

## **On-Chain Analysis of Wintermute's DeFi Activity**

This report investigates Wintermute's activity within decentralised finance by analysing on-chain transfer data to understand how the firm interacts with tokens, protocols, and blockchain networks. Counterparties to Wintermute transactions are identified and classified, enabling the isolation of DeFi-specific interactions. The study then examines token flows, chain usage, and protocol engagement using descriptive statistics, log–log visualisations, clustering, and temporal analysis. Together, these methods provide a clear overview of Wintermute's trading patterns, liquidity movements, and operational footprint across the DeFi ecosystem.

### **Classifying Method Overview, Assumptions, and Limitations**

The classifying method identifies whether counterparties interacting with Wintermute correspond to known DeFi platforms. It uses the DeFiLlama protocol dataset, normalising protocol names, domains, and CoinGecko identifiers to create a consistent reference. Each counterparty string is normalised and compared against all known protocols using a scoring system based on exact token matches, partial matches, and full-string agreement, with length penalties to discourage weak matches. The protocol with the highest score is selected, provided it exceeds a minimum threshold; otherwise, the counterparty is labelled as "Unknown". Final classification into DeFi or non-DeFi categories relies on DeFiLlama metadata.

This approach assumes that counterparties are represented by human-readable names or domains, that DeFiLlama's dataset is comprehensive, and that textual similarity reflects true identity. It performs well for labelled entities but has limitations: it cannot classify raw blockchain addresses, may misidentify entities with generic or ambiguous names, and depends on the accuracy and stability of external metadata. It also does not incorporate chain-specific information or advanced fuzzy-matching techniques, which may affect robustness when counterparties are inconsistently named or partially truncated.

I excluded counterparties classified as "Unknown", as these were predominantly raw blockchain addresses without meaningful identifiers. After filtering them out, the dataset was reduced from 437,000 to 371,136 entries. This remaining volume was sufficiently large to support the analysis, and the unknown addresses were not investigated further, given their limited interpretive value.

## **EDA**

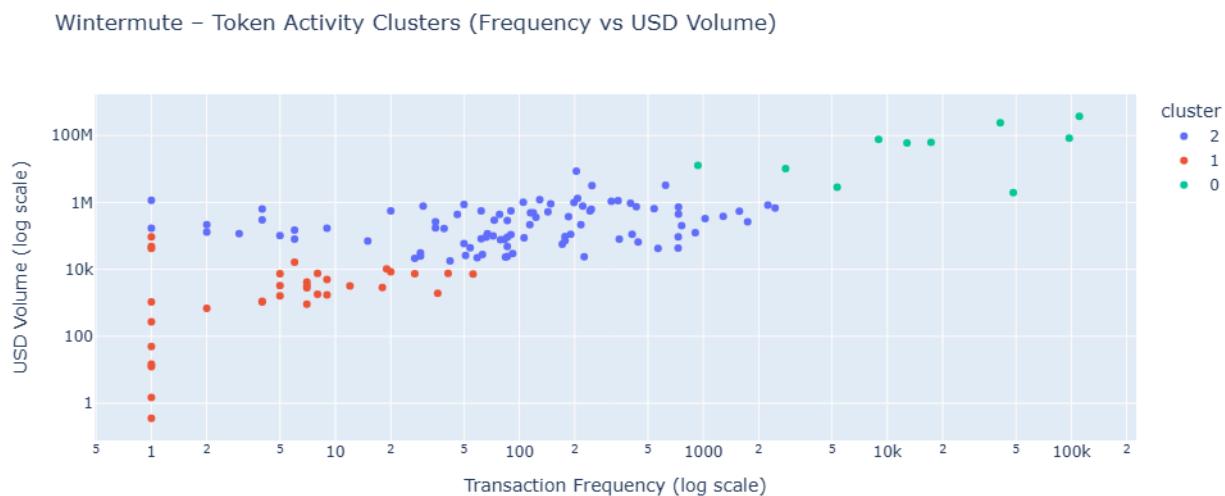
### **Token Trading**

The first stage of the analysis examined which tokens Wintermute trades and how activity varies across them. To explore this, I plotted a scatter diagram comparing the transaction frequency of each token with the total USD volume traded. I did this as a log-log plot for better visualisation. This provided a clear visual representation of token activity across both high- and low-liquidity assets. I then applied K-means clustering to group tokens with similar behavioural patterns, enabling a structured segmentation of Wintermute's trading activity into high, mid, and low activity token groups.

The table summarises the three clusters identified in the K-means analysis of Wintermute's token trading behaviour. Each cluster groups tokens with similar patterns in transaction frequency, total USD volume, and the average USD value per transaction.

- Cluster 0 contains 82 mid-activity tokens, with an average of 127.7 trades and a mean total volume of USD  $2.44 \times 10^5$ . The average trade size is moderate at USD 1,910, indicating these tokens form a broad band of regularly traded assets without being individually dominant.
- Cluster 1 consists of 26 low-activity tokens, averaging only 6.8 trades and USD  $2.00 \times 10^3$  in total volume. With a mean transaction size of USD 296, these tokens represent marginal or opportunistic activity within Wintermute's portfolio.
- Cluster 2 includes 27 high-activity, high-volume tokens. These show an average of 13,351 trades and an exceptionally large mean total volume of USD  $3.51 \times 10^7$ . Their average transaction size is also the highest at USD 2,626, reflecting their central importance in Wintermute's trading operations. Notably, this cluster includes major assets such as SOL, USDT, and WBTC, highlighting their role as core liquidity vehicles.

Overall, the clusters reveal a clear three-tier structure in Wintermute's token trading patterns: a small set of intensively traded core tokens, a broad middle tier of moderately used tokens, and a peripheral set with only occasional activity.



Cluster(activity)	Count	Mean Frequency	Mean USD Volume(USD)	Average USD per transaction (USD)
0 (mid)	82	127.7	2.44x10^5	1910.2
1 (low)	26	6.8	2.00x10^3	295.7
2 (high)	27	13351.3	3.51x10^7	2625.5

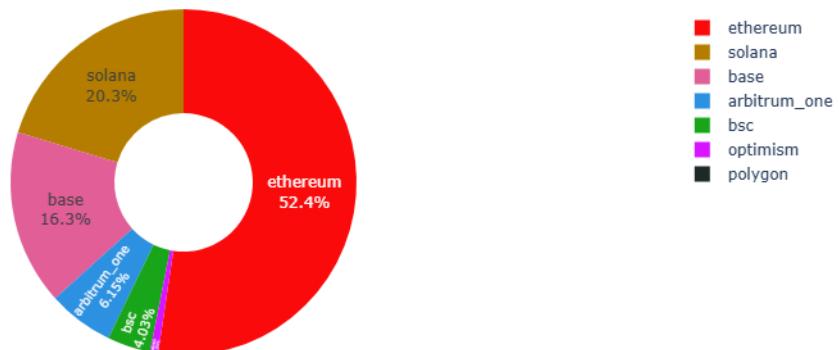
### Blockchain Wintemute are most active on

The first pie chart illustrates Wintermute's USD volume distribution across blockchains. Ethereum clearly dominates, accounting for over half of all value transferred (52.4%), reflecting its role as the primary settlement layer for high-value transactions. Solana contributes a further 20.3%, and Base another 16.3%, together forming the majority of Wintermute's economic flow. The remaining chains collectively represent a much smaller share of total volume.

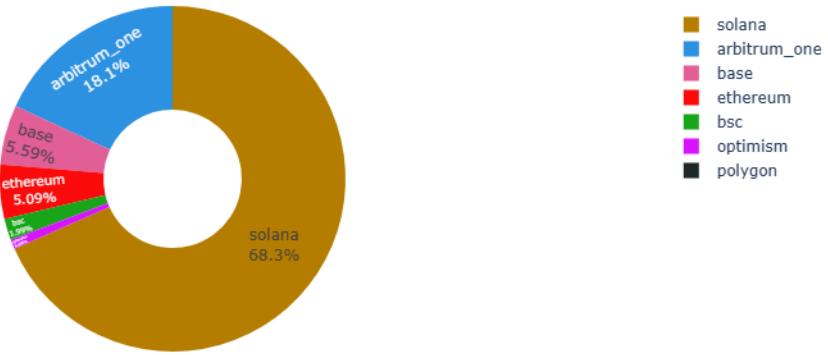
The second pie chart shows transaction frequency across blockchains and presents a very different picture. Here, Solana is overwhelmingly dominant, making up 68.3% of all DeFi-related trades. Arbitrum One follows with 18.1%, while Ethereum, despite carrying the largest USD volume, accounts for only 5.1% of transactions. This reflects Solana's high-throughput, low-latency environment, which encourages frequent, smaller transactions, while Ethereum is used for fewer but significantly higher-value transfers.

This contrast underscores how Wintermute strategically uses different blockchains according to their respective strengths in liquidity, throughput, and cost efficiency

Wintermute – Chain Activity by USD Volume



Wintermute – Chain Activity by Transaction Frequency



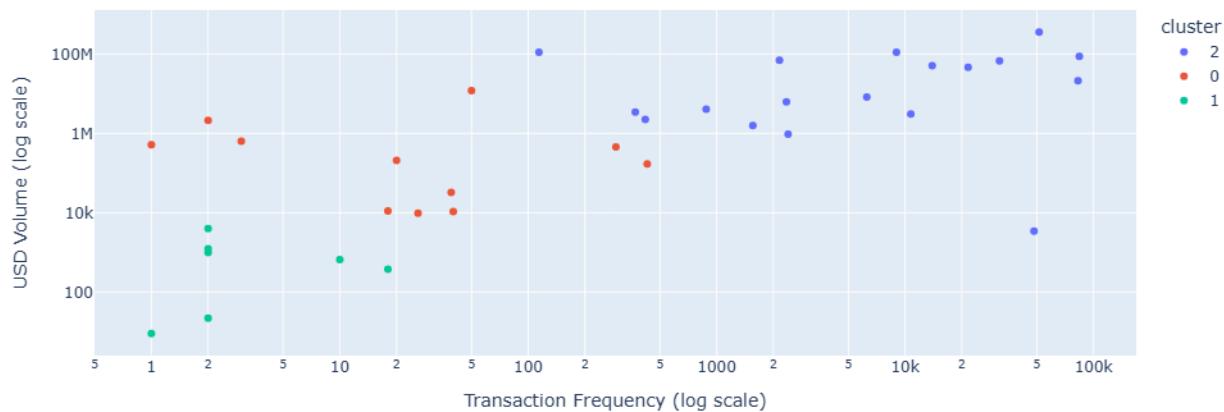
## Wintermutes' Activity on DeFi Platforms

The figure below shows, and the table summarises the three clusters identified in the K-means analysis of Wintermute's activity across DeFi platforms. Each cluster groups platforms with similar levels of transaction frequency, total USD volume, and average value per transaction.

- Cluster 0 contains 11 mid-activity platforms, averaging 83.5 transactions and USD  $1.47 \times 10^6$  in total volume. These platforms show substantial engagement, with a relatively large average trade size of USD 17,638, indicating meaningful but not dominant activity.
- Cluster 1 represents 8 low-activity platforms, with an average of just 4.8 transactions and a small mean total volume of USD 916. Their average trade size of USD 193 suggests these interactions are minor and likely peripheral to Wintermute's core trading activity.
- Cluster 2 captures 18 high-activity, high-volume platforms, showing a mean frequency of 20,565 transactions and a large average total volume of USD  $5.28 \times 10^7$ . Despite this high activity, the average transaction size remains moderate at USD 2,567, reflecting deeper liquidity and sustained operational involvement. This cluster represents Wintermute's primary DeFi venues.

Overall, the results reveal a three-tier structure in Wintermute's DeFi platform usage: a small set of highly active venues at the centre of operations, a broad middle tier of moderately used platforms, and a small group of low-activity outliers.

Wintermute – DeFi Platform Activity Clusters (Frequency vs USD Volume)



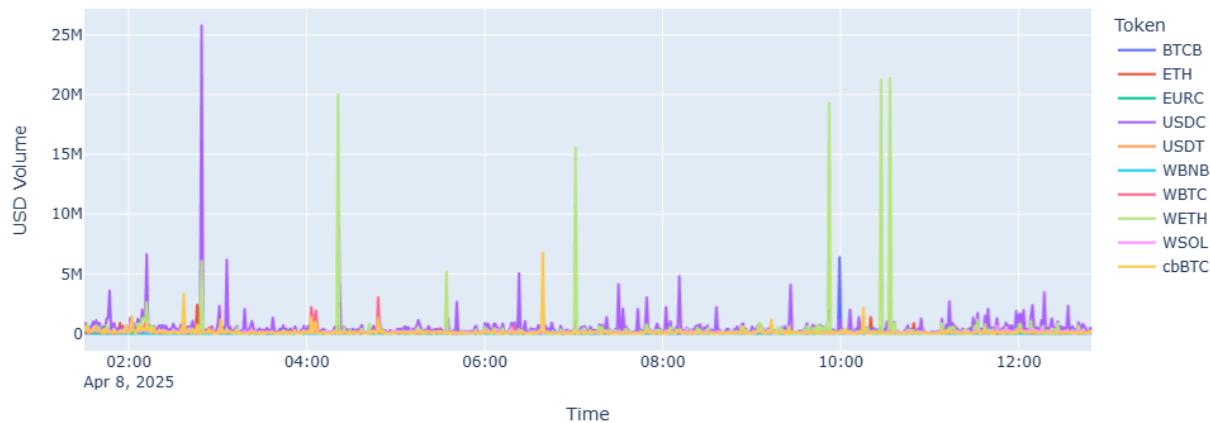
Cluster (activity)	Count	Mean Frequency	Mean USD Volume (USD)	Average USD per transaction (USD)
0 (mid)	11	83.5	$1.47 \times 10^6$	17638.5
1 (low)	8	4.8	$9.16 \times 10^2$	192.9
2 (high)	18	20565.5	$5.28 \times 10^7$	2567.1

## Temporal Trends

I investigated temporal trends in tokens, blockchains and DeFi platforms, but only looking into their 10 largest entities on a minute-by-minute basis.

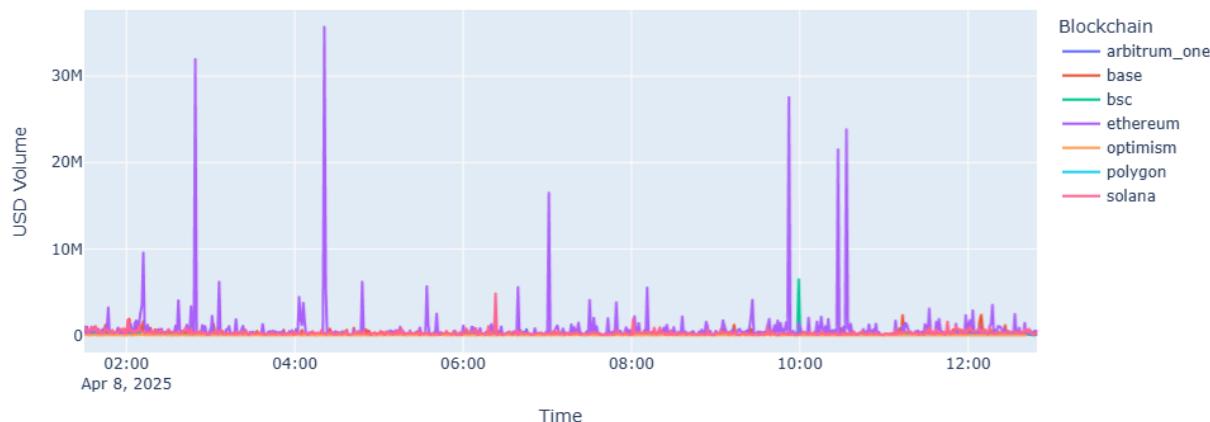
The minute-level token activity plot shows that Wintermute's DeFi trading is characterised by continuous low-level flow punctuated by sharp, isolated spikes in USD volume. These spikes are token-specific and indicate moments of high-value execution rather than steady accumulation. USDC exhibits the most prominent bursts, including several transfers exceeding USD 15–25 million, suggesting its central role in large-scale liquidity movements. Other tokens such as USDT, WBTC, and cbBTC also show occasional mid-sized spikes, while assets like ETH and WETH display frequent but lower-value activity. Overall, the pattern reflects Wintermute's strategy of executing large block trades in stablecoins, complemented by smaller, more regular activity in major market assets.

### Wintermute DeFi Activity Over Time — Token by minute



The minute-level blockchain activity plot shows steady low-level activity across all chains, but the largest USD spikes consistently occur on Ethereum, with several transfers exceeding USD 20–30 million. Other networks such as Solana, Base, and Arbitrum display frequent but much smaller movements, indicating routine transactional use rather than major value transfers. Overall, Ethereum serves as the primary venue for high-value liquidity movements, while other chains support lower-value, higher-frequency activity.

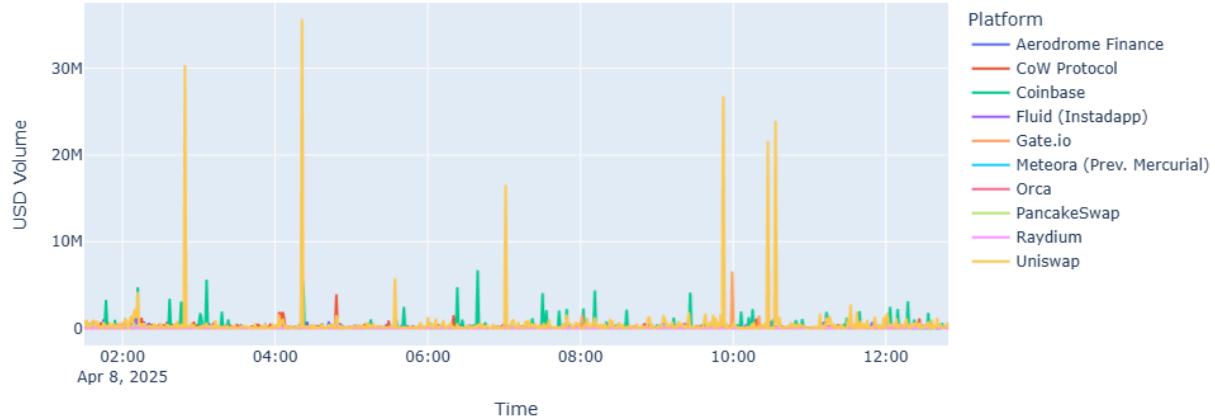
### Wintermute DeFi Activity Over Time — Blockchain by minute



The platform-level activity plot shows that most DeFi platforms exhibit steady, low-volume interactions, while the largest spikes are concentrated on Uniswap, which records several transfers exceeding USD 20–35 million. Coinbase, Orca, and Raydium show moderate but far smaller bursts, reflecting routine transactional flows rather than major liquidity events. Overall,

the pattern indicates that Wintermute conducts high-value executions primarily on Uniswap, while other platforms serve as secondary venues for smaller trades.

Wintermute DeFi Activity Over Time — Platform by minute



## Conclusion

This investigation provides a structured overview of Wintermute's behaviour within the DeFi ecosystem. By classifying counterparties and isolating DeFi-specific interactions, the analysis reveals clear patterns in how the firm allocates liquidity across tokens, chains, and platforms. Both token-level and platform-level clustering show a consistent three-tier structure, with a small group of assets and venues supporting the majority of Wintermute's high-value activity, a broad middle tier of moderately used entities, and a long tail of low-frequency interactions. Chain-level analysis further highlights how Wintermute leverages different networks for distinct purposes, using Ethereum for large-value settlement while relying on chains such as Solana and Arbitrum for frequent, smaller transactions. Minute-by-minute temporal plots reinforce this dynamic, showing steady baseline activity punctuated by substantial liquidity movements. Overall, the findings illustrate Wintermute's role as a high-volume liquidity provider, operating across multiple chains and platforms with a clear concentration of activity in key assets and venues.