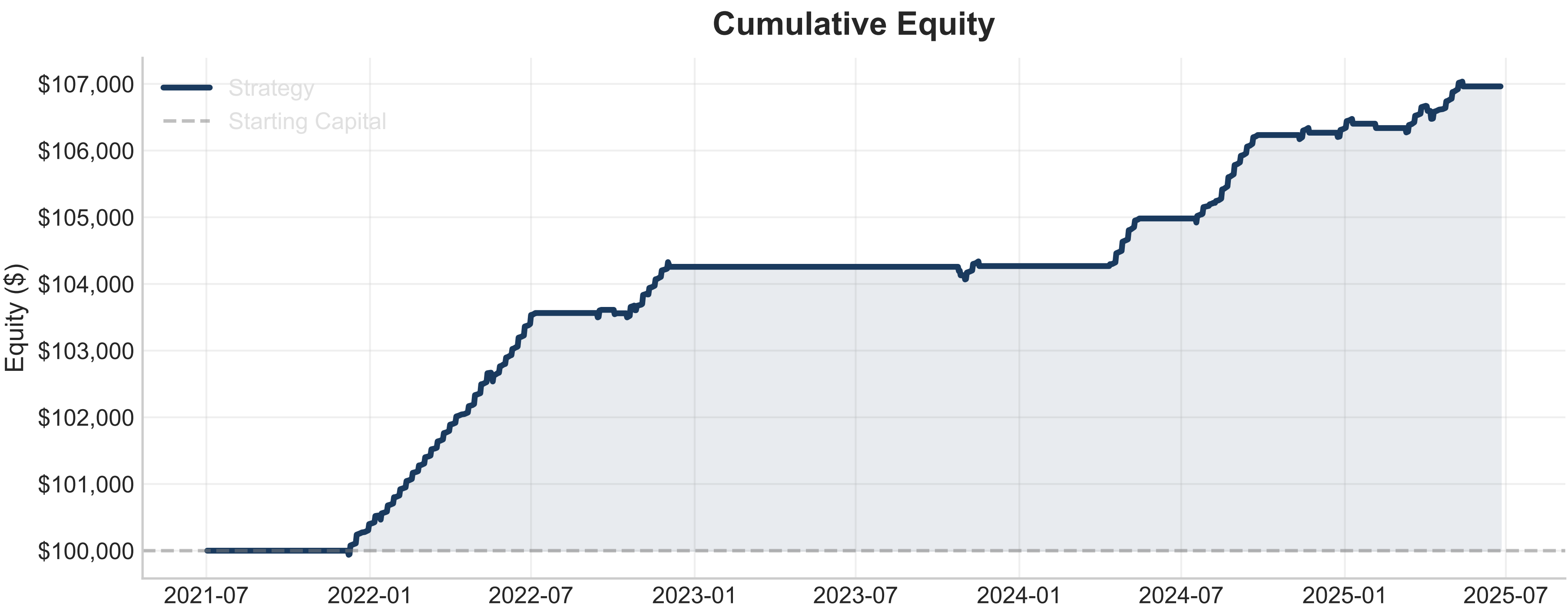
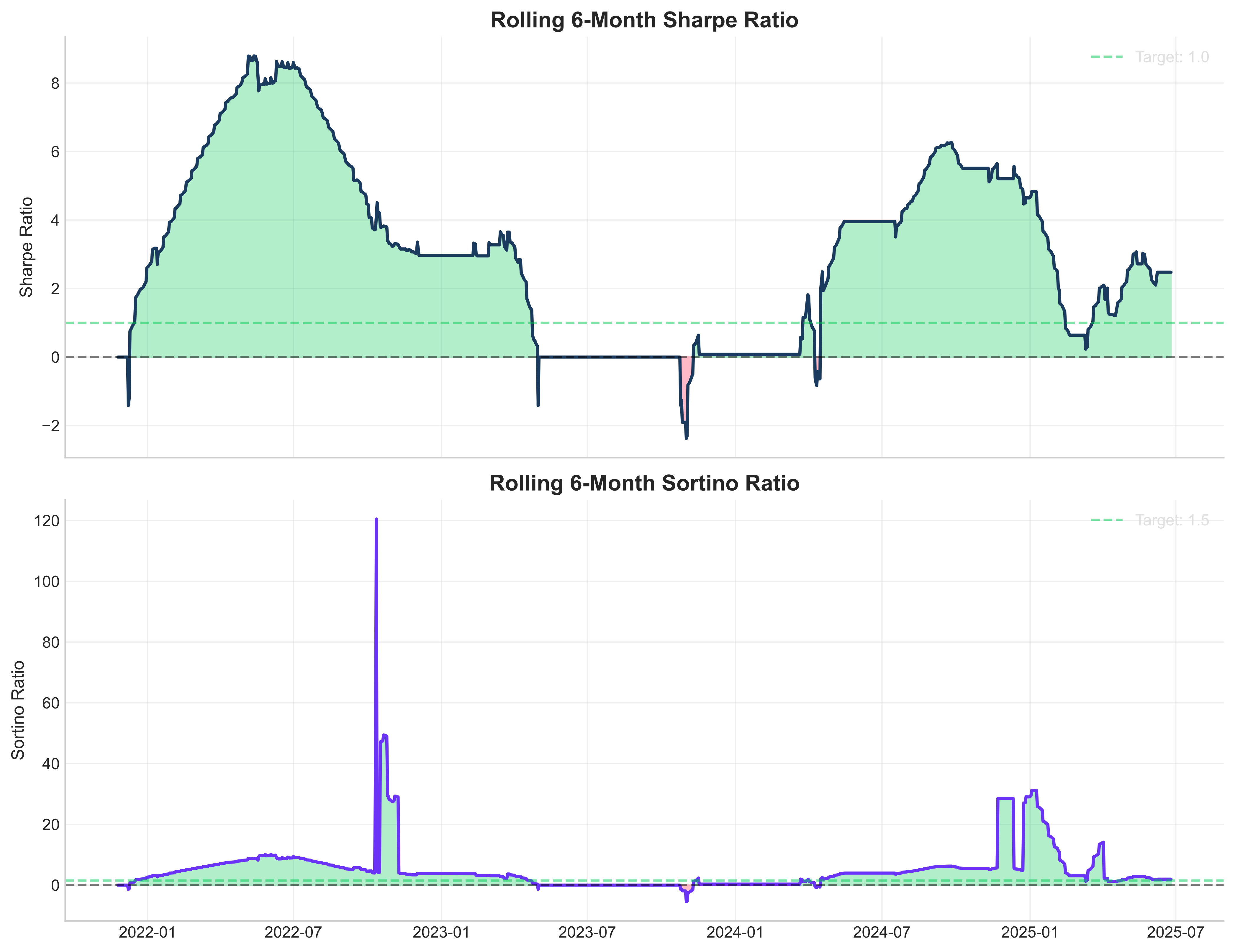
USATECH.IDXUSD

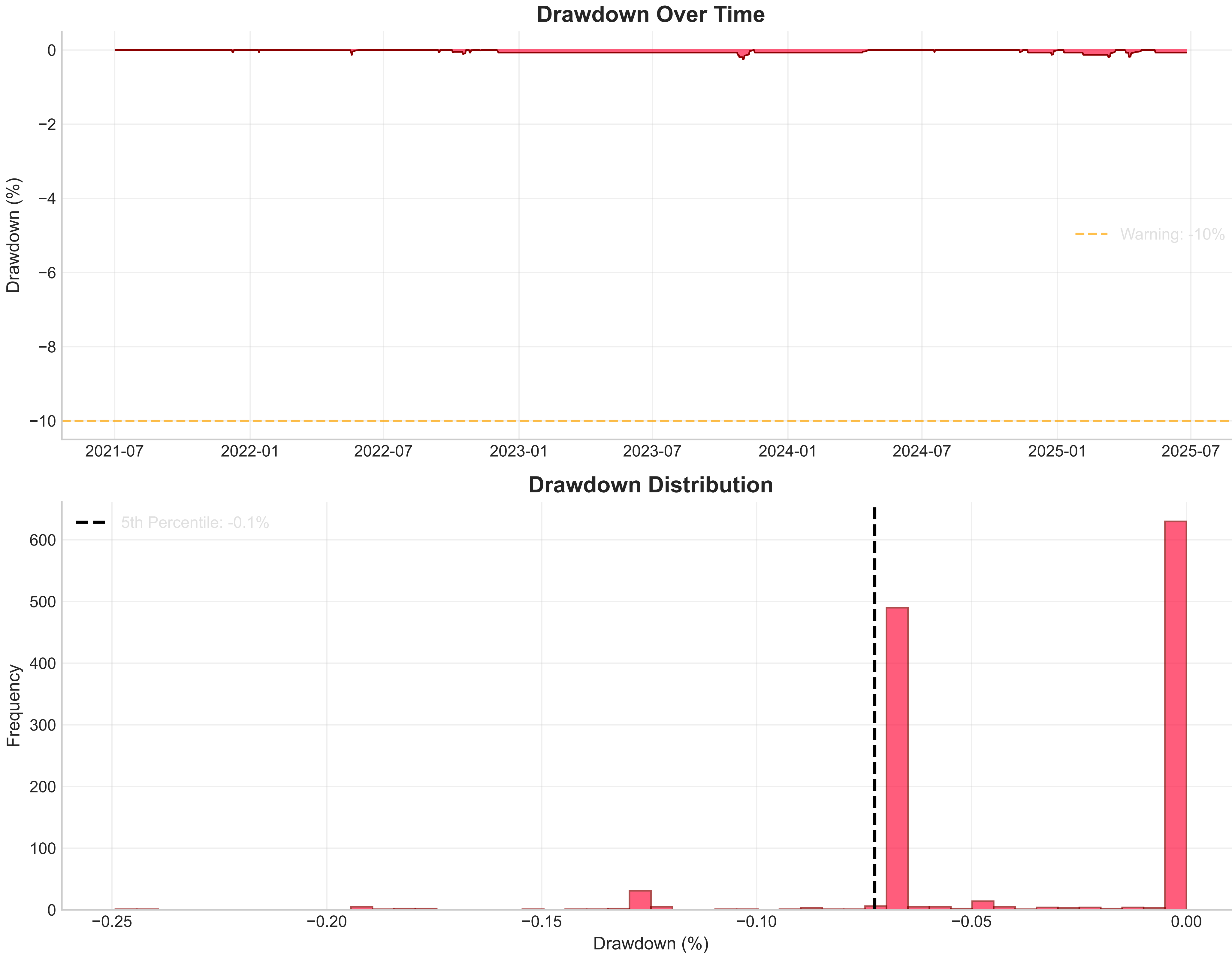
Scientific Options Framework v4.9 — Performance Report



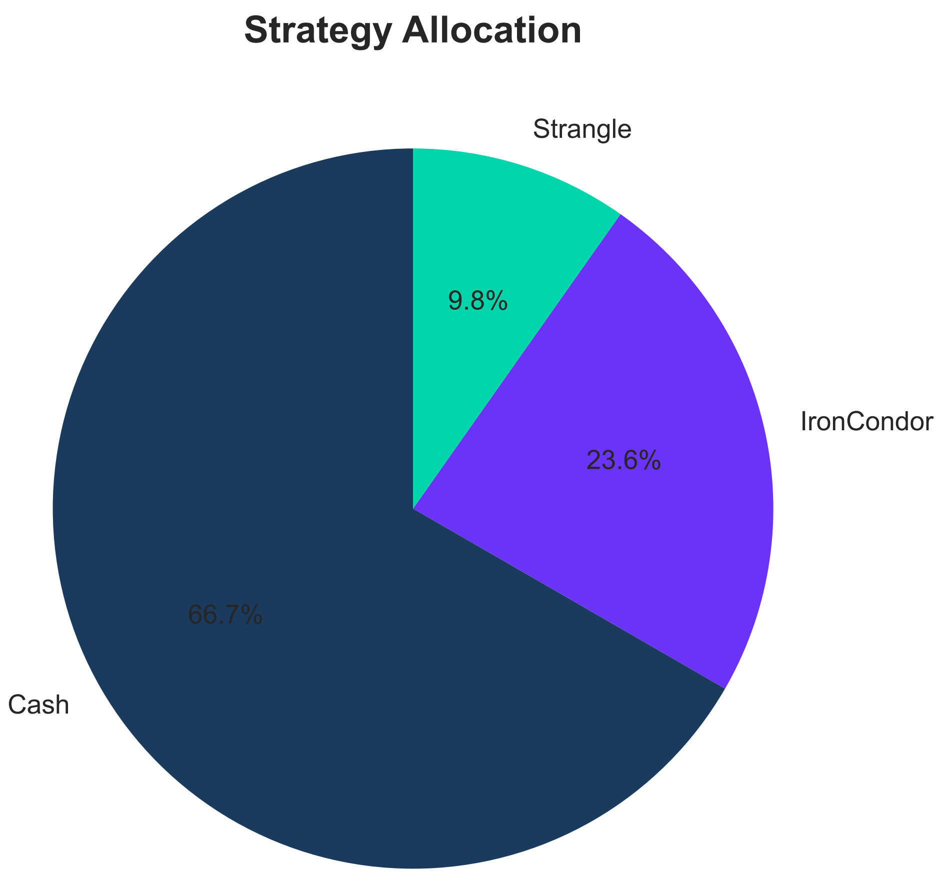
Sharpe Ratio	3.544 □	Sortino Ratio	3.957
Total Return	+6.96%	CAGR	+1.38%
Max Drawdown	-0.25%	Win Rate	93.5%
ML OOS AUC	0.5201	Sharpe p-value	0.0000



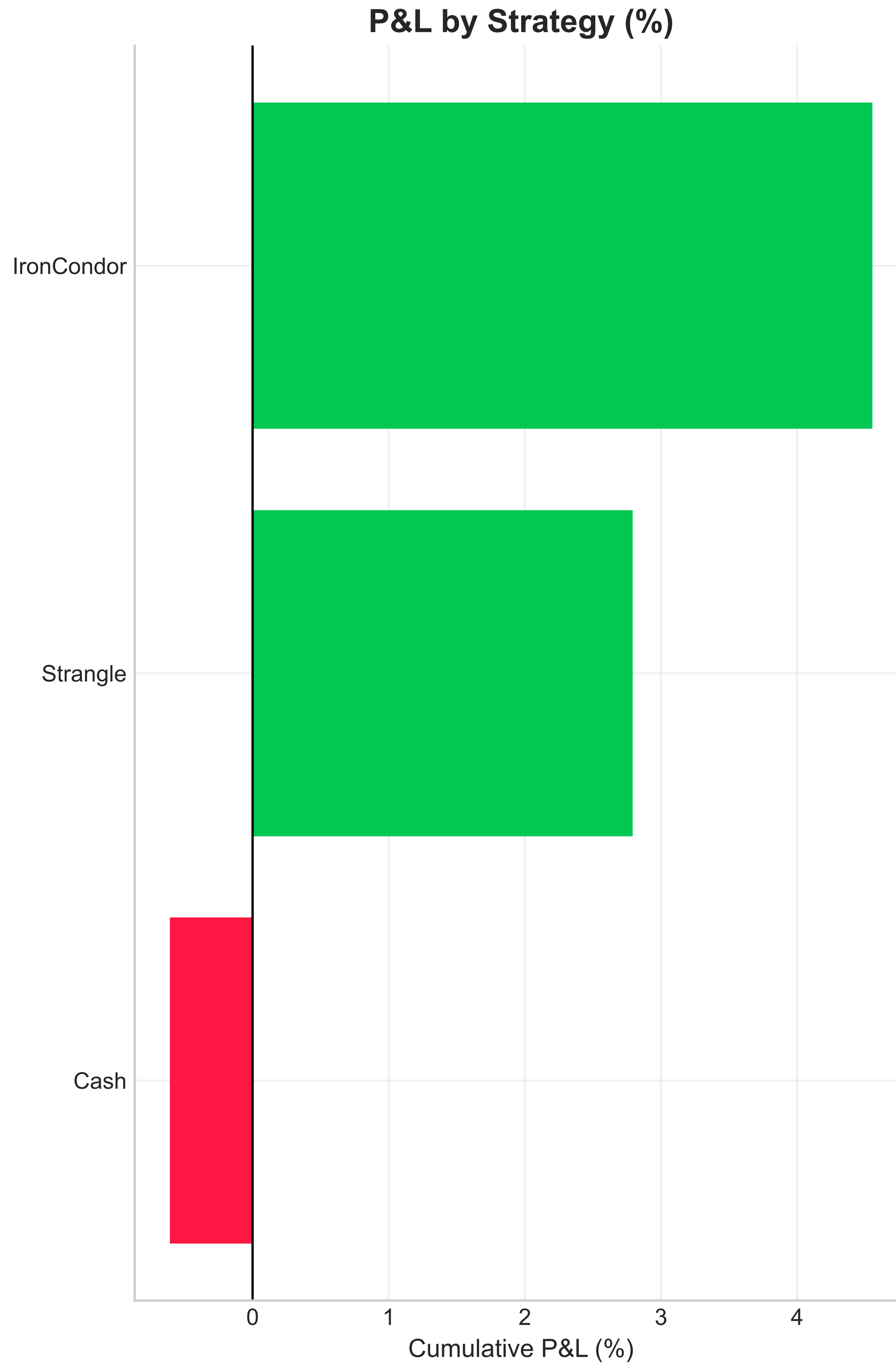
Rolling 6-Month Sharpe Ratio
Target: 1.0
Sharpe Ratio
8
6
4
2
0
−2
Rolling 6-Month Sortino Ratio
Target: 1.5
Sortino Ratio
120
100
80
60
40
20
0
2022-01
2022-07
2023-01
2023-07
2024-01
2024-07
2025-01
2025-07



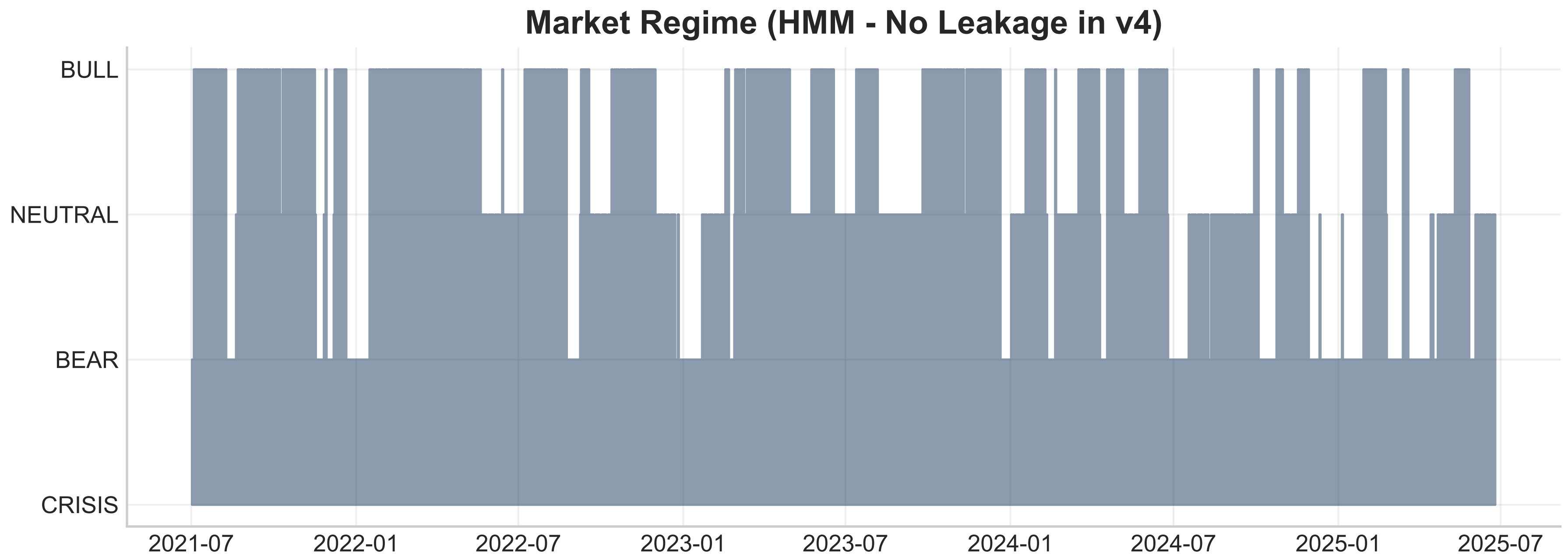
Drawdown Over Time
Drawdown (%)
0
−2
−4
−6
−8
−10
Warning: -10%
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
2024-07
2025-01
2025-07
Drawdown Distribution
Frequency
600
500
400
300
200
100
0
5th Percentile: -0.1%
−0.25
−0.20
−0.15
−0.10
−0.05
0.00
Drawdown (%)

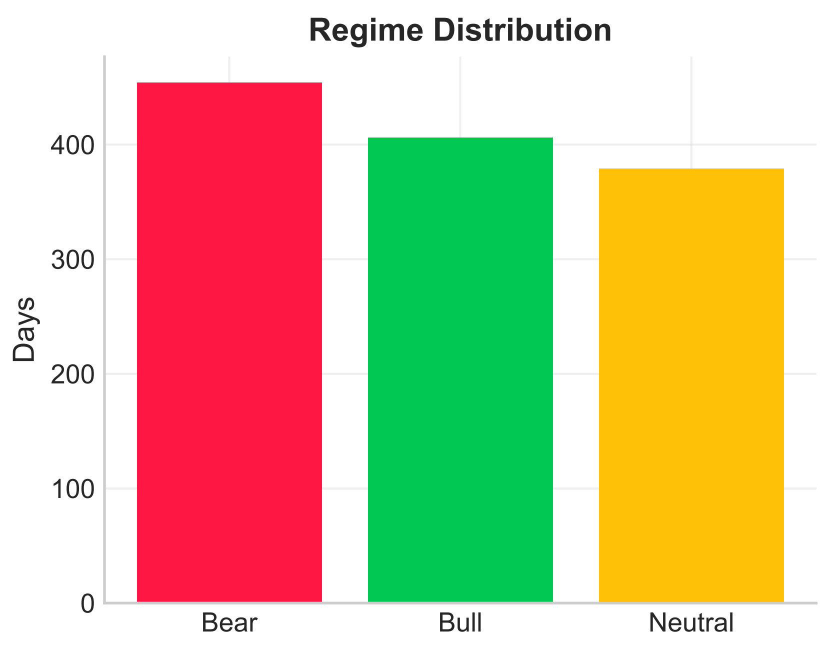


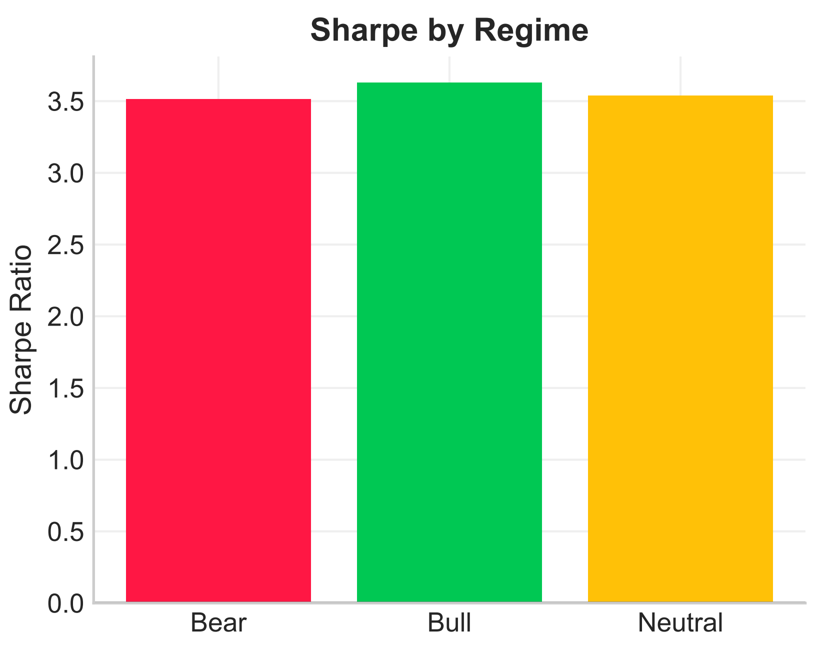
Strategy Allocation
Strangle
9.8%
IronCondor
23.6%
66.7%
Cash

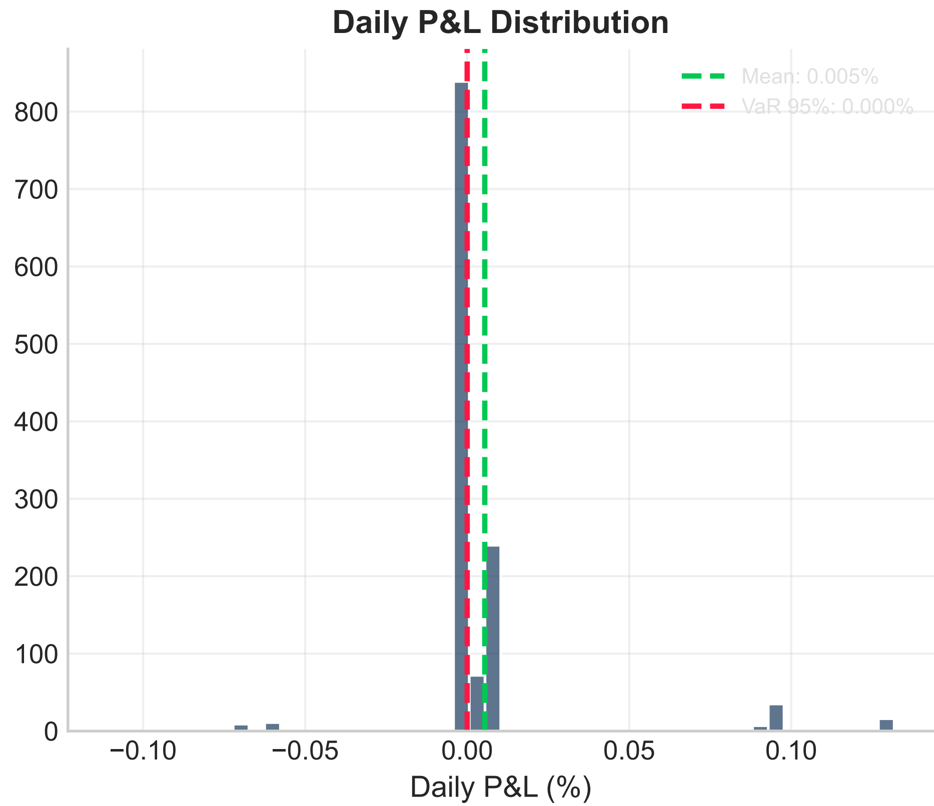


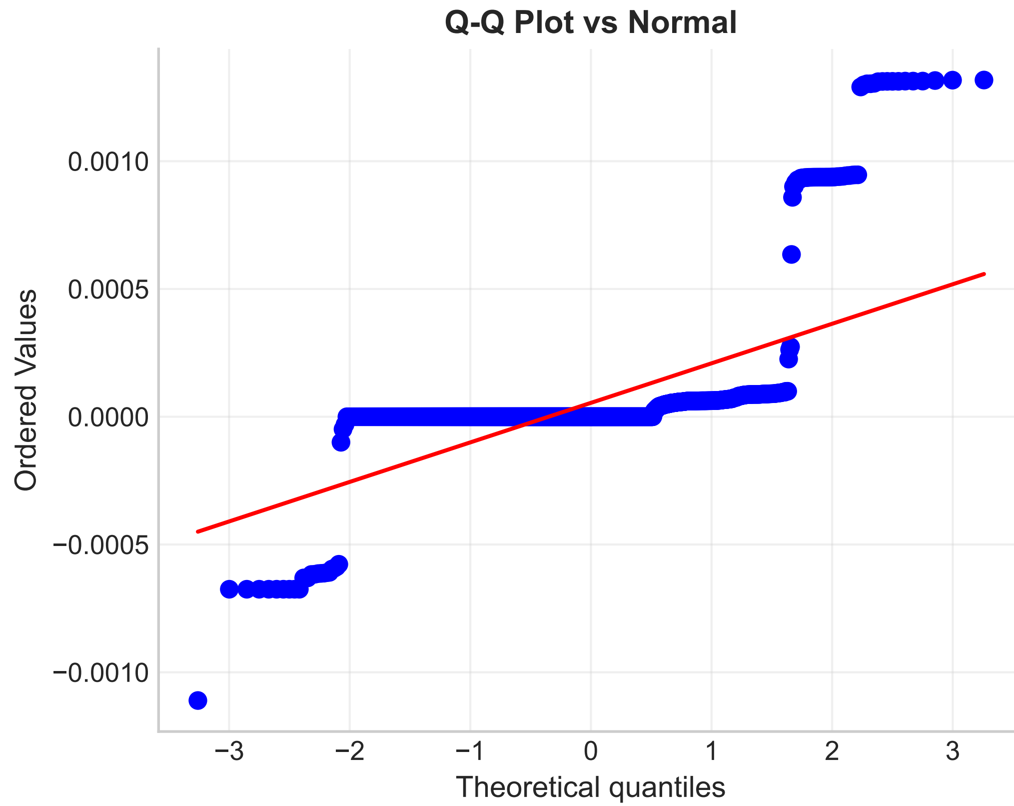
P&L by Strategy (%)
IronCondor
Strangle
Cash
0
1
2
3
4
Cumulative P&L (%)

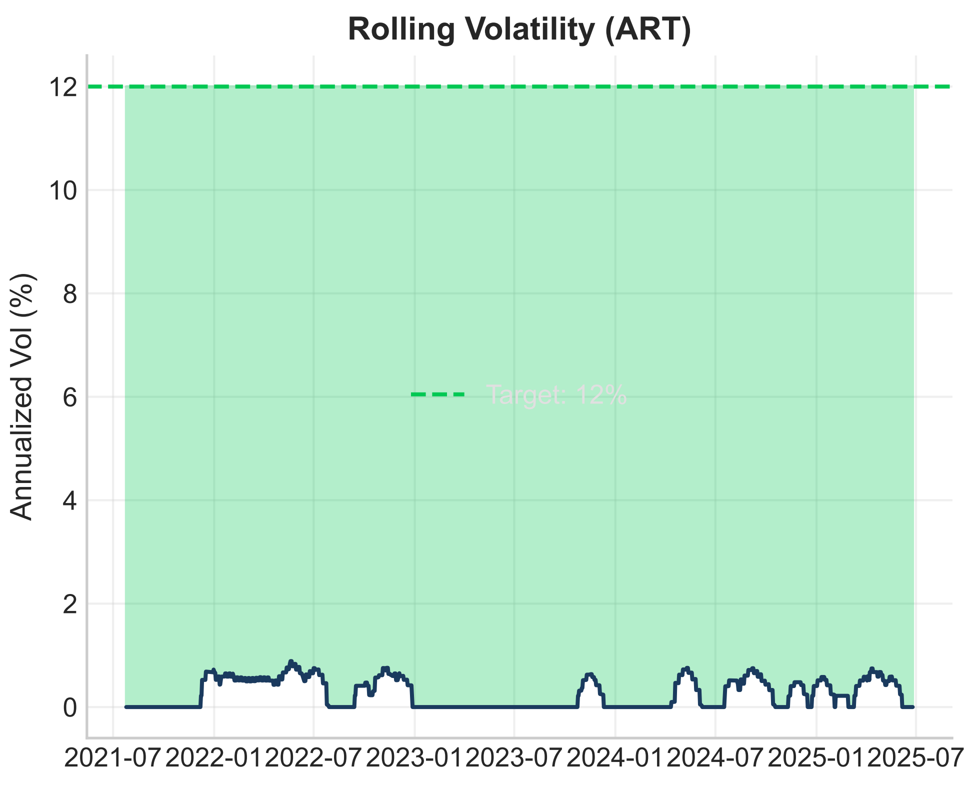

Market Regime (HMM - No Leakage in v4)
BULL
NEUTRAL
BEAR
CRISIS
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
2024-07
2025-01
2025-07


Regime Distribution
Days
0
100
200
300
400
Bear
Bull
Neutral

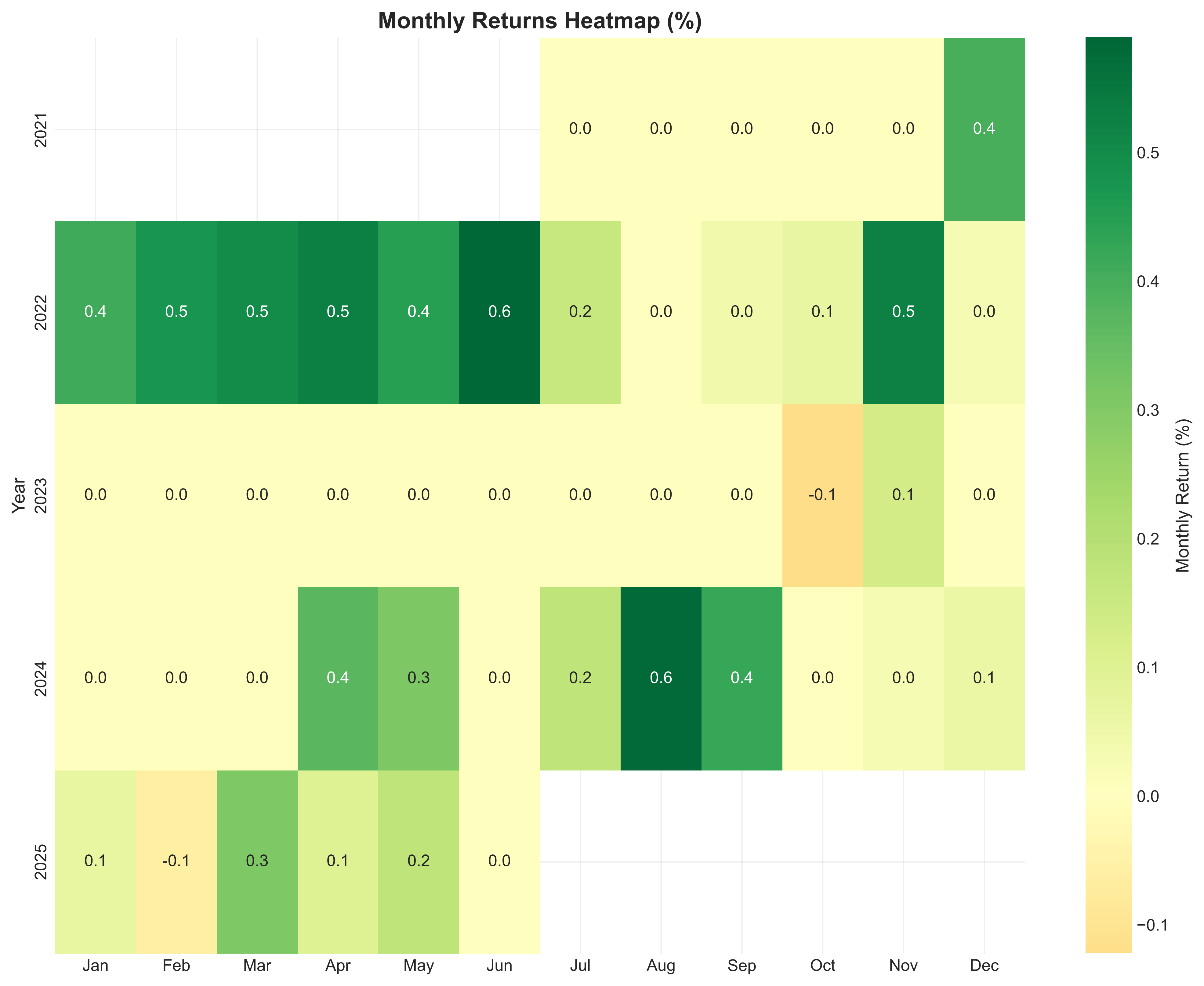

Sharpe by Regime
Sharpe Ratio
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
Bear
Bull
Neutral







Metric	Value
VaR 95%	0.000%
ES 95%	-0.002%
Skewness	2.920
Kurtosis	13.727
Omega Ratio	5.410
Profit Factor	5.410



Monthly Returns Heatmap (%)
Year
2021
2022
2023
2024
2025
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0.0
0.0
0.0
0.0
0.0
0.4
0.4
0.5
0.5
0.5
0.4
0.6
0.2
0.0
0.0
0.1
0.5
0.0
0.0
0.0
0.0
0.0
0.0
0.0
0.0
0.0
0.0
-0.1
0.1
0.0
0.0
0.0
0.0
0.4
0.3
0.0
0.2
0.6
0.4
0.0
0.0
0.1
0.1
-0.1
0.3
0.1
0.2
0.0
Monthly Return (%)
0.5
0.4
0.3
0.2
0.1
0.0
−0.1

Top 10 Winners & Losers

Rank	Strategy	P&L (%)
1	IronCondor	+1.6343%
2	Strangle	+0.5387%
3	IronCondor	+0.4730%
4	IronCondor	+0.2769%
5	IronCondor	+0.2277%
6	IronCondor	+0.1946%
7	Strangle	+0.1749%
8	IronCondor	+0.1740%
9	Strangle	+0.1646%
10	Strangle	+0.1499%
B1	Strangle	+0.0087%
B2	Strangle	+0.0084%
B3	IronCondor	+0.0079%
B4	Strangle	+0.0034%
B5	IronCondor	-0.0497%
B6	IronCondor	-0.0548%
B7	Strangle	-0.0577%
B8	IronCondor	-0.0587%
B9	IronCondor	-0.0613%
B10	IronCondor	-0.0616%

v4.9 Fixes & Improvements Dashboard

Improvement	Metric	Status
1. Robust ML (Lasso Logistic)	OOS AUC: 0.5201	□
2. HMM Regime (No Leakage v4)	Fixed: Train-only fitting	□
3. Parkinson/GK Vol Estimators	Using High-Low data	□
4. Vol Percentile (renamed)	Accurate nomenclature	□
5. Auto-Regressive Risk Targeting	Realized: 0.4%	□□
6. Weekend Theta WIRED	Avg Adj: 1.7966	□
7. Strategy Leverage Diff	Per-strategy scaling	□
8. OOS AUC Reporting	Test AUC, not train	□

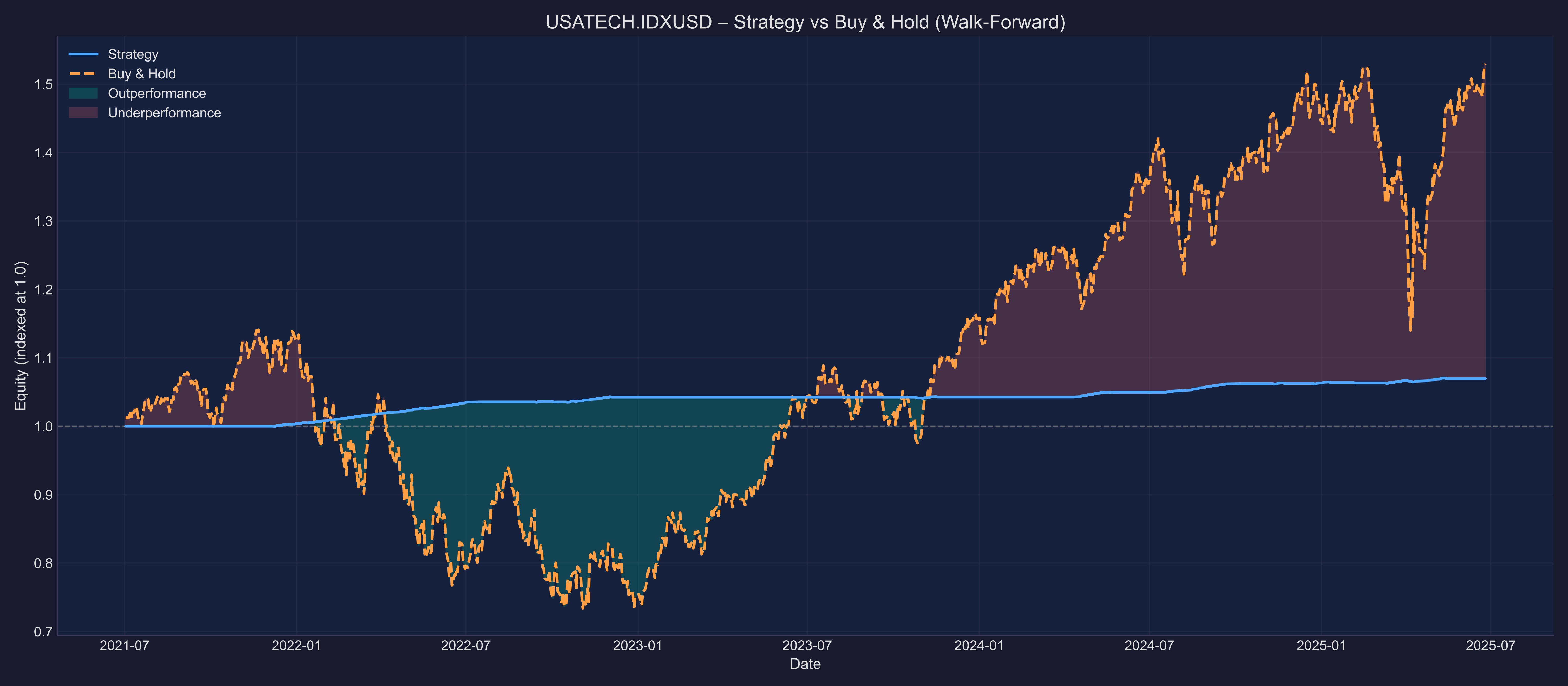
USATECH.IDXUSD - FINAL SUMMARY (v4.9)

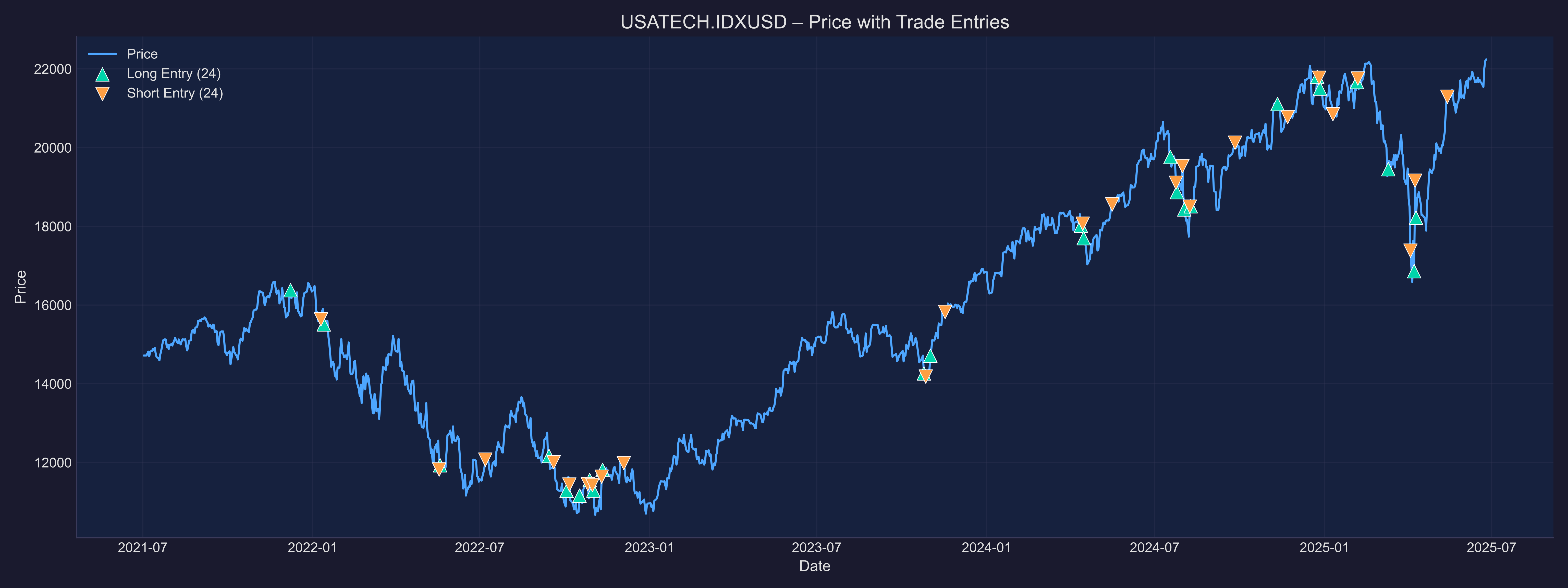
Core Metrics:
- Sharpe Ratio: 3.5439
- Sortino Ratio: 3.9566
- Total Return: +6.96%
- Max Drawdown: -0.25%

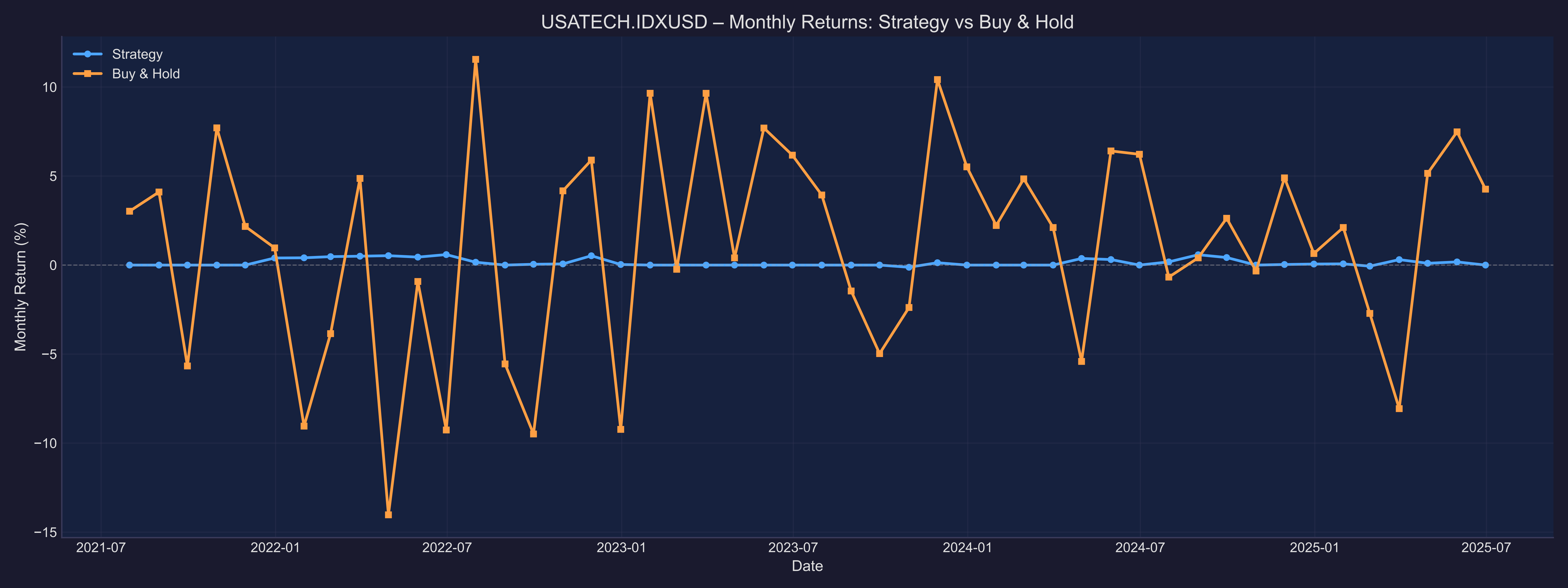
Statistical Significance:
- t-stat: 19.7515
- p-value: 0.000000
- 95% CI: [2.8594, 4.1809]
- Significant: Yes

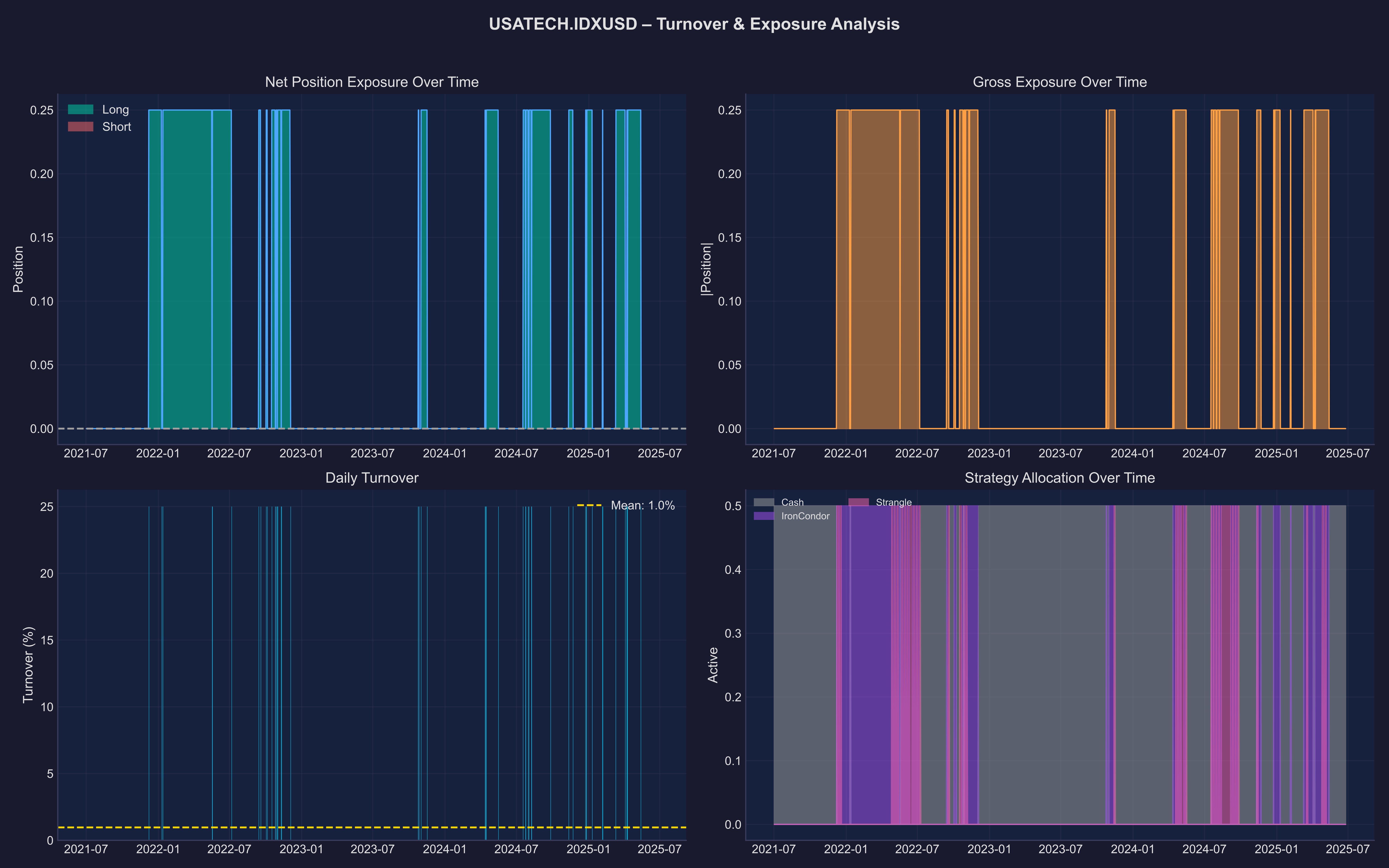
ML Performance (OOS):
- Global AUC: 0.5201

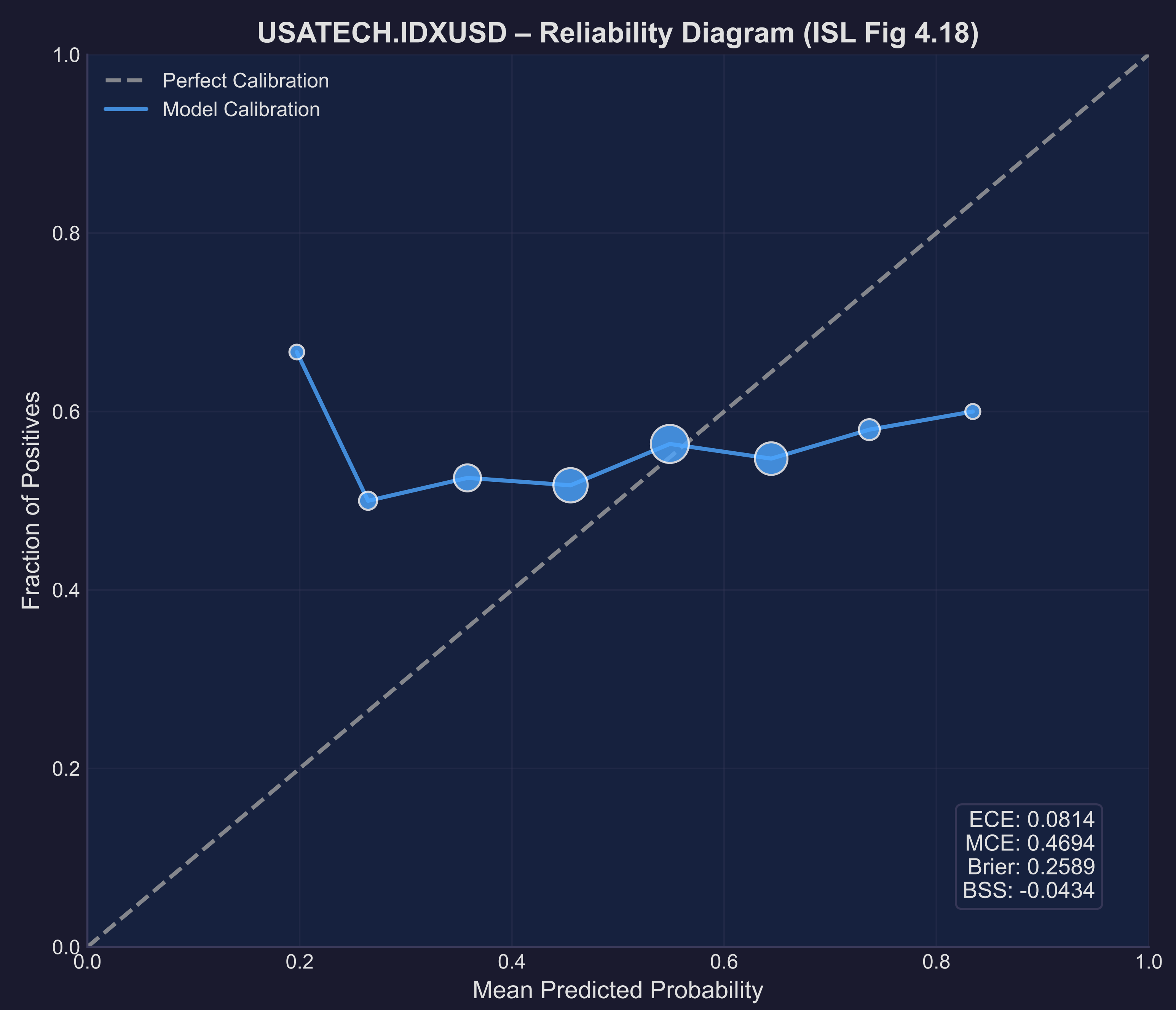
GRADE: EXCELLENT (Significant)

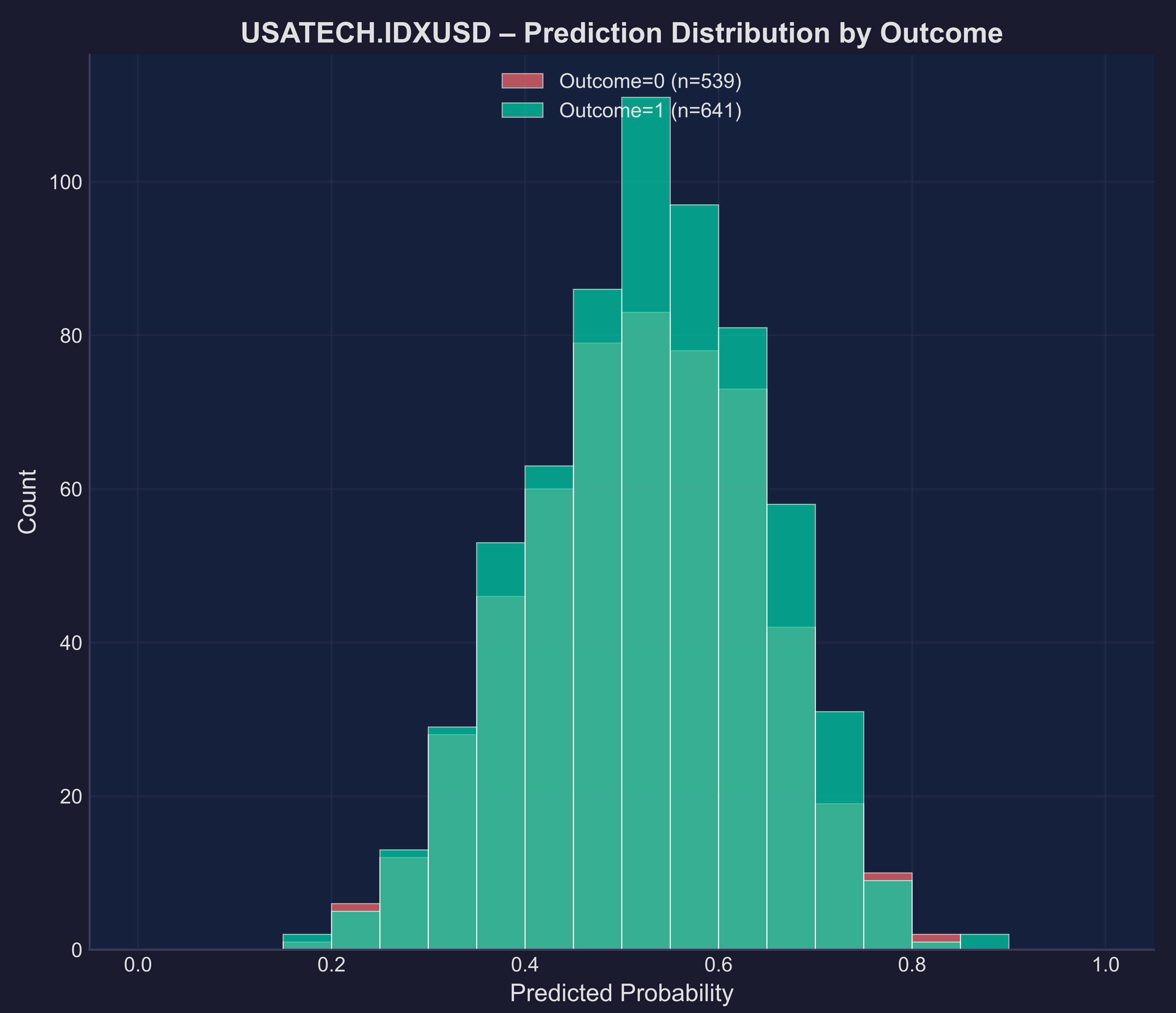

USATECH.IDXUSD – Strategy vs Buy & Hold (Walk-Forward)
Strategy
Buy & Hold
Outperformance
Underperformance
Equity (indexed at 1.0)
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
2024-07
2025-01
2025-07
Date


USATECH.IDXUSD – Price with Trade Entries
Price
Long Entry (24)
Short Entry (24)
22000
20000
18000
16000
14000
12000
Price
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
2024-07
2025-01
2025-07
Date

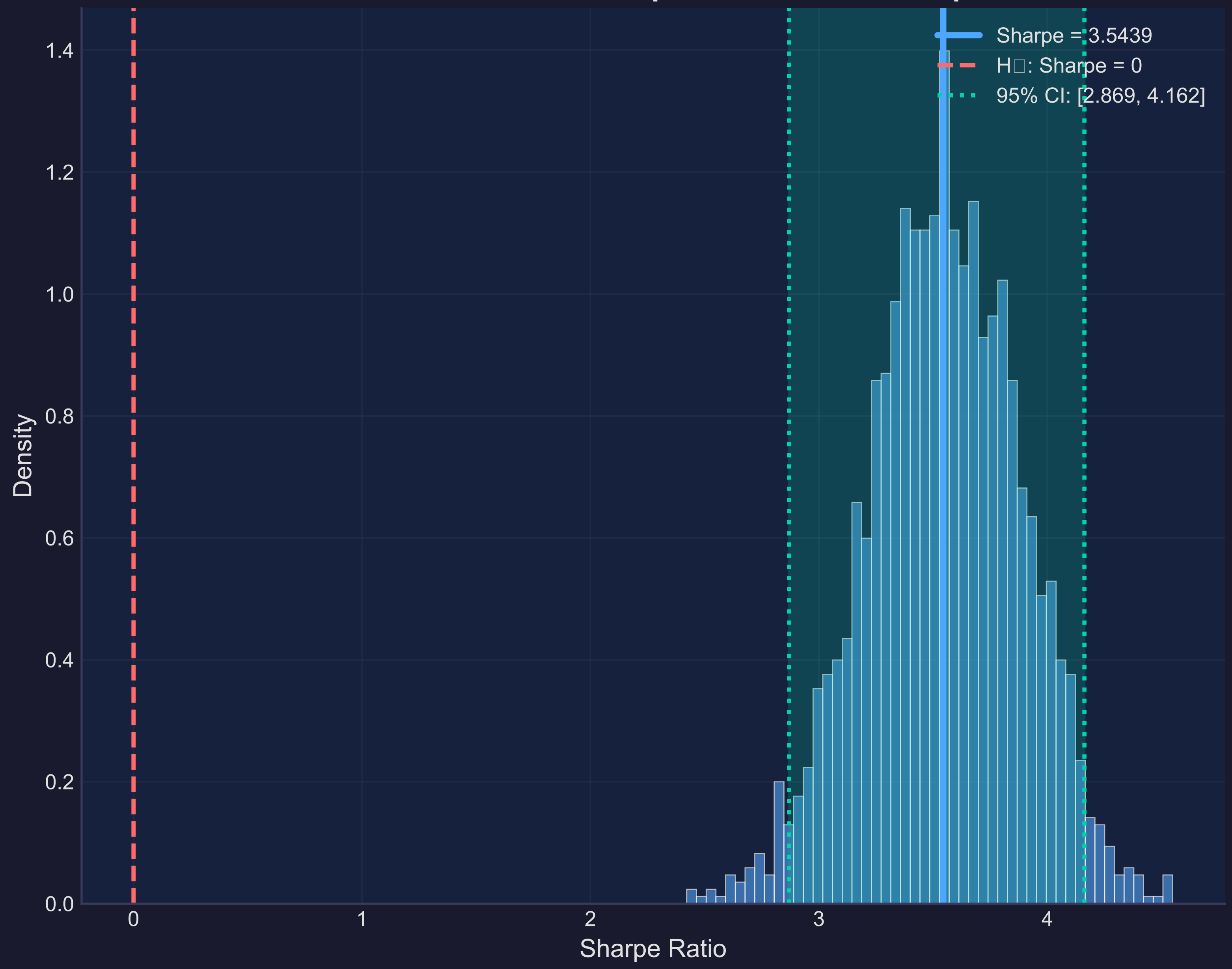

USATECH.IDXUSD – Monthly Returns: Strategy vs Buy & Hold
Strategy
Buy & Hold
Monthly Return (%)
10
5
0
−5
−10
−15
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
2024-07
2025-01
2025-07
Date


USATECH.IDXUSD – Turnover & Exposure Analysis
Net Position Exposure Over Time
Long
Short
Position
Gross Exposure Over Time
|Position|
Daily Turnover
Mean: 1.0%
Turnover (%)
Strategy Allocation Over Time
Cash
IronCondor
Strangle
Active
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
2024-07
2025-01
2025-07


USATECH.IDXUSD – Reliability Diagram (ISL Fig 4.18)
Perfect Calibration
Model Calibration
ECE: 0.0814
MCE: 0.4694
Brier: 0.2589
BSS: -0.0434
Fraction of Positives
Mean Predicted Probability
0.0
0.2
0.4
0.6
0.8
1.0

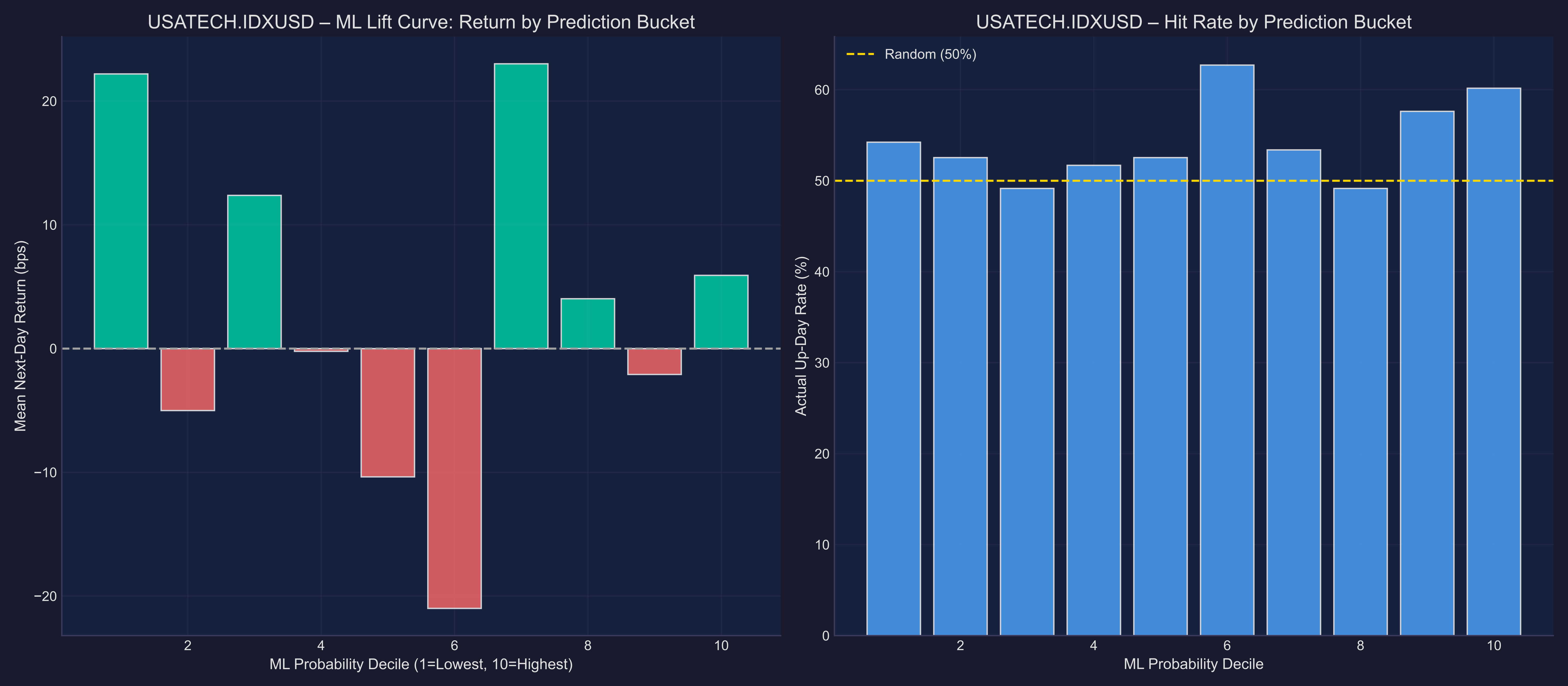

USATECH.IDXUSD – Prediction Distribution by Outcome
Outcome=0 (n=539)
Outcome=1 (n=641)
Count
Predicted Probability
0
20
40
60
80
100
0.0
0.2
0.4
0.6
0.8
1.0

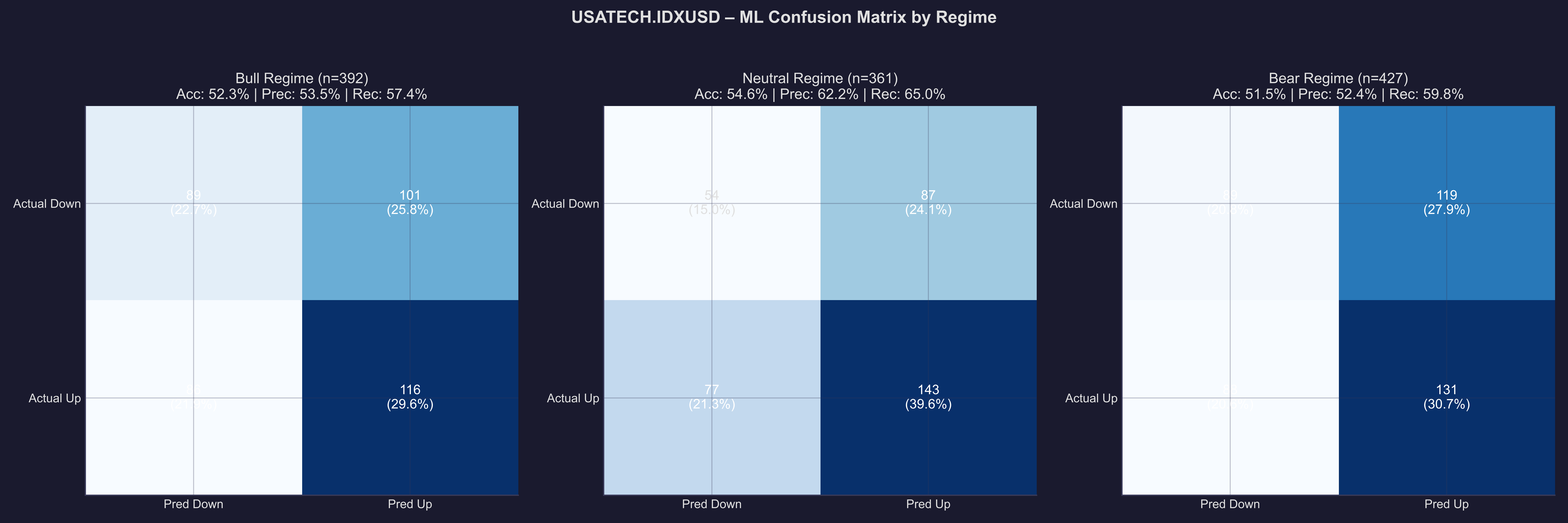
USATECH.IDXUSD – Bootstrap Distribution of Sharpe Ratio



USATECH.IDXUSD – Sharpe Ratio T-Test Results

```
SHARPE RATIO STATISTICAL SIGNIFICANCE TEST

Sample Size (n):           1,239 days

Point Estimate:
  Sharpe Ratio:            3.5439
  Standard Error:          0.1794

T-Test (H₀: Sharpe = 0):
  t-statistic:             19.7515
  p-value:                 0.000000
  Degrees of freedom:      1238

Significance:
  At α = 0.05:             ✓ Yes
  At α = 0.01:             ✓ Yes

Confidence Intervals:
  Analytical 95% CI:       [3.1923, 3.8956]
  Bootstrap 95% CI:        [2.8691, 4.1619]

Bootstrap Statistics:
  Mean:                    3.5460
  Median:                  3.5467
  Std Error:               0.3334
```


USATECH.IDXUSD – ML Lift Curve: Return by Prediction Bucket
Mean Next-Day Return (bps)
ML Probability Decile (1=Lowest, 10=Highest)
USATECH.IDXUSD – Hit Rate by Prediction Bucket
Random (50%)
Actual Up-Day Rate (%)
ML Probability Decile



USATECH.IDXUSD – ML Confusion Matrix by Regime
Bull Regime (n=392)
Acc: 52.3% | Prec: 53.5% | Rec: 57.4%
Neutral Regime (n=361)
Acc: 54.6% | Prec: 62.2% | Rec: 65.0%
Bear Regime (n=427)
Acc: 51.5% | Prec: 52.4% | Rec: 59.8%
Actual Down
Actual Up
Pred Down
Pred Up
89
(22.7%)
101
(25.8%)
116
(29.6%)
54
(15.0%)
87
(24.1%)
77
(21.3%)
143
(39.6%)
119
(27.9%)
131
(30.7%)