

Who Loses and Why? Market Microstructure of Perpetual Futures

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Abstract

This extended abstract summarizes the essence of [1], which asks who loses money in perpetual-futures trading, and why. We study Hyperliquid, a leading decentralized perpetual-futures venue, using the complete on-chain record of orders and trades from March 27, 2025 through June 30, 2026 for its ten most actively traded contracts. We classify wallets into algorithmic market makers, front-end traders, and algorithmic takers; front-end traders trade manually through the venue’s interface, and we interpret them as predominantly retail. For each group we then measure profit and loss trade by trade, valuing every trade against the midprice two hours later and subtracting the fees paid. On this measure front-end traders lose \$1.11 billion, market makers gain \$208 million, and algorithmic takers approximately break even. Three channels carry the transfer and account for the whole of it. The first is voluntary trading. Front-end traders demand immediacy, placing large aggressive orders whose size scales little with displayed liquidity, and so pay the highest execution costs; favorable post-trade price movement and maker income offset part of that cost. The second is forced exits. Leverage converts adverse price moves into forced liquidations, which exit at prices far worse than any voluntary trade, and auto-deleveraging returns only part of the loss. The third is fees. Front-end traders cross the spread on most of their volume and sit in the highest-fee tiers, and so pay most of the venue’s fees. Post-trade price impact is organized by trade purpose, though group differences persist within each purpose category. These results identify immediacy, forced exits, and fees as the principal channels of wealth transfer in decentralized perpetual-futures markets.

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1 Motivation

Perpetual futures are derivative contracts with no fixed maturity; periodic funding payments between long and short positions keep their prices close to spot. They are now the dominant instrument in cryptocurrency trading, with reported 2025 notional volume of \$61.7 trillion,



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more than three times spot volume,¹ yet most of it occurs on offshore venues outside regulated reporting, leaving even basic facts about market participants unknown. The visible portion is already large: reported forced liquidations across crypto derivatives reached roughly \$150 billion in 2025, more than \$19 billion of it on October 10, 2025 alone.² These episodes point to large wealth transfers, but not to their economic structure. In [1] we ask who is on each side of these transfers, how large they are, and through which mechanisms they occur.

2 Setting and Data

Hyperliquid is a leading decentralized perpetual-futures exchange whose order book and matching engine run entirely on a public blockchain. Deposits, withdrawals, account equity, and margin usage are recorded in on-chain snapshots for each wallet address, and all orders, cancellations, trades, and forced liquidations are recorded at millisecond resolution with trade-time position size and realized profit and loss, so each wallet's complete event history is observable. Our sample runs from March 27, 2025 through June 30, 2026 and covers the ten perpetual contracts with the highest trading volume; order and fill records come from Allium, top-of-book snapshots from Tardis. In total, 729,540 active wallets are classified.

3 Empirical Approach

We classify pseudonymous wallets into economically interpretable trader types based on observed trading behavior, assigning labels at the coin-day level, so labels can vary across coins and over time:

- **Algorithmic market makers** continuously post, update, and cancel resting limit orders on both sides of the book, with most submissions add-liquidity-only (post-only).
- **Algorithmic takers** exhibit high-frequency activity, large order counts, and sustained trading over hours incompatible with manual trading; 69% of their volume takes liquidity.
- **Front-end traders** are identified primarily by market orders submitted through the venue's web front end, which Hyperliquid records as `FrontendMarket` orders; we interpret this group as predominantly retail.

A residual ambiguous group, 1.7% of platform volume, is excluded from group-level analysis.

We then measure each group's dollar profit and loss trade by trade, valuing every trade against the midprice 120 minutes later, with fees subtracted separately. This profit and loss splits into three channels that add to the total. Voluntary trading nets execution cost, post-trade price impact, and income earned as a maker. Net forced exits set losses on forced liquidations against the offset from auto-deleveraging (ADL), which closes profitable positions at the mark price when liquidations cannot clear. Fees are the third channel.

Finally, we partition every voluntary taker trade, an aggressive order that crosses the spread, by its trade purpose: an opening increases position size, a gain-realizing close reduces a position at a profit, and a loss-realizing close reduces a position at a loss.

4 Key Findings

1. **Front-end traders finance the venue.** Measured trade by trade at the 120-minute interval and net of fees, front-end traders lose \$1.11 billion, market makers gain \$208 million, and algorithmic takers approximately break even. The front-end loss is the sum

¹ See Reuters, April 22, 2026, citing CryptoQuant.

² See CryptoSlate (CoinGlass data) and CoinDesk, October 11, 2025.

of the three channels: \$154 million on voluntary trading, \$226 million on net forced exits, and \$725 million in fees. The gap between the front-end loss and the other groups' gains is mostly the fee bill, which accrues to the venue rather than to the other trading groups.

2. **Channel one, voluntary trading: \$154 million.** Front-end traders pay \$501 million in execution cost on their voluntary taker trades, recover \$299 million through favorable post-trade price movement, and earn \$48 million as makers. Execution cost is 2.43 basis points per dollar of taker volume, against 0.70 for market makers and 1.70 for algorithmic takers. The gap comes from slippage: front-end traders concentrate volume in large aggressive orders, where slippage rises sharply, and scale trade size with displayed liquidity far less than market makers do.
3. **Inside that channel: post-trade price impact and trade purpose.** Price impact initially favors all three groups but subsequently declines only for front-end traders. Trade purpose organizes the divergence: loss-realizing closes follow recent returns and revert for every group, gain-realizing closes are contrarian for every group, and only openings differ, with front-end traders opening in the direction of recent returns while the other two groups open against them. A loss-realizing close is the voluntary counterpart of a forced exit: both exit quickly and pay for immediacy, and the post-trade price pattern on a liquidation resembles that of a loss-realizing close on a much larger scale.
4. **Channel two, net forced exits: \$226 million.** Forced liquidations impose a \$344 million loss on front-end traders, against which auto-deleveraging returns \$118 million. Front-end traders account for 96.0% of three-group liquidation volume (97.6% excluding the October 10, 2025 episode). Liquidation trades pay roughly twenty times the voluntary half-spread, with adverse post-trade price moves an order of magnitude larger.
5. **Channel three, fees: \$725 million.** That is 2.99 basis points of front-end volume, compared with \$50 million (0.16 basis points) for market makers and \$55 million (2.17 basis points) for algorithmic takers. Front-end traders trade overwhelmingly as takers, crossing the spread on 85% of their volume versus 20% for market makers; and because fee tiers depend on recent trading volume and HYPE staking, most front-end volume sits in the base fee tier while market-maker volume is concentrated in lower-fee tiers.

5 Implications

None of these mechanisms requires trading against better-informed counterparties in the usual sense. Front-end traders pay because they demand immediacy in large aggressive orders without conditioning size on displayed depth as market makers do, because the maker-taker schedule charges the aggressor and they take liquidity on 85% of their volume, and because leverage converts adverse price moves into forced exits at prices far worse than any voluntary trade. Funding payments, the channel specific to perpetual contracts, sit outside this measure: negligible over a two-hour window, they matter only as a carrying cost on positions held longer. The results give a wallet-level account of who loses, and why, on a leading decentralized venue: front-end traders pay for immediacy, in larger aggressive trades, in costly forced exits, and in less favorable fee tiers.

References

- 1 Ruizhe Jia, Ciamac C. Moallemi, Shouqiao Wang, and Xinmeng Zeng. Who loses and why? Market microstructure of perpetual futures, 2026. doi:10.2139/ssrn.7270041.