

Postcards from the cutting edge of Gas research: *What you don't know can hurt you & your users*

In July of 2024, we shared original research describing how the interaction between privately transmitted transactions and altruistic self-built blocks unexpectedly increase Base Fee volatility. We also warned that this effect would likely get more pronounced as private transaction share continues to grow.

In this session we will revisit our original findings but with 4 months of additional data and deeper investigative research. Has gas price volatility increased as predicted? If so, why? If not, why not? And why does this matter?



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Matt Cutler

X: @mcutler @blocknative

Tg: @mcutler95

Gas Markets

spot demand for block space

sets

spot price for block space

Gas Matters

Transaction fees

Settlement

UX

DevEx

Paymaster expense

L1 Fees

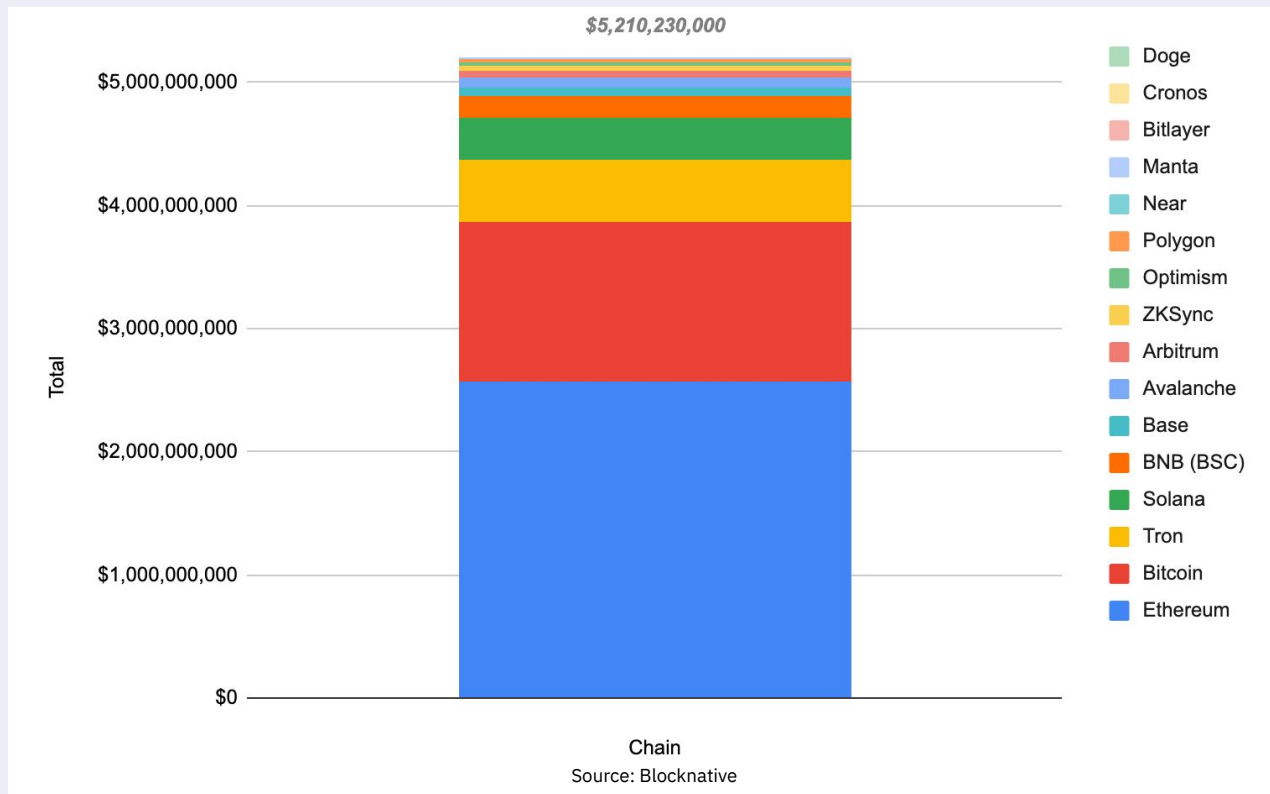
Validator revenue

L2 revenue

L2 COGS

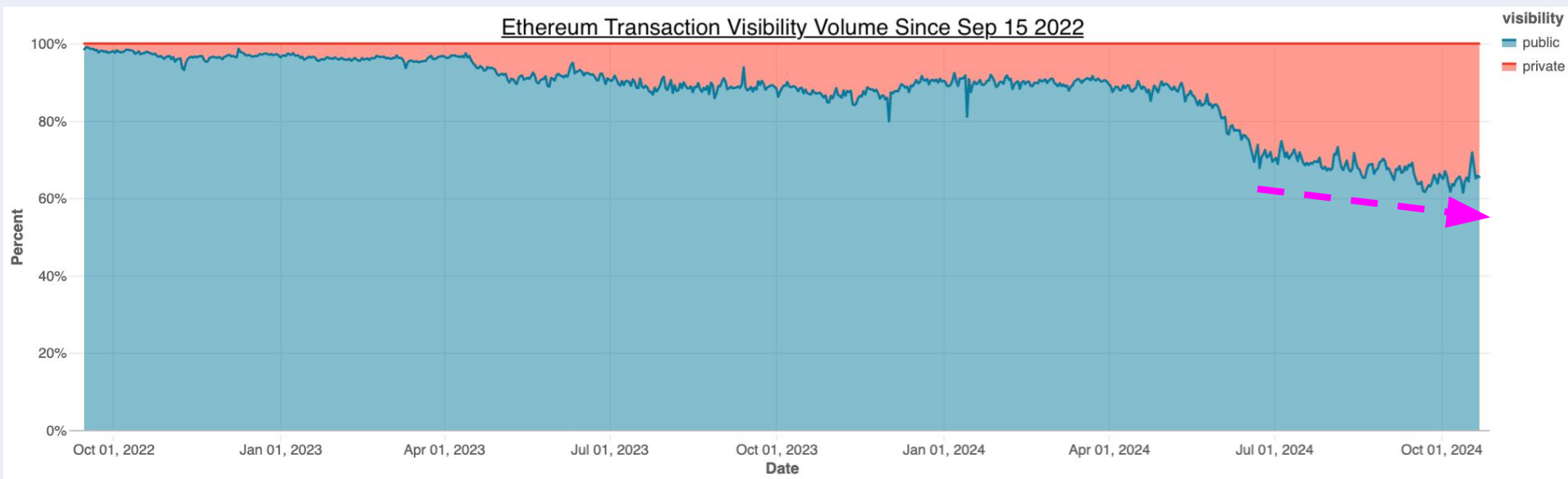
Chain operations

Gas Matters: \$5.2B in Fees (12 mo)

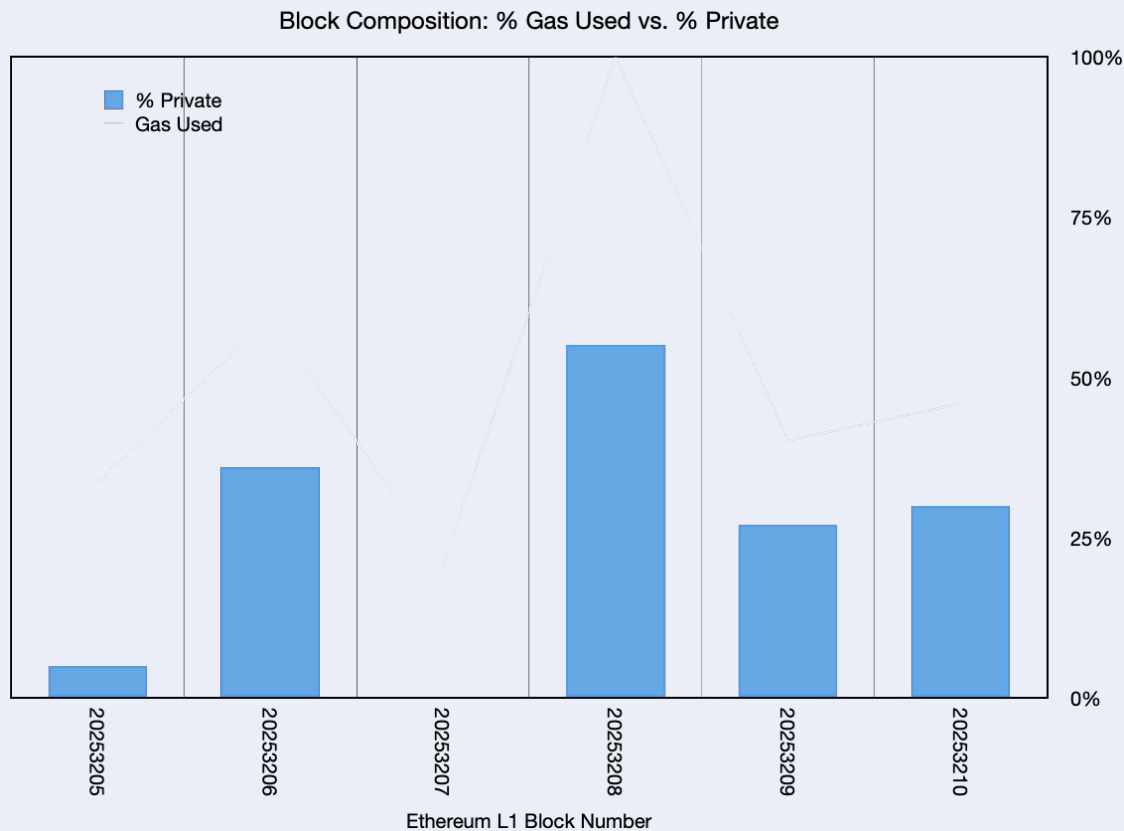




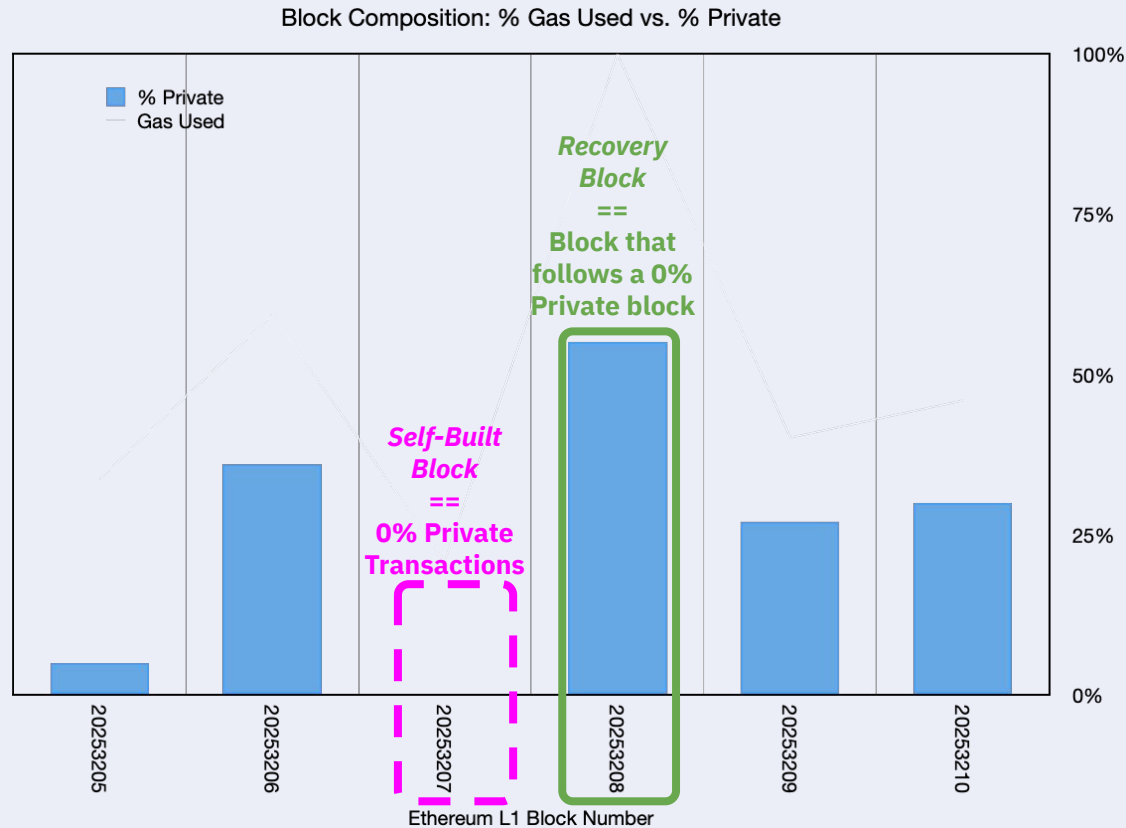
Private Transactions: Approaching >35% of Total



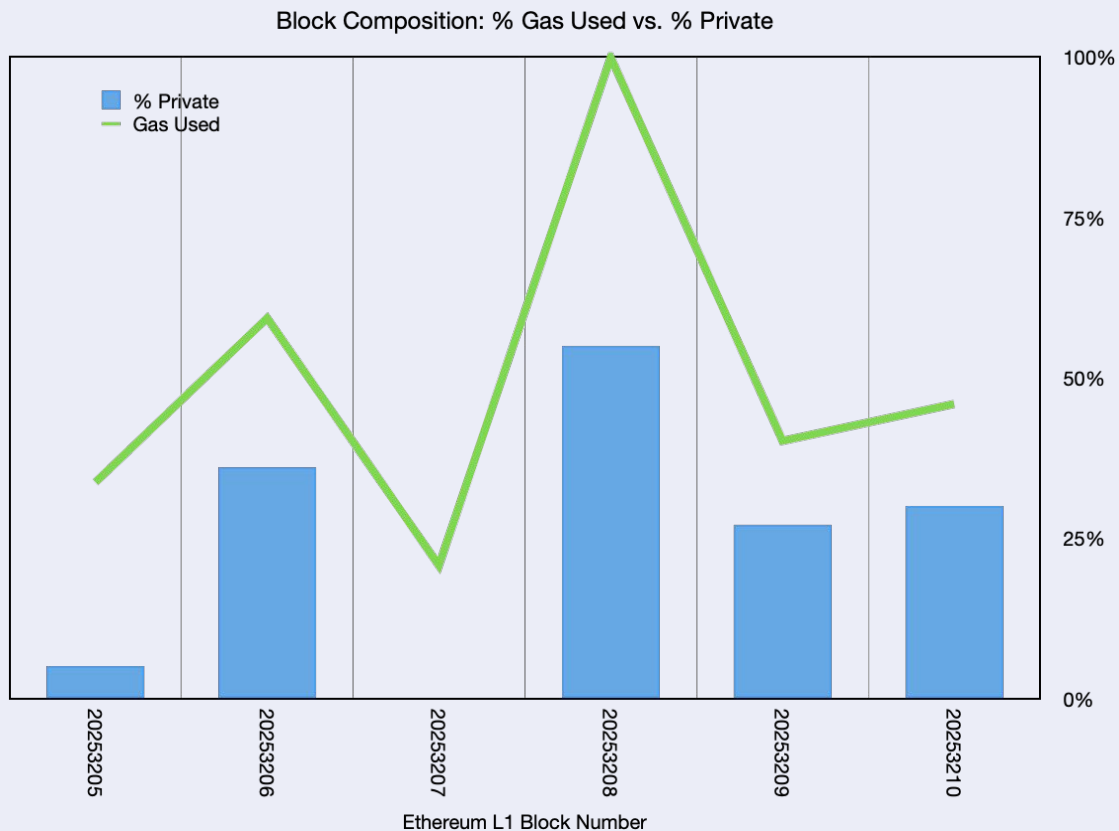
Example: Six Consecutive Ethereum Mainnet Blocks



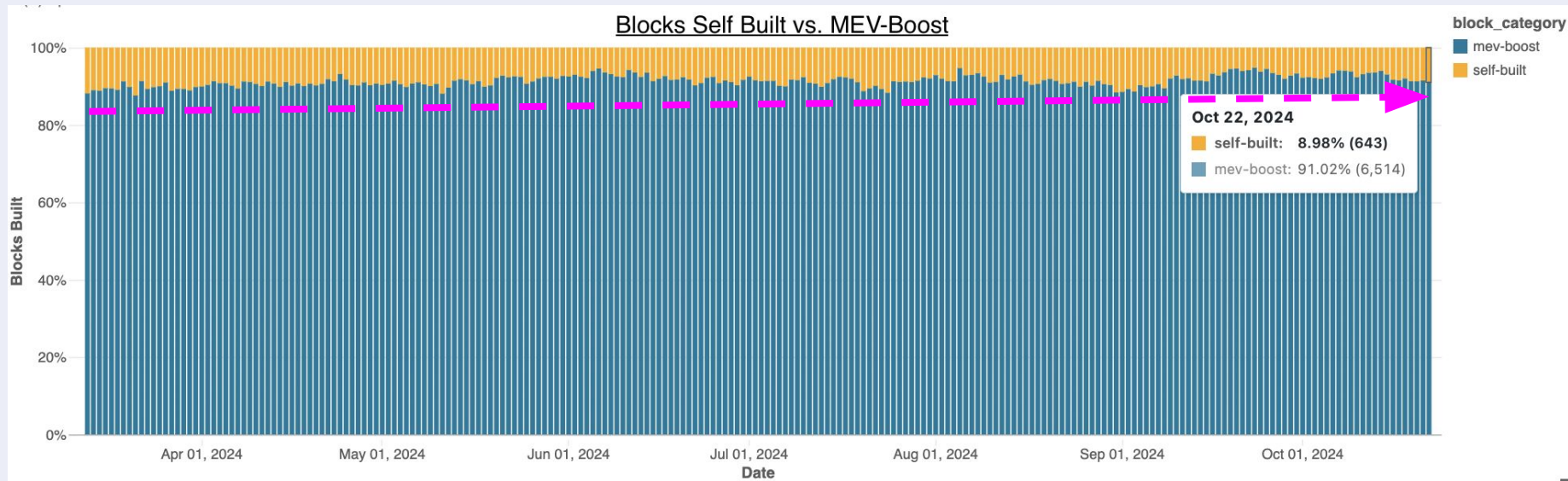
Example: Six Consecutive Ethereum Mainnet Blocks



Smaller Block = ↑ Private Mempool Pressure

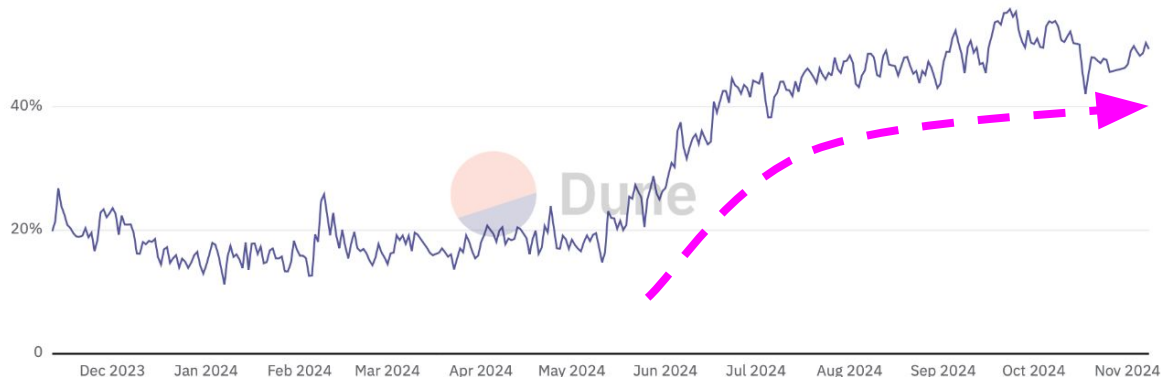


Vanilla/Self-Built Blocks: 9% of All Blocks



Private Transactions: ~50% of All Gas Used

Share of Gas Used by Private Order-Flow Daily Ethereum Private Order-Flow
Share of all transactions



@dataalways

... 10h

Weekly Gas Share Daily Ethereum Private Order-Flow
Share of all transactions

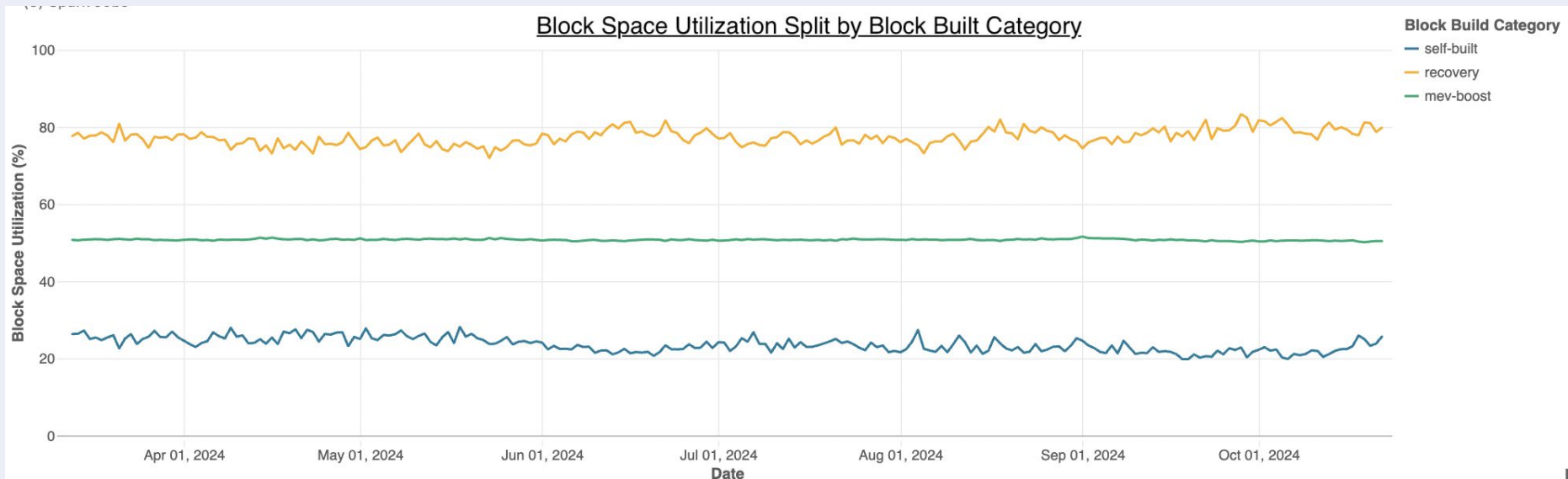
48.89%
Weekly Gas Share

@dataalways

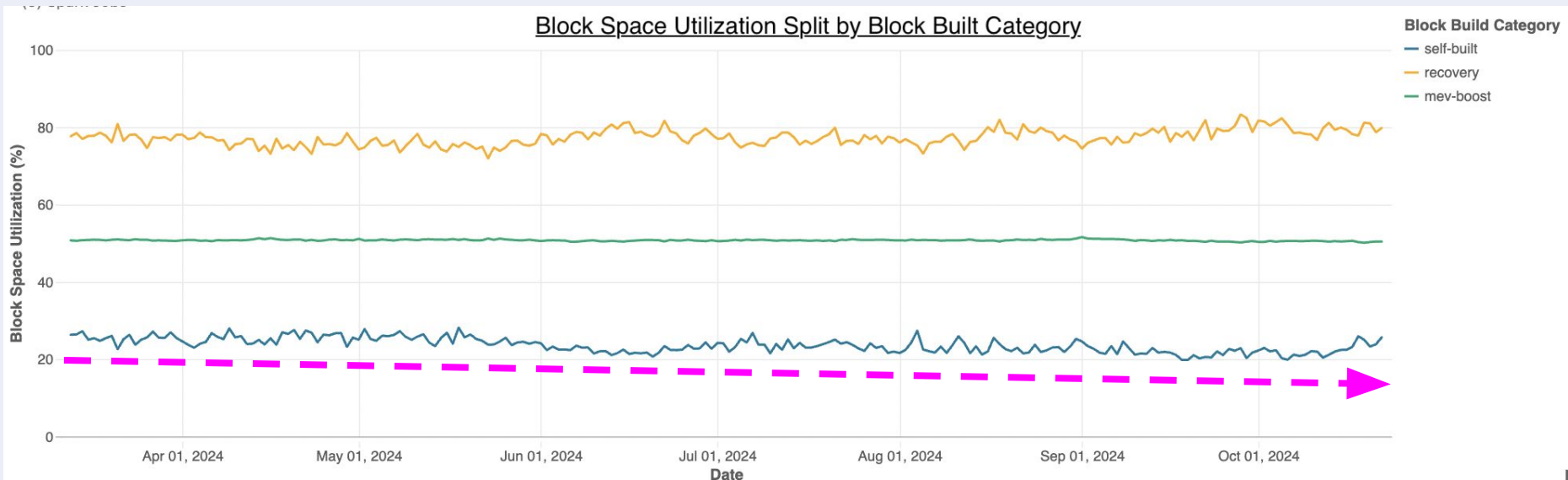
... 10h

Source: dune.com/dataalways/private-order-flow

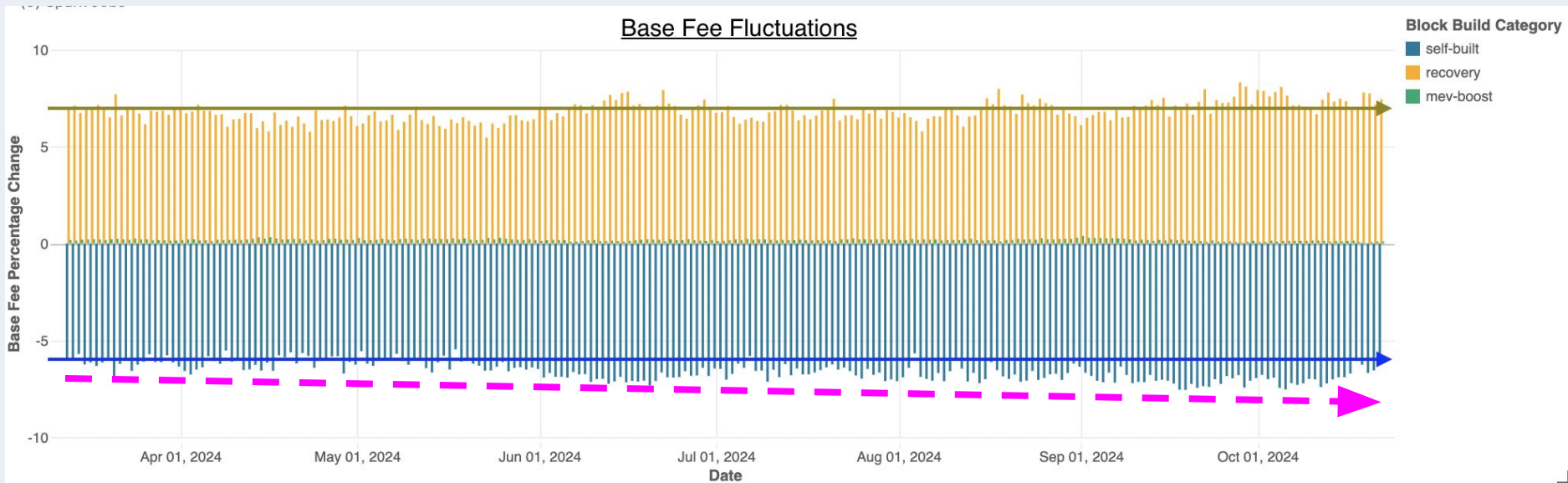
↑ Private Transactions = ↓ Vanilla Blocks Size



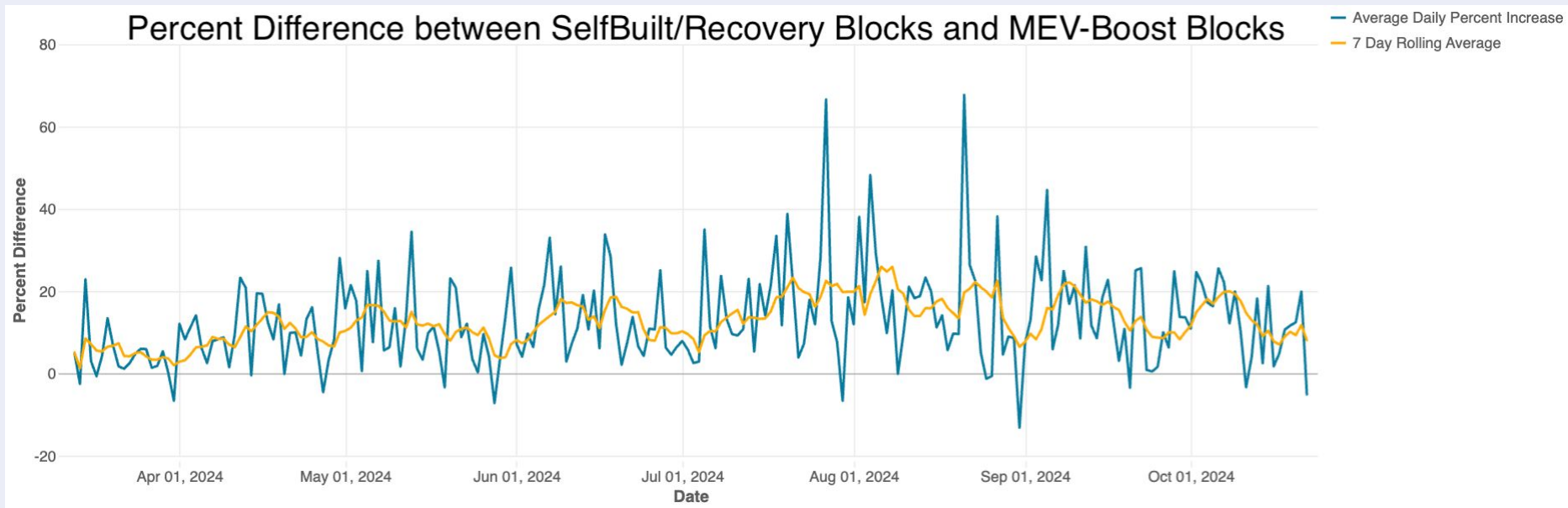
↑ Private Transactions = ↓ Vanilla Blocks Size



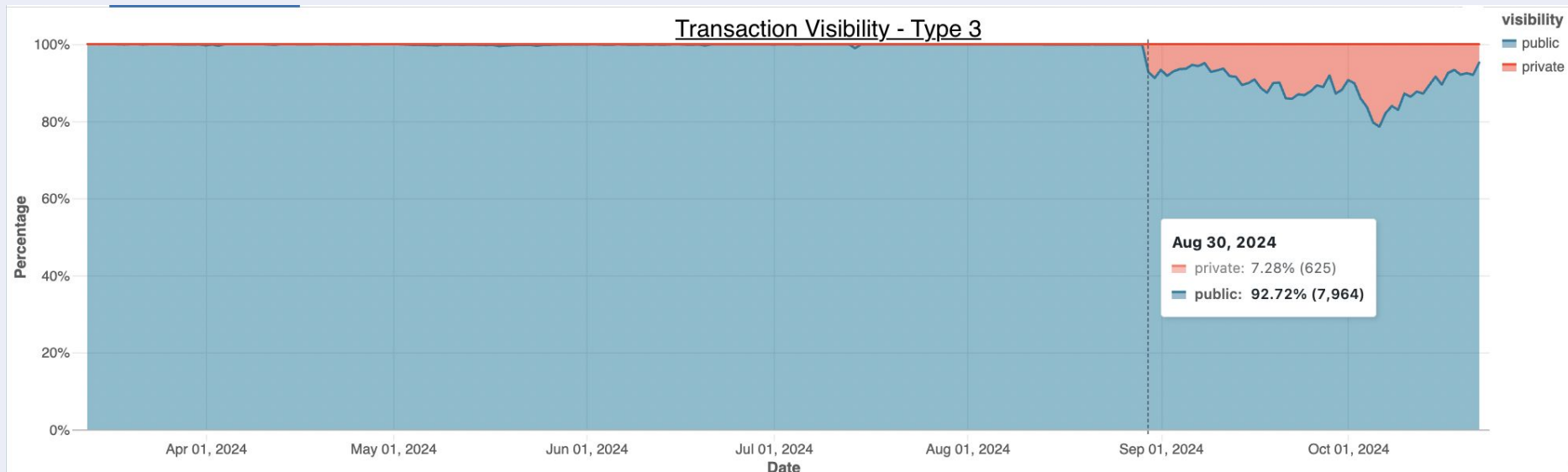
Smaller Vanilla Blocks = \uparrow Base Fee Volatility



Vanilla Blocks: ↑ Base Fee Volatility by ~10%



Looking Ahead: Similar Trend for Blobs?



Wat do? + Resources



Further research required



1559 fee asymmetry

Watch in real-time: Ethernw.xyz

Move everything *onchain*! <https://Gas.Network>

We Can Help

Estimate Fees On Your Chain

Predict Gas Market Trajectory

Optimize Settlement Costs

Decision Your Real-Time Operations



docs.blocknative.com



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