.

✉ [contact@eigenphi.com](mailto:contact@eigenphi.com)

🐦 [@EigenPhi](https://twitter.com/EigenPhi)