ETF Long/Short Strategy Using Open Interest Data as Signals

A precision-focused approach for entering long/short positions in the in a portfolio of ETFs. This strategy uses options market signals to identify optimal entry points. A Systematic Approach to ETF Allocation Using Options Market Data.

Understanding Open Interest Data

What is OI?

Open Interest represents the total number of outstanding derivative contracts, such as options that have not been settled.

Large open interest often indicates institutional hedging. These positions reveal professional market expectations.

It provides insights into market sentiment and potential future price movements, indicating new money entering or exiting the market.

Unwinding signals changing institutional outlook. This provides actionable intelligence for timing.

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Purpose of this Strategy

- Leverage options market data to gain insights into institutional sentiment and positioning.
- Options flow reveals institutional positioning and sentiment before price movements occur
- Improve portfolio performance through systematic signal generation and dynamic allocation
- Implement systematic risk controls while maintaining diversification across asset classes

Strategy Objectives

- Capture options flow intelligence
- Generate systematic trading signals
- Optimize portfolio allocation
- Maintain risk discipline

Understanding the Strategy Framework

1

Signal Identification

Monitor near-month OTM call and put options open interest with strikes 5% above current price.

2

Unwinding Detection

Track open interest levels both sides.

Create parameters which when breached trigger entry signals

3

Position Entry

Enter long/short position when significant unwinding occurs.

4

Risk Management

Set predefined stop-loss and take-profit levels.

Data Sources Overview

- 10 Excel files (.xlsx) containing historical options and price data for each ETF ticker
- All files combined into unified Data Frame with ticker identification for comprehensive analysis
- Historical data spanning from 2016 to August 2023, providing robust backtesting foundation

Options Data Components

Expiry and C/P Flag

Options expiration dates and call/put identification for contracts classification.

Generated Signals

Processed signals from options flow analysis for portfolio allocation decisions

Strike Prices

Up and Down Strike levels for T-1 and T-2 periods indicating market positioning.

Open Interest

Outstanding contracts for up/down strikes across time periods

Open Interest Change

Day-over-day open interest changes, the foundation for signal generation

Volumes Data

Trading Volumes for up/down strikes providing signal confirmation and strength.

Data Preprocessing

- Read all .xlsx files using glob pattern matching and pandas Excel reader
- Extract ticker symbol from filename and add as identifier column
- Concatenate all Data Frames into single unified dataset for analysis

Preprocessing Pipeline

- Load Excel Files
- Extract Ticker Names
- Combine DataFrames
- Validate Data Quality

Signal Generation Methodology

Buy Signal

Day-over-day open interest change is greater than 20% AND open interest volumes are greater than average historical volumes. Decreasing call option open interest indicates bullish positioning and upward momentum

OI_DOD_CHANGE Formula

OI_DOD = (OI_T 1- OI_T-2) / OI_T-2

Sell Signal

Day-over-day open interest change is less than -20% AND open interest volumes are greater than average historical volumes. Decreasing put option open interest suggests bearish sentiment and potential downward pressure

Once a signal is generated, initiate a buy/sell position in the ETF tracking the index.

Why Focus on OTM Options?

Speculative Sentiment

Most OTM options expire worthless which is why many institutional investors use it for hedging portfolios.

Heavy call open interest suggests extended bearish sentiment and vice versa.

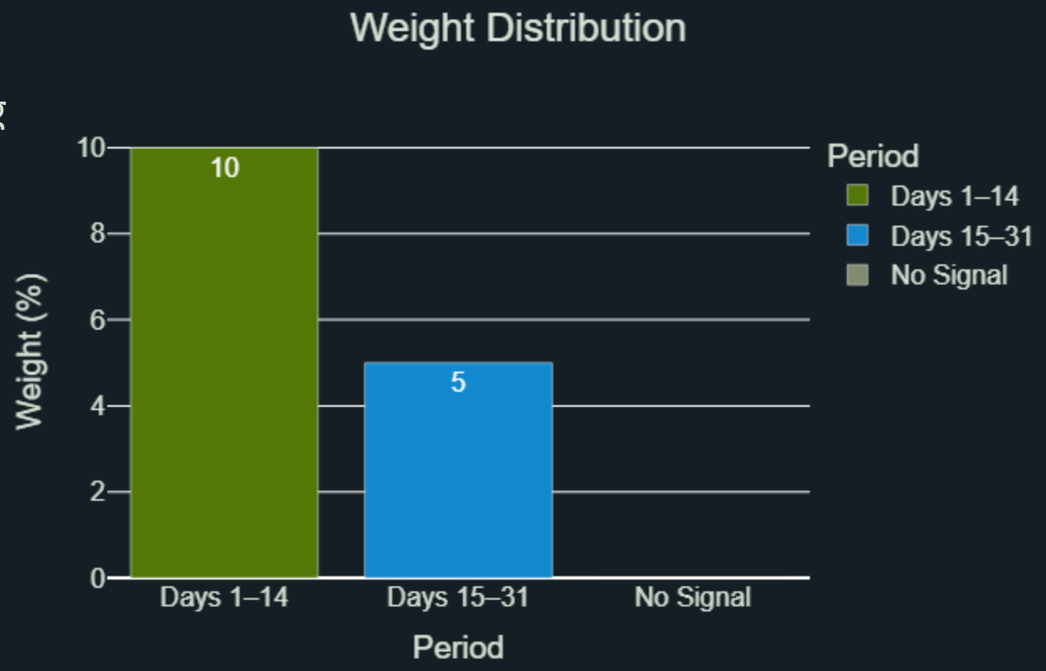
Institutional Footprint

Large open interest often indicates institutional hedging. These positions reveal professional market expectations.

Unwinding signals implies changing institutional outlook in the short term. This provides actionable intelligence for timing.

Portfolio Construction

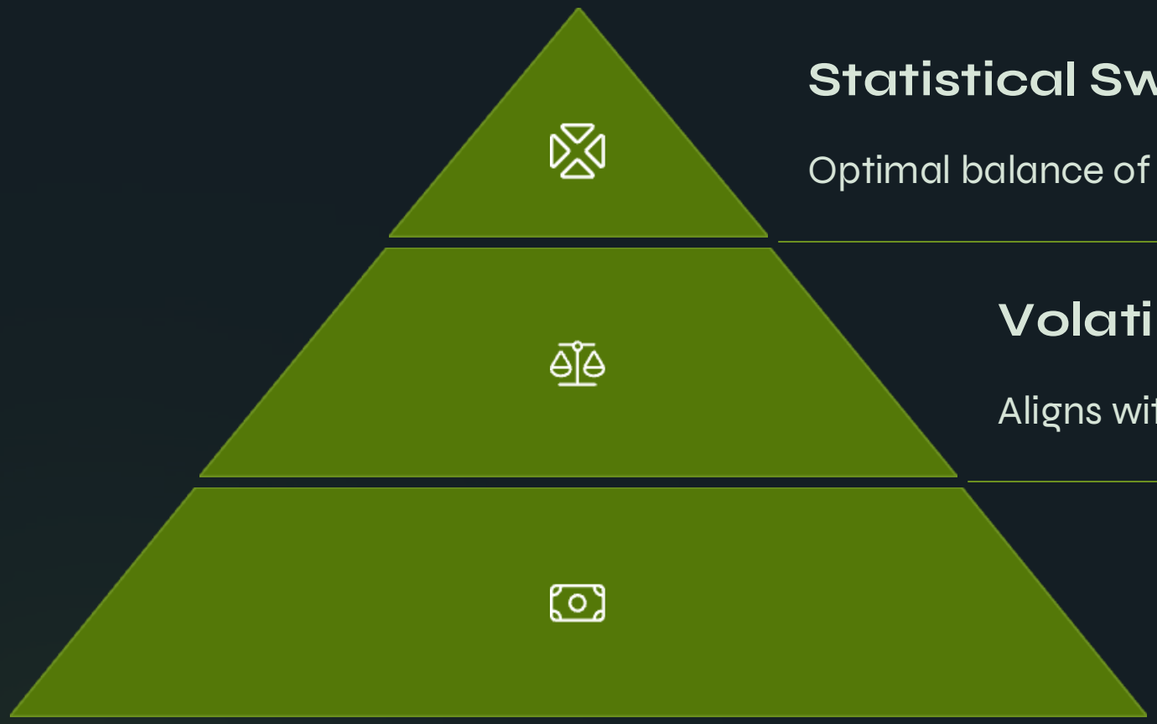
- Upon generation of a buy or sell signal, a position in the corresponding ETF is initiated.
- No single ETF will be allocated more than 10% weightage in the portfolio to ensure diversification and manage risk.
- The portfolio will be constructed with a focus on maintaining a balanced exposure across various ETFs that meet the signal criteria.



Portfolio Rebalancing Strategy

- If a buy/sell signal is generated within the last two weeks of the month,
- the portfolio will be partially rebalanced with a 5% weightage adjustment; else it will be fully rebalanced.
- No single ETF will be allocated more than 10% weightage in the portfolio to ensure diversification and manage risk.
- Regular monitoring and rebalancing will ensure the portfolio adheres to the defined strategy and risk parameters.

The 5% Strike Threshold Significance



Statistical Sweet Spot

Optimal balance of signal and noise

Volatility Consideration

Aligns with typical SPX monthly movement range

Premium Efficiency

Meaningful premium without excessive theta decay

The 5% OTM threshold captures significant speculative positioning without excessive noise. This level has shown historical relevance in predicting market turns.

Detecting Genuine Options Unwinding

OI Analysis

Confirm unwinding through elevated Day over Day OI Change

Signal Weightage

More weightage to signals generated in first two weeks of the month and less weightage to signals in the last two weeks of the month.

Open Interest Decline

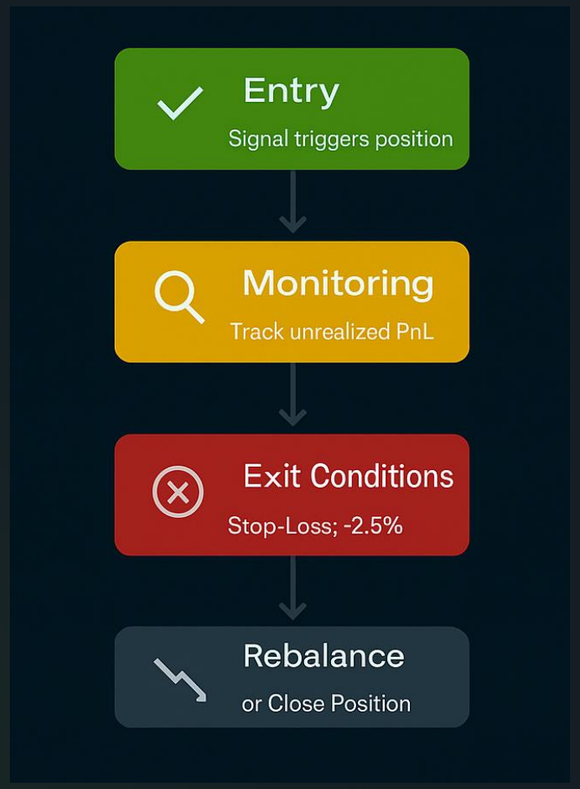
Track multi-day decrease in open contracts

Volume Analysis

Monitor volumes as well to filter fake signals

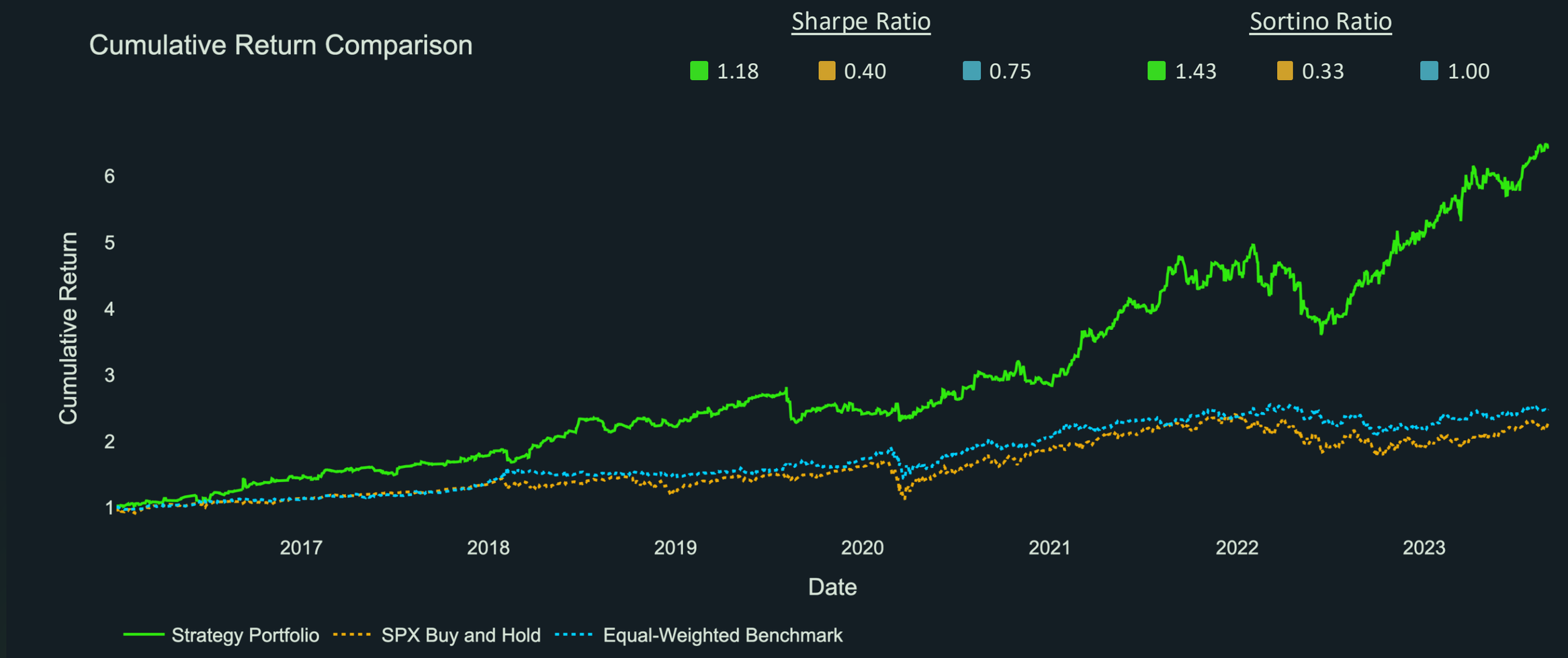
Profit and Loss-Based Risk Management

To reduce tail risk and improve capital efficiency, each trade is governed by a PnL-based exit rule:



- Stop-Loss triggers at −2.5%, cutting losers early
- Take-Profit triggers at +5.0%, locking in gains
- PnL is monitored daily after position initiation
- Whichever is hit first (PnL or new signal), we rebalance

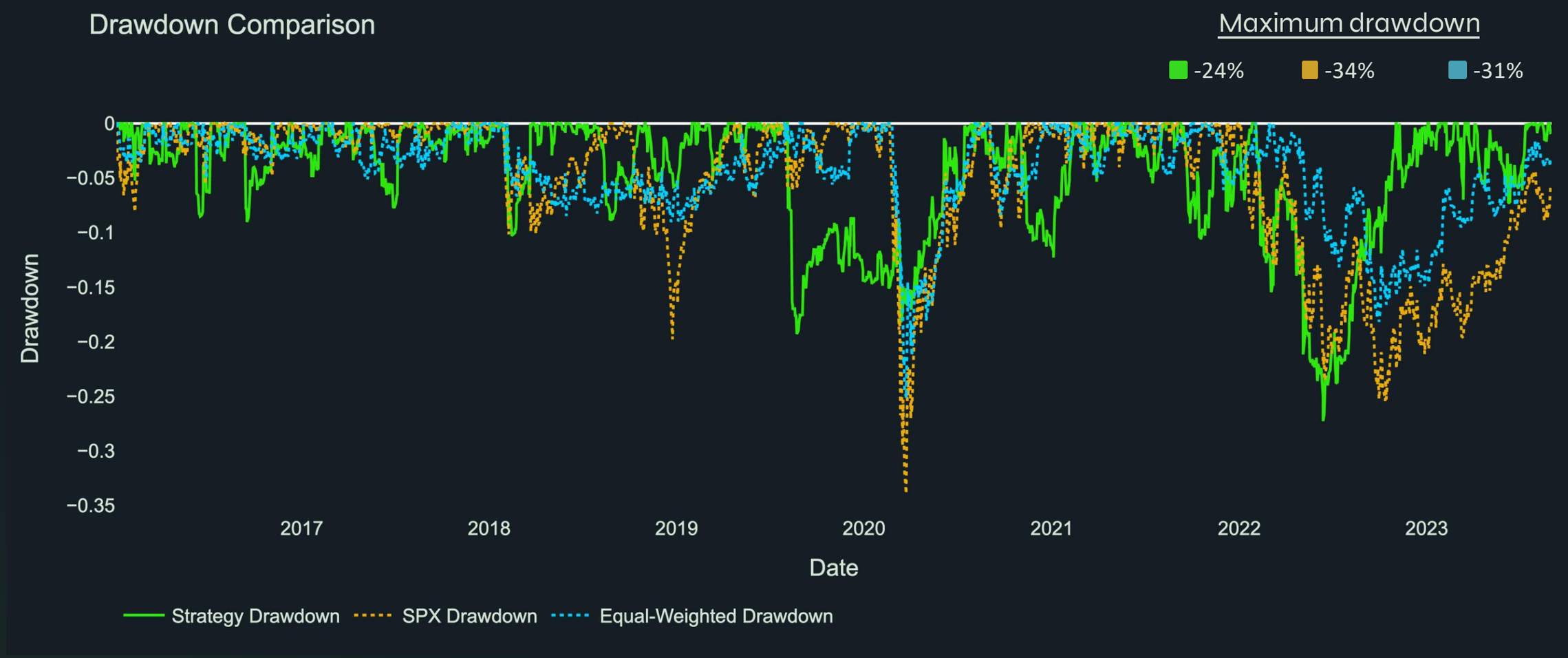
Historical Backtest Results



The strategy delivered a +543.71% cumulative return, ending at 6.4371× the initial investment.

- Outperformed SPX by +416.82% (SPX ended at 2.2689)
- Outperformed Equal-Weighted Benchmark by +396.00% (EW ended at 2.4771)

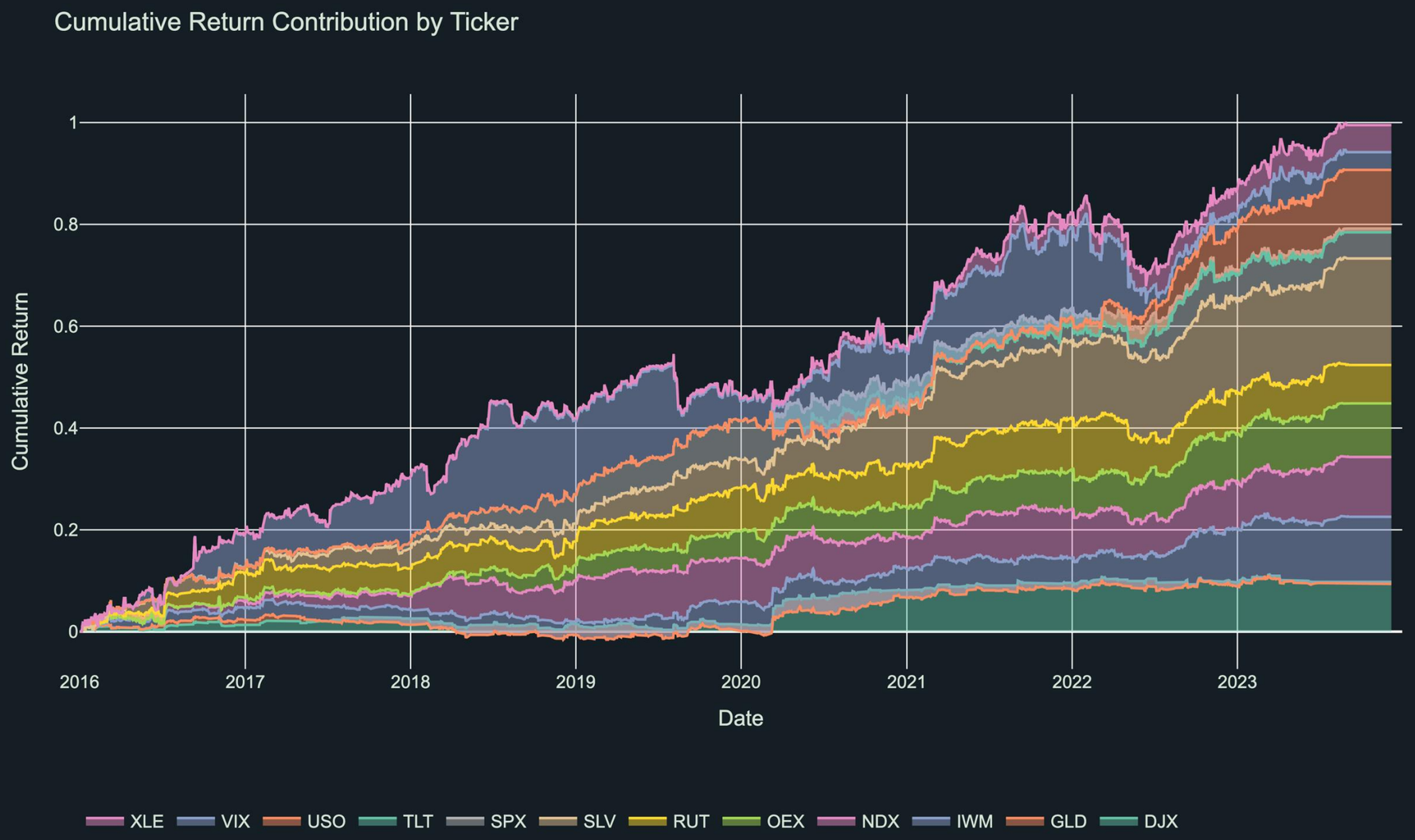
Drawdown Comparison



The strategy exhibits consistently lower and faster-recovering drawdowns relative to SPX and the equal-weighted benchmark.

- Enhanced capital protection during crises (e.g., COVID-19, 2022 sell-off)
- Stop-loss and rebalance logic help minimize deep equity curve dips

Which Assets Drove Strategy Performance?



- Diversified drivers: No single ticker dominates returns.
- Top contributors: XLE, NDX, and VIX consistently added value across regimes.
- Defensive assets like TLT and GLD helped buffer drawdowns in volatile periods.
- The strategy dynamically rebalances allocation based on signal timing and direction.

Strategy Limitations and Considerations

Market Dependency

Relies heavily on options market efficiency and liquidity for signal

Lagged Indicator

Uses T-1 and T-2 data, potentially missing immediate market movements

Market Regime Changes

May underperform during unusual market conditions or structural shifts

Transaction Costs

Frequent rebalancing may incur significant trading costs and slippage

Key Risk Factors to Monitor

False Signals

Options unwinding may occur for reasons unrelated to directional outlook. Confirm with additional indicators.

Volatility

Open interest data can be influenced by various market factors, leading to false signals.

External Shocks

Geopolitical or economic surprises override technical signals. Maintain strict stop-loss discipline.

- FOMC announcements
- Black swan events

Advanced Strategy Enhancements

Machine Learning Integration

Implement ML models for pattern recognition in options flow data

Vehicle Optimization

Consider options or leveraged ETFs for position sizing

Real-Time Processing

Develop intraday signal generation for faster market response

Cross-Asset Application

Extend methodology to sector ETFs for rotation strategy