Week 7 Report

New England Investment Consulting Group

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Progress Review

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Progress Review

- Backtested strategy with varying entry/exit criteria and moving average window
- Added transaction costs into model
  - longer moving averages are now associated with higher returns (transaction costs included) to minimize number of trades
  - optimized upper and lower bound cutoffs in order to optimize risk-adjusted returns while considering transaction costs

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Backtesting Results

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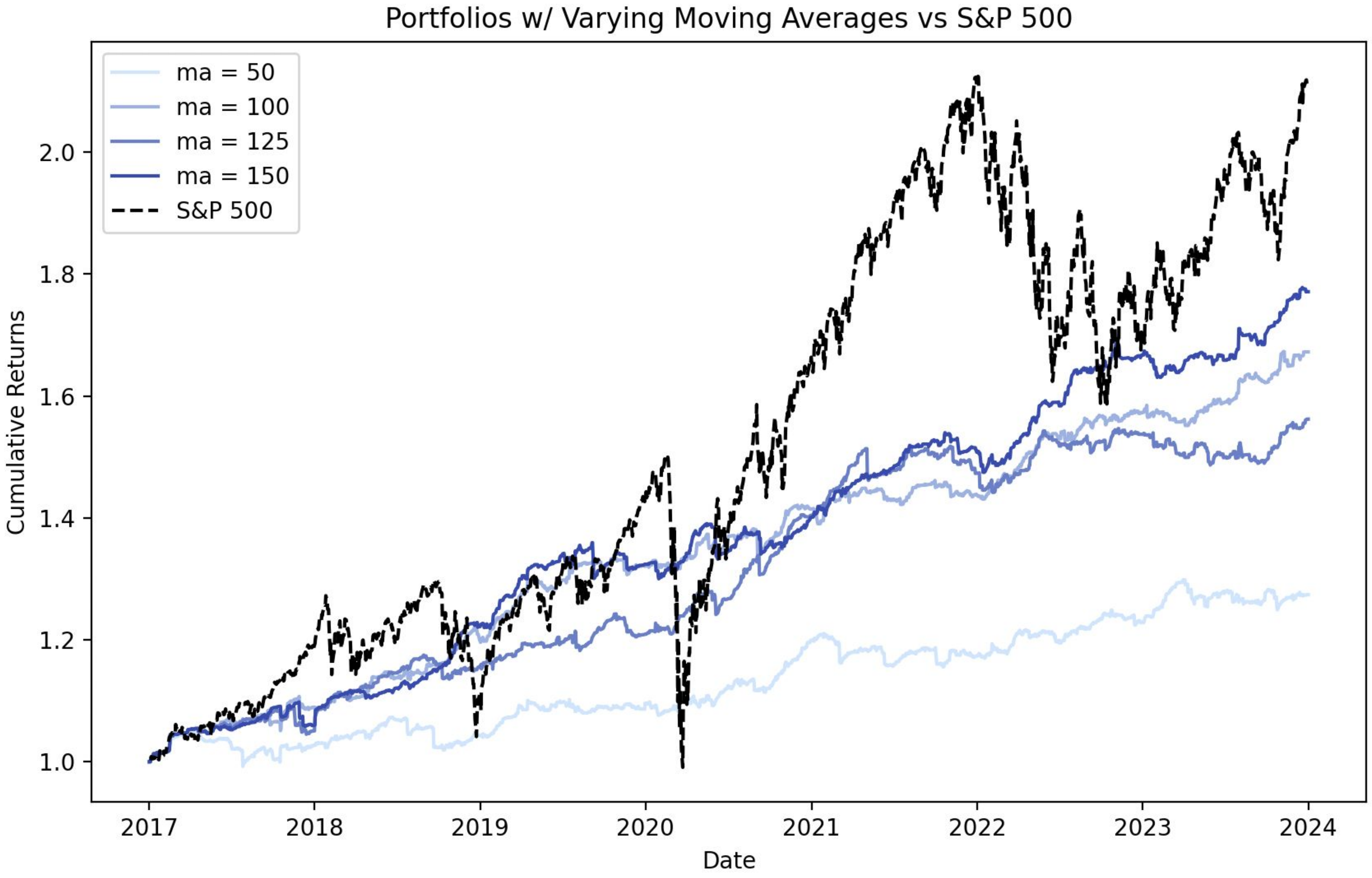
Indicator Strategy

- Moving average = 50, 100, 125, 150 days
- Lower bound = 40, Upper bound = 52



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Indicator Strategy Performance Metrics

ma = 50

```
Performance Metrics:
Sharpe Ratio: -0.296
Variance: 1.703e-03
Value at Risk (VaR): -0.31%
Conditional Value at Risk (cVaR): -0.69%
Win Rate: 61.78%
Beta: -2.05e-03
CAGR: 3.40%
```

ma = 100

```
Performance Metrics:
Sharpe Ratio: 0.653
Variance: 1.341e-03
Value at Risk (VaR): -0.28%
Conditional Value at Risk (cVaR): -0.58%
Win Rate: 71.23%
Beta: 1.74e-03
CAGR: 7.35%
```

ma = 125

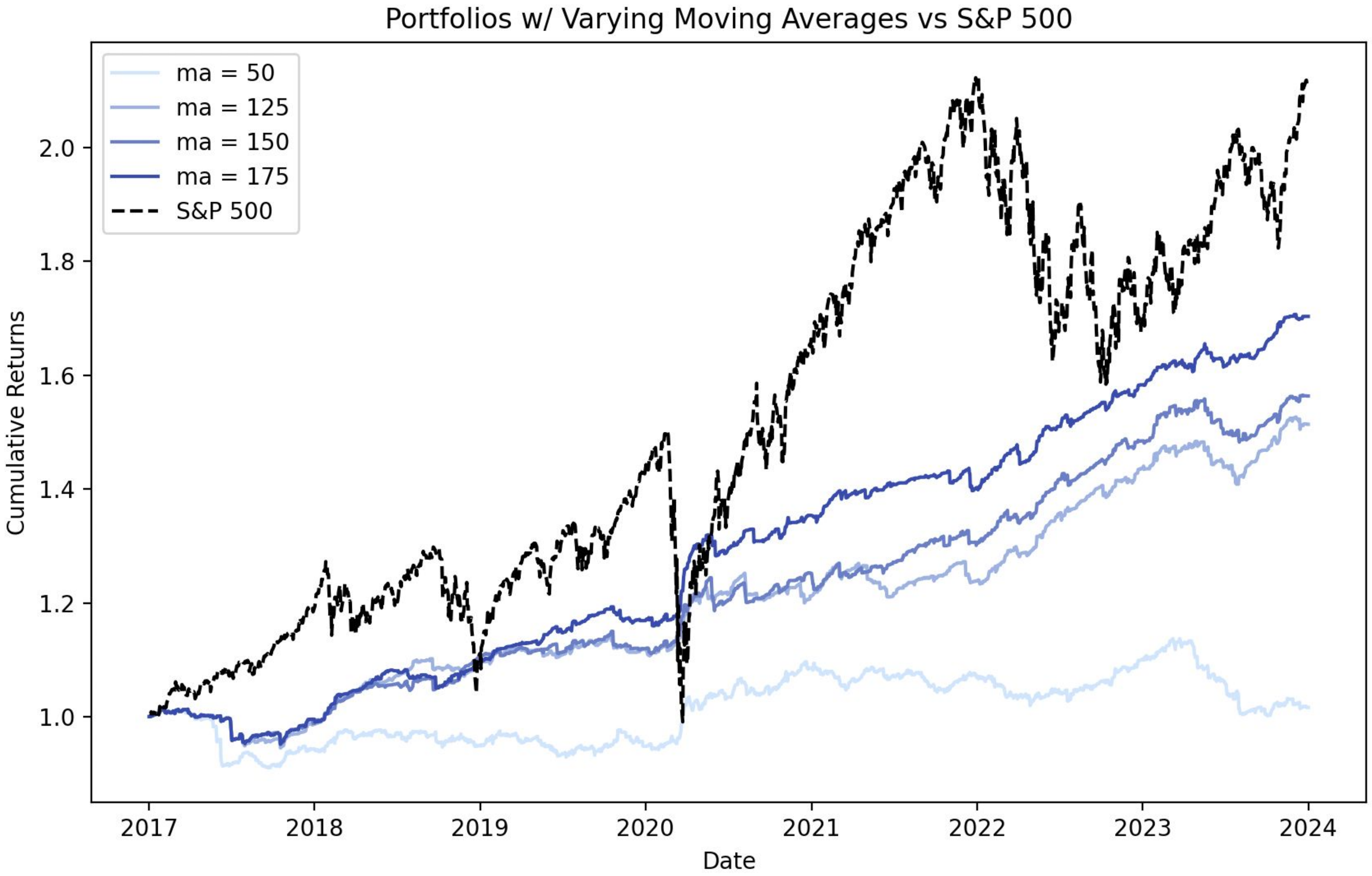
```
Performance Metrics:
Sharpe Ratio: 0.329
Variance: 1.756e-03
Value at Risk (VaR): -0.31%
Conditional Value at Risk (cVaR): -0.72%
Win Rate: 73.67%
Beta: 1.20e-02
CAGR: 6.35%
```

ma = 150

```
Performance Metrics:
Sharpe Ratio: 0.759
Variance: 1.638e-03
Value at Risk (VaR): -0.27%
Conditional Value at Risk (cVaR): -0.61%
Win Rate: 74.73%
Beta: 3.06e-03
CAGR: 8.21%
```

Z-Score Strategy

- Moving average = 50, 125, 150, 175 days
- Critical z-score = 1.1



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Z-Score Strategy Performance Metrics

ma = 50

```
Performance Metrics:
Sharpe Ratio: -0.564
Variance: 2.397e-03
Value at Risk (VaR): -0.52%
Conditional Value at Risk (cVaR): -0.86%
Win Rate: 65.48%
Beta: -1.76e-03
CAGR: 0.22%
```

ma = 125

```
Performance Metrics:
Sharpe Ratio: 0.221
Variance: 1.645e-03
Value at Risk (VaR): -0.37%
Conditional Value at Risk (cVaR): -0.76%
Win Rate: 76.94%
Beta: 4.58e-03
CAGR: 5.89%
```

ma = 150

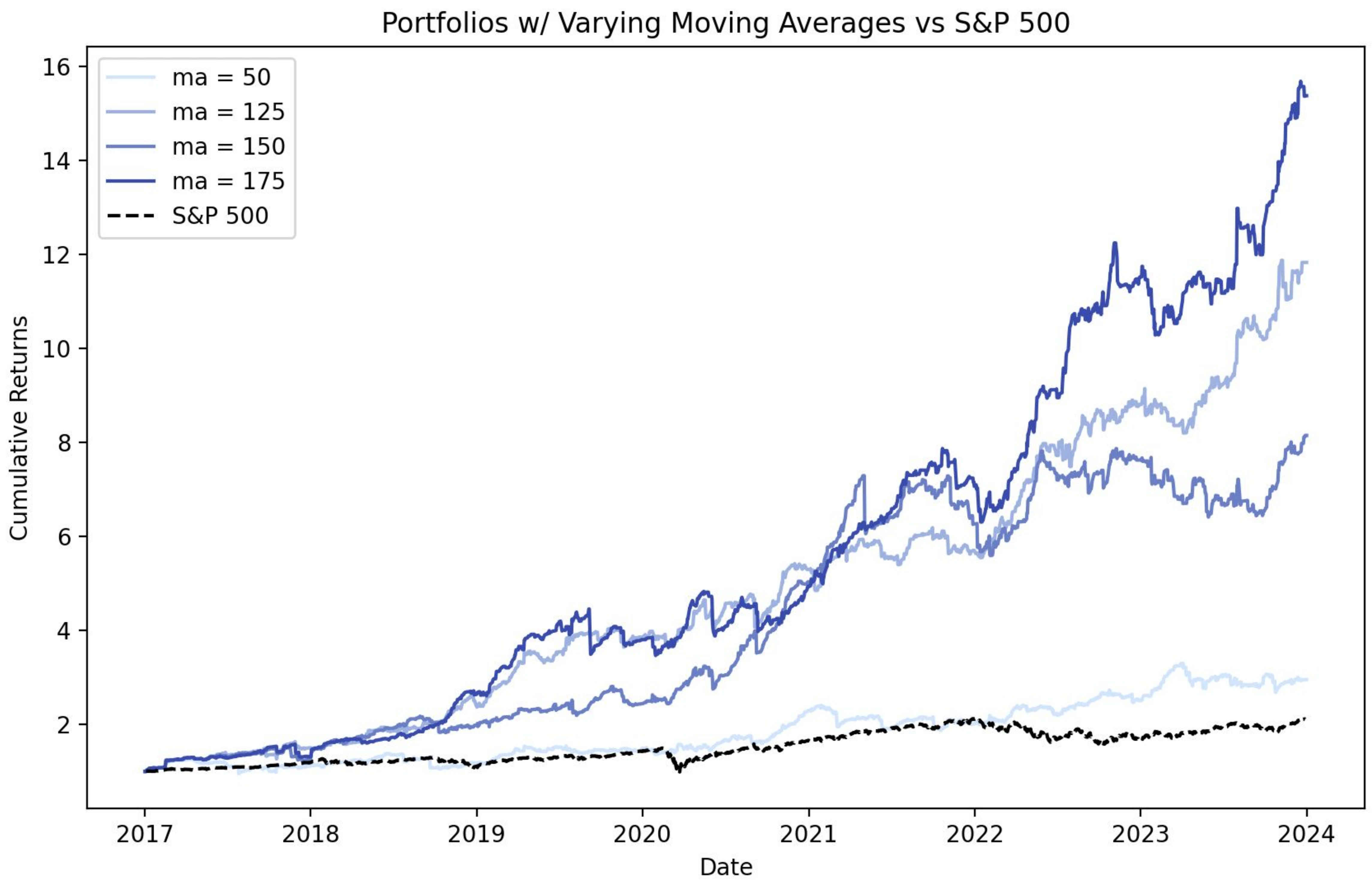
```
Performance Metrics:
Sharpe Ratio: 0.294
Variance: 1.675e-03
Value at Risk (VaR): -0.33%
Conditional Value at Risk (cVaR): -0.76%
Win Rate: 78.16%
Beta: 5.24e-03
CAGR: 6.36%
```

ma = 175

```
Performance Metrics:
Sharpe Ratio: 0.490
Variance: 1.396e-03
Value at Risk (VaR): -0.28%
Conditional Value at Risk (cVaR): -0.65%
Win Rate: 78.22%
Beta: 3.24e-03
CAGR: 7.63%
```

Indicator Strategy, 5:1 Leverage

- Moving average = 50, 100, 125, 150 days
- Lower bound = 40, Upper bound = 52



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Indicator Strategy, 5:1 Leverage Performance Metrics

ma = 50

```
Performance Metrics:
Sharpe Ratio: 0.589
Variance: 4.257e-02
Value at Risk (VaR): -1.56%
Conditional Value at Risk (cVaR): -3.43%
Win Rate: 61.78%
Beta: -1.02e-02
CAGR: 16.15%
```

ma = 100

```
Performance Metrics:
Sharpe Ratio: 1.462
Variance: 3.351e-02
Value at Risk (VaR): -1.40%
Conditional Value at Risk (cVaR): -2.89%
Win Rate: 71.23%
Beta: 8.69e-03
CAGR: 40.64%
```

ma = 125

```
Performance Metrics:
Sharpe Ratio: 0.855
Variance: 4.389e-02
Value at Risk (VaR): -1.55%
Conditional Value at Risk (cVaR): -3.62%
Win Rate: 73.67%
Beta: 6.02e-02
CAGR: 33.59%
```

ma = 150

```
Performance Metrics:
Sharpe Ratio: 1.333
Variance: 4.094e-02
Value at Risk (VaR): -1.34%
Conditional Value at Risk (cVaR): -3.06%
Win Rate: 74.73%
Beta: 1.53e-02
CAGR: 45.82%
```

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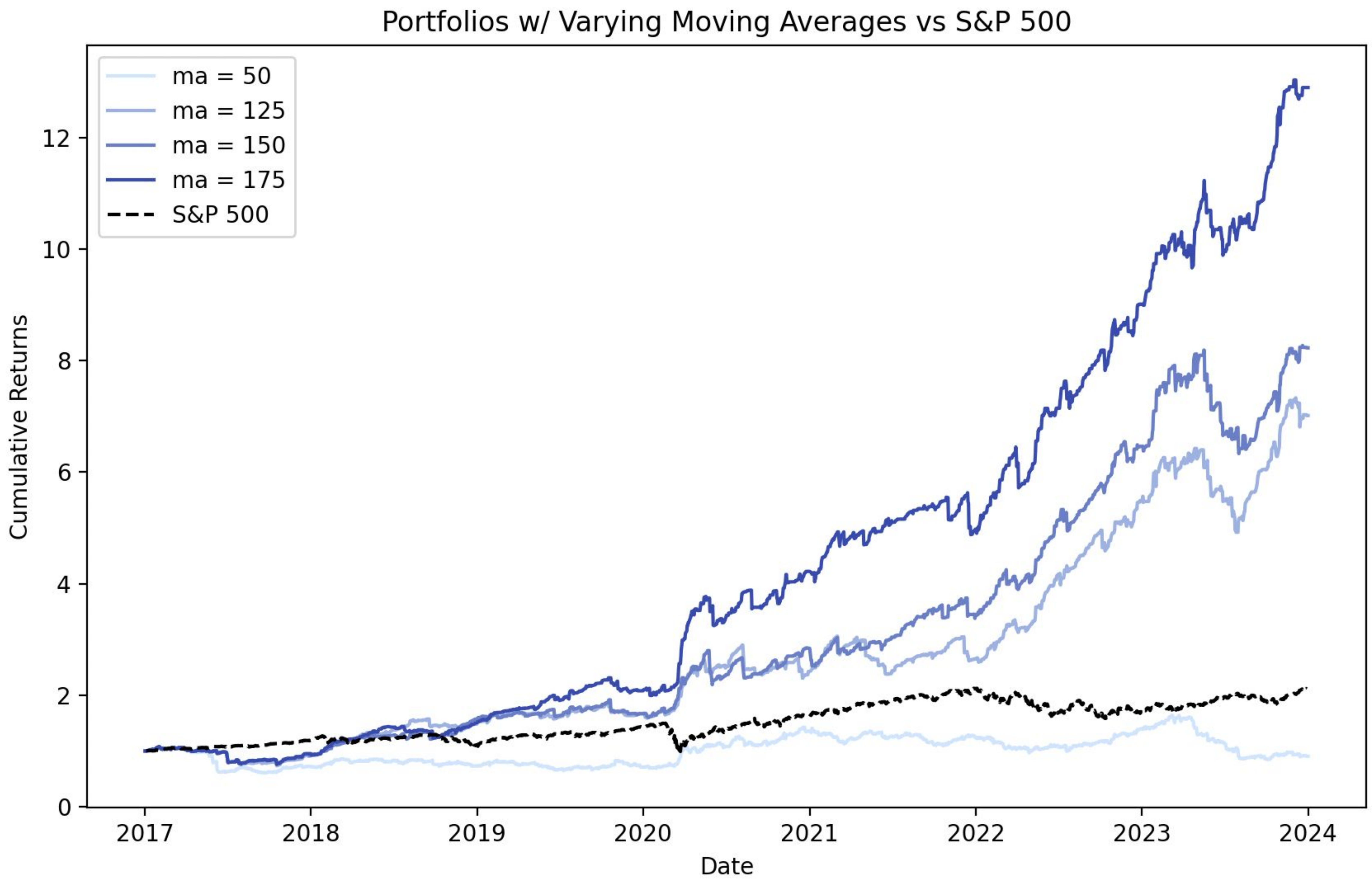
Z-Score Strategy, 5:1 Leverage

- Moving average = 50, 125, 150, 175 days
- Critical z-score = 1.1



Z-Score Strategy, 5:1 Leverage Performance Metrics

ma = 50

```
Performance Metrics:
Sharpe Ratio: -0.009
Variance: 5.993e-02
Value at Risk (VaR): -2.58%
Conditional Value at Risk (cVaR): -4.30%
Win Rate: 65.48%
Beta: -8.82e-03
CAGR: -1.34%
```

ma = 125

```
Performance Metrics:
Sharpe Ratio: 0.724
Variance: 4.112e-02
Value at Risk (VaR): -1.87%
Conditional Value at Risk (cVaR): -3.81%
Win Rate: 76.94%
Beta: 2.29e-02
CAGR: 30.84%
```

ma = 150

```
Performance Metrics:
Sharpe Ratio: 0.819
Variance: 4.186e-02
Value at Risk (VaR): -1.66%
Conditional Value at Risk (cVaR): -3.82%
Win Rate: 78.16%
Beta: 2.62e-02
CAGR: 33.76%
```

ma = 175

```
Performance Metrics:
Sharpe Ratio: 1.000
Variance: 3.490e-02
Value at Risk (VaR): -1.38%
Conditional Value at Risk (cVaR): -3.26%
Win Rate: 78.22%
Beta: 1.62e-02
CAGR: 42.32%
```

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Takeaways

- The strategy seems to be market neutral generating small but positive returns over time
  - beta near zero, relatively low variance in returns (non-leveraged)
- Transaction costs make it important to look over a longer horizon (i.e. increased moving average/lookback window)
  - Ideal moving average is between 100-175 days
- Strategy with leverage is subject to potential large losses which may make it necessary to add additional features such as stop-loss/position sizing

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Next Steps

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Next Steps

- Develop the indicator further
- Develop backtesting framework further to provide more metrics
- Potentially implement stop-loss