

Density Edge

April 6, 2026

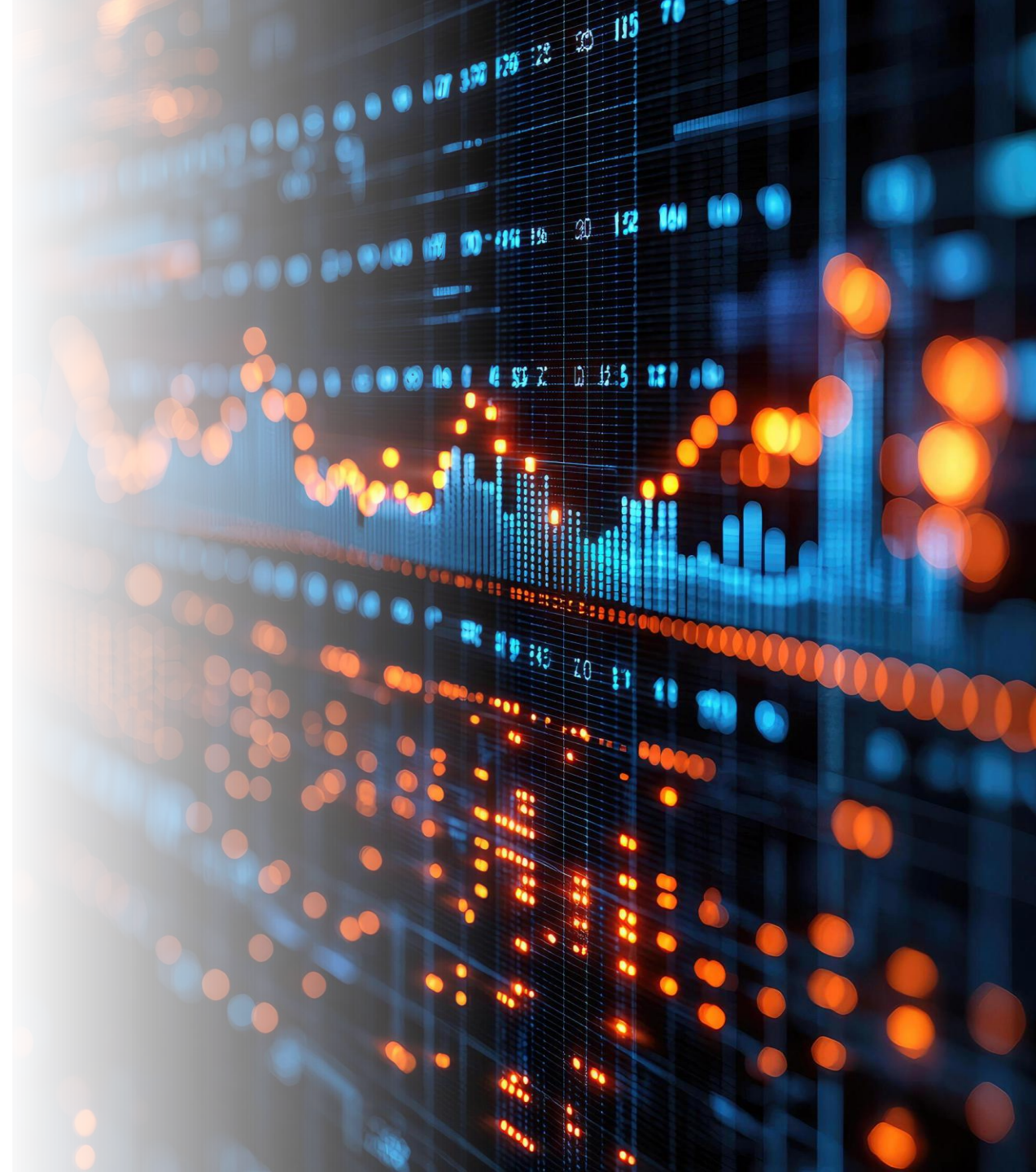
Sharpe Edge

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Executive Summary



Strategy

Rank S&P 500 stocks **by how persistently** they claim their new 26-week high (touch density). **Buy the top 5**. Hold 13 weeks (quarter). **Repeat monthly** with 3 staggered sub-baskets, creating a fully invested strategy of holding 7-11 stocks 95% of the time.



Performance

19.8% mean annualized return — **+6.8% alpha** vs S&P 500 —
Sharpe 0.83



Recommendation

Invest **\$10,000 per month** over the next **three months** for a total investment of **\$30,000**. This strategy will be funded by liquidating our **ICSH short-term bond/cash** holdings.

Strategy Rationale

The 26W lookback:

- Jegadeesh & Titman (1993): **6-month formation** is the most significant and most replicated period

Touch density counts the number of trading days (out of the full 130-day lookback) on which a stock's daily high price reached a new 26-week rolling maximum. **It sits at the intersection of two validated ideas:**

- **George & Hwang (2004)** show *proximity* to the period high predicts returns (nearness ratio = price / 52W high). **That's a single snapshot.**
- **Jegadeesh & Titman (1993)** show *cumulative* signal measurement over the formation period is the standard approach – you rank by **total return** over 6-12 months, not by one day's return.

Monthly rebalancing and sub-baskets are supported by Hurst, Ooi & Pedersen (2017) – they show across 67 markets and 137 years that **blending multiple entry points** is more robust than any single entry point. The 13-week holding period per basket aligns with Jegadeesh & Titman's (1993) optimal 3–6-month hold.

Allowing duplication concentrates weight in the highest-conviction names, consistent with Brands et al. (2005), who find that concentrated portfolios outperform diluted ones when the selection signal is strong.

Strategy Design

Description

- Systematic US equity momentum inspired strategy that ranks all S&P 500 stocks by how persistently their daily high touches a new 26-week rolling maximum over the past 130 days. Buys the top 5 names per sub-basket across 3 rotating monthly sub-baskets – 15 slots total.

Origin

- Inspired by George & Hwang (2004), who show that proximity to the 52-week high predicts returns better than raw past-return momentum via anchoring bias. Extended by replacing their single-day nearness snapshot with a cumulative touch density signal – applying Jegadeesh & Titman's (1993) full formation-period measurement methodology to G&H's period-high concept.

Goal

- Identify S&P 500 stocks exhibiting sustained price persistence at multi-month highs and capture the anchoring-driven premium in a rules-based, 15-slot portfolio with quarterly holding periods and monthly rebalancing.

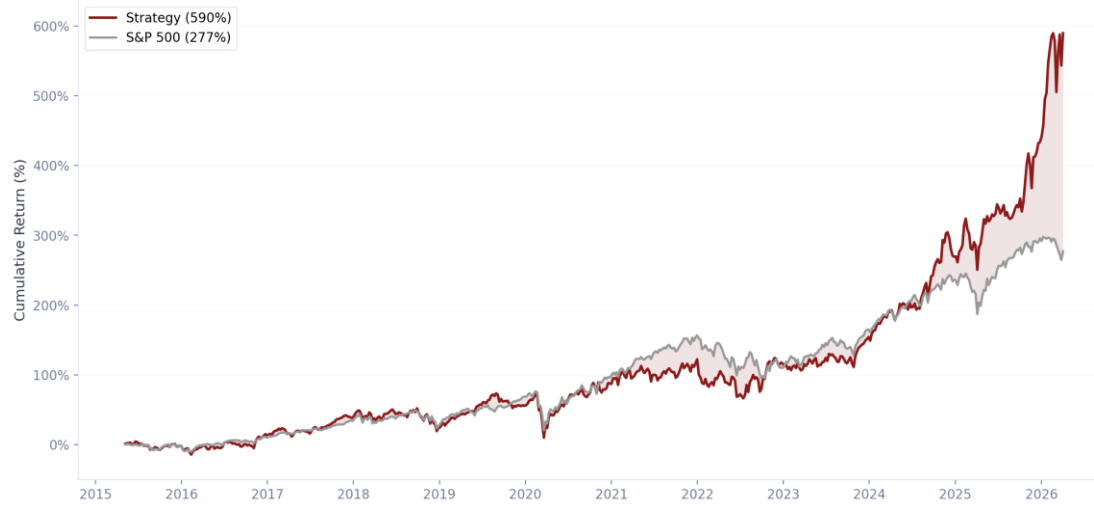
Parameters

- S&P 500 universe (753 tickers, survivorship-bias-free); 26-week rolling lookback (130 days); rank by touch density descending – count of days daily high \geq 26-week rolling max over full 130-day window; ties broken by recency; no minimum gate; top 5 per sub-basket; equal-weight per slot (~6.7%); duplicates allowed; 3x5 monthly rebalancing; 13-week holding period per sub-basket

Backtest Parameters

Parameter	Description	Rationale
Universe	S&P 500 (historical membership)	753 tickers via Bloomberg
Signal	Count of days at 26WH over 130 days	Measures persistence at highs
Ranking	Signal count descending	Strongest signals = top ranks
Selection	Top 5 monthly	3 sub-baskets x 5 stocks = 15

Backtest Performance



Strategy Summary

	10-Year	5-Year
Annualized Return	19.8%	28.6%
Annualized Alpha	+6.8%	+16.6%
Annualized Vol	23.3%	24.1%
Sharpe Ratio	0.83	1.31
Max Drawdown	-37.0%	-25.4%
Benchmark Return	13.0%	12.0%

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Avg
Strategy	15.8%	22.4%	-9.7%	25.1%	19.6%	18.8%	-2.8%	17.7%	44.2%	41.5%	33.0%	20.6%
S&P 500	12.0%	21.8%	-4.4%	31.5%	18.4%	28.7%	-18.1%	26.3%	25.0%	17.9%	-3.5%	14.1%
Alpha	+3.8	+0.6	-5.3	-6.4	+1.2	-9.9	+15.3	-8.6	+19.2	+23.6	+36.5	+6.4

590%

Total Return
vs 277% SPX

+6.8%

Ann. Alpha
10-year

0.83

Sharpe
10-year

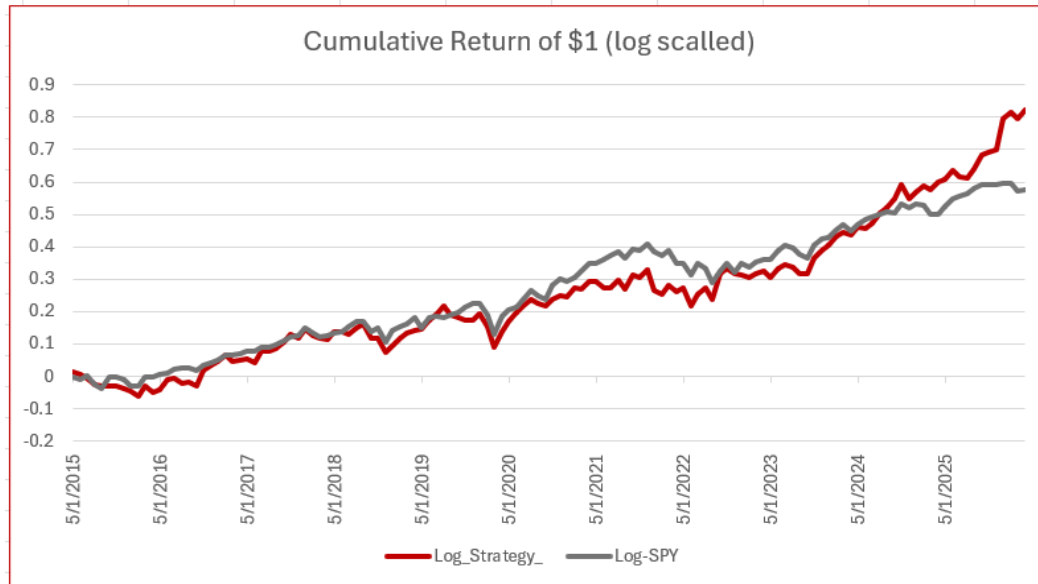
-37.0%

Max DD
vs -31.8% SPX

1.04

Avg Beta
near-market

Backtest Performance



Strategy Summary

	10-Year	5-Year
Annualized Return	19.8%	28.6%
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Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Avg
Strategy	15.8%	22.4%	-9.7%	25.1%	19.6%	18.8%	-2.8%	17.7%	44.2%	41.5%	33.0%	20.6%
S&P 500	12.0%	21.8%	-4.4%	31.5%	18.4%	28.7%	-18.1%	26.3%	25.0%	17.9%	-3.5%	14.1%
Alpha	+3.8	+0.6	-5.3	-6.4	+1.2	-9.9	+15.3	-8.6	+19.2	+23.6	+36.5	+6.4

590%

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10-year

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Sharpe
10-year

-37.0%

Max DD
vs -31.8% SPX

1.04

Avg Beta
near-market

Backtest Performance

Period	Avg Annual Return	Alpha	Beta	Volatility	Max DD	Sharpe
Strategy 0–5Y	11.8%	-1.9%	1.05	22.6%	-37.0%	0.52
SPY 0–5Y	13.7%	–	1.00	17.6%	-31.8%	0.78
Strategy 5Y	28.6%	+16.6%	0.95	24.1%	-25.4%	1.31
SPY 5Y	12.0%	–	1.00	16.0%	-23.9%	0.74
Strategy 10Y (max)	19.8%	+6.8%	1.04	23.3%	-37.0%	0.83
SPY 10Y (max)	13.0%	–	1.00	16.9%	-31.8%	0.69

Alpha generation is regime-dependent. The strategy underperforms during broad-based rallies with dispersed leadership (2019, 2021, 2023) and outperforms when market leadership is narrow and persistent (2022: +15.3pp, 2024-2025: +19-24pp). The first half of the sample produced -1.9% annualized alpha; the second half produced +16.6%. Investors should expect episodic rather than consistent outperformance.

Risks

Key risks identified across the strategy, with mitigations built into the design

<u>Risk Category</u>	Specific Risks	Mitigations
Statistical Significance	<ul style="list-style-type: none"> Factor alpha $t=1.23$ ($p=0.217$); not significant at 5% level 	<ul style="list-style-type: none"> Single-factor signal with academic backing (George & Hwang 2004); removing UMD still shows +6.91% alpha
Drawdown & Crash Risk	<ul style="list-style-type: none"> Max DD -37.0%; amplifies sudden crashes (COVID: -4.6pp worse than S&P 500) 	<ul style="list-style-type: none"> +15.3pp in 2022 gradual bear; manage via allocation sizing
Concentration Risk	<ul style="list-style-type: none"> Mean 9 unique stocks of 15 slots 	<ul style="list-style-type: none"> 3x5 staggered baskets provide temporal diversification; all 11 GICS sectors represented historically
Alpha Recency	<ul style="list-style-type: none"> 2023-2026 drives most alpha (+15.5%, $t=2.03$); 2018-2019 was negative (-7.3%). Does not consistently beat the market. 	<ul style="list-style-type: none"> Designed for persistence regimes; underperformance in broad bull markets is expected and documented

Strengths & Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> ❑ Rules-based implementation with strong academic backing for each parameter 	<ul style="list-style-type: none"> ❑ Factor alpha not statistically significant ($t=1.23$, need ~ 2.0 for 5% level)
<ul style="list-style-type: none"> ❑ +6.8% annual alpha over S&P 500 across 13 offset paths (offset spread only 2.6pp) 	<ul style="list-style-type: none"> ❑ Amplifies drawdowns in sudden crashes (COVID: -4.6pp vs benchmark)
<ul style="list-style-type: none"> ❑ Adaptive sector rotation through the persistence signal; all 11 GICS sectors represented 	<ul style="list-style-type: none"> ❑ Alpha concentrated in 2023-2026 (+15.5%, $t=2.03$); 2018-2019 was negative (-7.3%)
<ul style="list-style-type: none"> ❑ Strong in gradual bears (2022: +11.2pp vs benchmark); nearly symmetric beta (0.974 up/down) 	<ul style="list-style-type: none"> ❑ High overlap (mean 9 unique of 15 slots) creates concentration risk in persistent leaders
<ul style="list-style-type: none"> ❑ Survivorship-bias-free data (753 tickers, 553 weekly screens, 2015-2026) 	<ul style="list-style-type: none"> ❑ Negative profitability tilt (RMW -0.0874) costs $\sim 0.3\%/yr$ in factor drag

Effect on Portfolio (If fully invested today)

Ticker	Short Name	GICS Sector	Density	Weight in Rebalance	Weight in Strategy
Basket 1 Purchased February					
STX	Seagate Technology	Info Technology	46/130	6.7%	6.7%
WDC	Western Digital	Info Technology	45/130	6.7%	6.7%
C	Citigroup	Financials	39/130	6.7%	6.7%
GM	General Motors	Consumer Disc.	39/130	6.7%	6.7%
L	Loews Corp	Financials	38/130	6.7%	6.7%
Basket 2 Purchased March					
SNDK	SanDisk Corp	Info Technology	52/130	6.7%	6.7%
STX	Seagate Technology	Info Technology	49/130	6.7%	Now 13.33%
MU	Micron Technology	Info Technology	46/130	6.7%	6.7%
WDC	Western Digital	Info Technology	44/130	6.7%	Now 13.33%
JNJ	Johnson & Johnson	Healthcare	42/130	6.7%	6.7%
Basket 3 Purchased Now					
SNDK	SanDisk Corp	Info Technology	53/130	6.7%	Now 13.33%
MU	Micron Technology	Info Technology	44/130	6.7%	Now 13.33%
WDC	Western Digital	Info Technology	44/130	6.7%	Now 20%
STX	Seagate Techonology	Info Technology	44/130	6.7%	Now 20%
JNJ	Johnson & Johnson	Health Care	42/130	6.7%	Now 13.33%

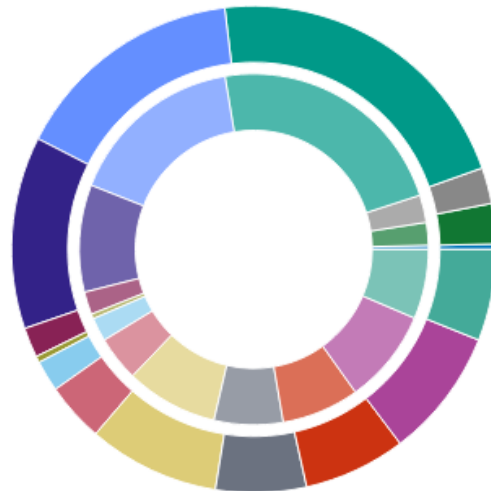
Stocks	Sectors	Average Holding Period
8 Stocks Held	4 Sectors Held	4.7 Months

100% of rebalances have overlap. Mean unique stocks: 9.0 / 15. The most common state is 5-7 duplicate slots (75.2% of rebalances), meaning 8-10 unique names. This is a direct consequence of the 130-day density window: stocks in sustained 6-month uptrends don't rotate monthly.

Effect on Portfolio (if fully invested today)

Ticker	Short Name	GICS Sector	Density	Weight in Rebalance	Weight in Strategy
STX	Seagate Technology	Info Technology	46/130	6.7%	20.1%
WDC	Western Digital	Info Technology	45/130	6.7%	20.1%
C	Citigroup	Financials	39/130	6.7%	6.7%
GM	General Motors	Consumer Disc.	39/130	6.7%	6.7%
L	Loews Corp	Financials	38/130	6.7%	6.7%
MU	Micron Technology	Info Technology	46/130	6.7%	13.4%
JNJ	Johnson & Johnson	Healthcare	42/130	6.7%	13.4%
SNDK	SanDisk Corp	Info Technology	53/130	6.7%	13.4%

Sector Allocation



Inner: Current Outer: Projected

NAV: \$1.01M

Affected Sectors

Sector	Now	Proj	Δ
Technology	9.1%	11.8%	+2.7%
Broad Market	20.8%	19.8%	-1.0%
Fixed Income	15.1%	14.3%	-0.7%
Healthcare	1.9%	2.5%	+0.5%
Energy	6.6%	6.3%	-0.3%
Industrials	5.9%	5.6%	-0.3%
Commodity	5.8%	5.6%	-0.3%
Financials	7.8%	8.1%	+0.3%
Consumer Staples	3.8%	3.6%	-0.2%
Unknown	2.3%	2.2%	-0.1%
Communication Services	2.0%	1.9%	-0.1%
Materials	1.9%	1.8%	-0.1%
Consumer Discretionary	8.0%	7.9%	-0.1%

Risk Metrics

Metric	Current	Projected	Δ
Beta	0.77	0.82	+0.05
VaR 95%	-1.10%	-1.18%	-0.08
Vol (ann)	10.86%	11.62%	+0.76
Sharpe	0.30	0.28	-0.02
Max DD	-6.54%	-7.00%	-0.46

Factor Exposures

Factor	Current	Projected	Δ
Momentum	-0.30	-0.19	+0.109
Quality	-0.05	-0.03	+0.012
Value	0.02	0.00	-0.019
Size	0.03	0.05	+0.021
Volatility	-0.67	-0.59	+0.071

Effect on Portfolio (Starting Today)

Ticker	Short Name	GICS Sector	Density	Weight
Bucket 3 Purchased Now				
SNDK	SanDisk Corp	Info Technology	53/130	6.7%
MU	Micron Technology	Info Technology	44/130	6.7%
WDC	Western Digital	Info Technology	44/130	6.7%
STX	Seagate Technology	Info Technology	44/130	6.7%
JNJ	Johnson & Johnson	Health Care	42/130	6.7%

Sector Allocation



● Inner: Current ● Outer: Projected

NAV: \$1.01M

Affected Sectors

Sector	Now	Proj	Δ
Technology	9.1%	10.2%	+1.1%
Broad Market	20.8%	20.4%	-0.3%
Healthcare	1.9%	2.2%	+0.3%
Fixed Income	15.1%	14.8%	-0.2%
Financials	7.8%	7.7%	-0.1%
Consumer Discretionary	8.0%	7.9%	-0.1%
Energy	6.6%	6.5%	-0.1%
Industrials	5.9%	5.8%	-0.1%
Commodity	5.8%	5.8%	-0.1%
Consumer Staples	3.8%	3.7%	-0.1%

Risk Metrics

Metric	Current	Projected	Δ
Beta	0.77	0.79	+0.02
VaR 95%	-1.10%	-1.13%	-0.03
Vol (ann)	10.86%	11.11%	+0.25
Sharpe	0.30	0.29	-0.01
Max DD	-6.54%	-6.69%	-0.15

Factor Exposures

Factor	Current	Projected	Δ
Momentum	-0.30	-0.26	+0.038
Quality	-0.05	-0.04	+0.005
Value	0.02	0.02	-0.007
Size	0.03	0.04	+0.009
Volatility	-0.67	-0.64	+0.023

Summary & Recommendation

Strategy Merits



- **Performance:** 19.8% annualized return over 10 years; +6.8% alpha vs. S&P 500; Sharpe of 0.83

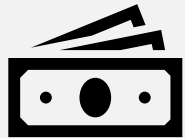


- **Risk:** Max drawdown -37.0%; alpha is regime-dependent; concentration in repeated 5-6 names



- **Effects on Portfolio:** Enhances return potential (590% vs. 277% SPY) and risk-adjusted performance (Sharpe 0.83 vs. 0.69) across all 11 GICS sectors with near-market beta (1.04)

Action Plan



- **Recommendation:** **Buy**
Invest ~\$30,000 from our ICSH short term bonds/cash at \$10,000/month over three months. Rebalance Monthly

Appendix

Quarterly Rebalance



Strategy Summary

	10-Year	5-Year
Annualized Return	17.6%	23.3%
Annualized Alpha	+4.6%	+11.3%
Annualized Vol	21.9%	21.6%
Sharpe Ratio	0.80	1.08
Max Drawdown	-35.5%	-21.9%
Benchmark Return	13.0%	12.0%

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Avg
Strategy	12.4%	19.4%	-9.2%	24.0%	22.9%	24.9%	4.9%	17.2%	23.4%	34.7%	21.4%	17.8%
S&P 500	12.0%	21.8%	-4.4%	31.5%	18.4%	28.7%	-18.1%	26.3%	25.0%	17.9%	-3.5%	14.1%
Alpha	+0.4	-2.4	-4.8	-7.5	+4.5	-3.8	+23.0	-9.1	-1.6	+16.8	+24.9	+3.7

486%

Total Return
vs 277% SPX

+4.6%

Ann. Alpha
10-year

0.80

Sharpe
10-year

-35.5%

Max DD
vs -31.8% SPX

0.99

Avg Beta
near-market

Key Drivers

October 2022: Energy-heavy basket drove the outperformance. By Nov-Dec, those energy names were flat or declining. SNPS (+9.7%) was the lone star.

2024 (+44.2% strategy year):

- VST (Vistra Energy) +65.2% – independent power/renewables, rode the AI-driven electricity demand narrative
- TRGP (Targa Resources) +40.2% – midstream energy, appeared in 2 baskets
- GDDY (GoDaddy) +34.4% – tech services, 2 baskets
- NRG Energy +28.9%, HWM (Howmet) +24.7%, TT (Trane) +24.0%
- Theme: utilities + industrials (power demand, reshoring, infrastructure)

2025 (+41.5% strategy year):

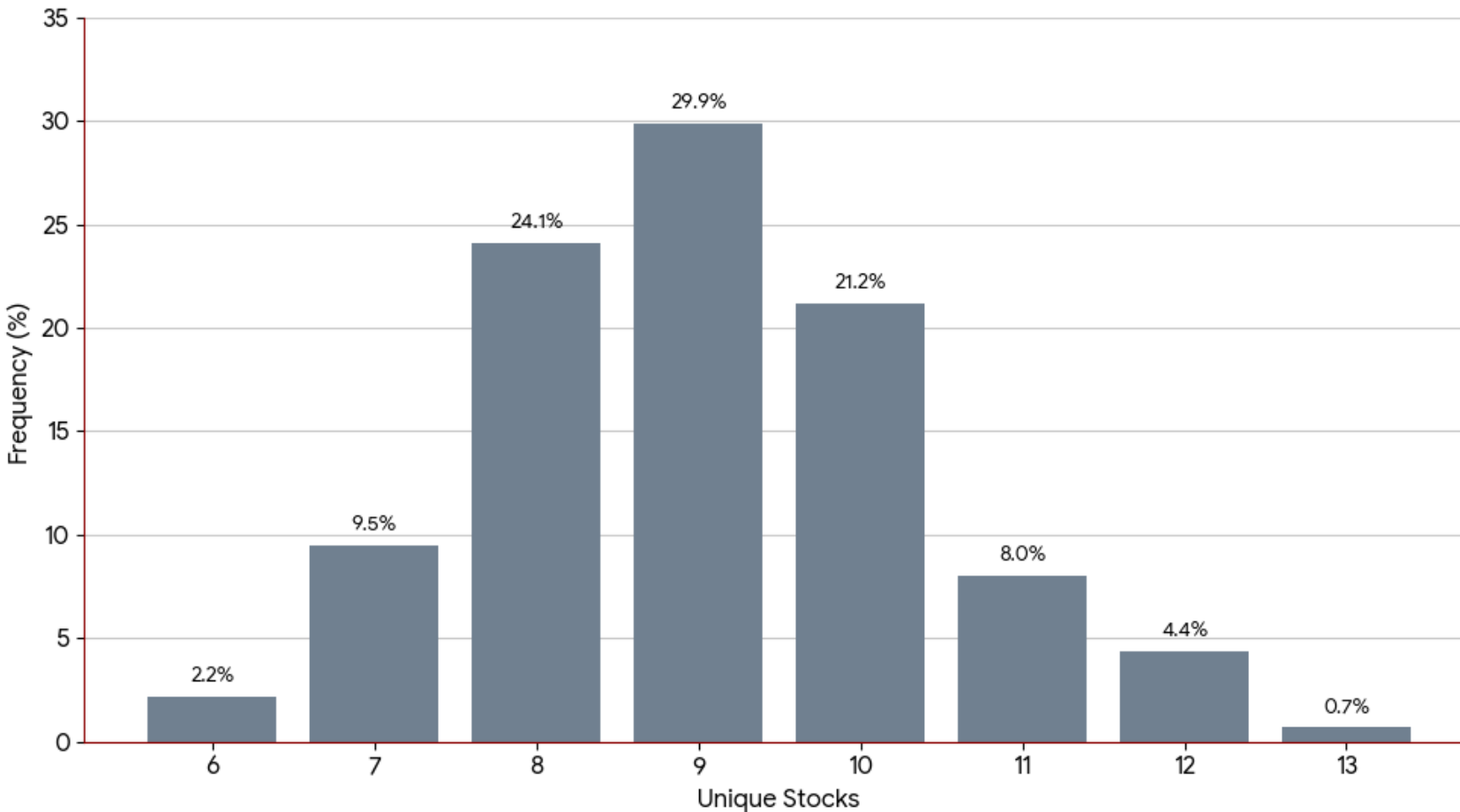
- STX (Seagate) +74.5% – storage/AI data demand, 2 baskets
- HWM (Howmet) +62.7% – aerospace, appeared in 4 baskets (the most persistent stock of the year)
- CAH (Cardinal Health) +39.6%, PLTR (Palantir) +39.2%, DASH (DoorDash) +31.9%
- Theme: tech hardware/storage + aerospace (AI infrastructure build-out)

2026 YTD (+33.0%):

- GLW (Corning) +67.1% – fiber optics/AI connectivity, 2 baskets
- WDC (Western Digital) +55.8%, STX +53.2% – storage continues
- MU (Micron) +19.6%, LRCX (Lam Research) +18.1%
- Theme: memory/storage/semis dominate – 10 of the top picks are IT
- HOOD (-34.1%) was the biggest drag

Unique stocks

Number of Unique stocks held at any moment



100% of rebalances have overlap.

Mean unique stocks: 9.0 / 15. The most common state is 5-7 duplicate slots (75.2% of rebalances), meaning 8-10 unique names. This is a direct consequence of the 130-day density window: stocks in sustained 6-month uptrends don't rotate monthly.

Holdings

Duration	% of Stints
1-2 months	2.3%
3 months (minimum hold)	33.6%
4-6 months	45.4%
7-9 months	16.4%
10-12 months	2.3%

Weight Class	Mean Count	Weight	Portfolio Share
Triple-weight (3x)	1.7 stocks	20.0% each	~34%
Double-weight (2x)	2.6 stocks	13.3% each	~34%
Single-weight (1x)	4.8 stocks	6.7% each	~32%

Metric	Value
Mean unique stocks	9.0 / 15 slots
Median unique stocks	9
Min / Max unique stocks	6 / 13
Mean effective N (1/HHI)	7.6
Mean max single-stock weight	19.3%
Max single-stock weight ever	20.0% (triple-weighted)

Effect on Portfolio (Quarterly Rebalance - 1x15)

Ticker	Short Name	GICS Sector	Density	Weight in Rebalance
CIEN	Ciena Corp	Info Technology	50/130	6.7%
SNDK	Sandisk Corp	Info Technology	42/130	6.7%
JNJ	Johnson & Johnson	Health Care	42/130	6.7%
FDX	FedEx Corp	Industrials	41/130	6.7%
MU	Micron Technology	Info Technology	39/130	6.7%
ROST	Ross Stores	Consumer Disc	37/130	6.7%
MNST	Monster Beverage	Consumer Staples	35/130	6.7%
AMAT	Applied Materials	Info Technology	33/130	6.7%
TER	Teradyne	Info Technology	32/130	6.7%
PH	Parker Hannifin	Industrials	32/130	6.7%
DD	DuPont de Nemours	Materials	31/130	6.7%
CMI	Cummins Inc	Industrials	31/130	6.7%
VTRS	Viatis	Health Care	30/130	6.7%
ALB	Albemarle Corp	Materials	30/130	6.7%

Stocks	Sectors
15 Stocks Held Always	7 Sectors Held

Stress episodes

Episode	Strategy	Benchmark	Diff
2016 correction	-12.3%	-10.8%	-1.5%
2018 Q4 selloff	-19.5%	-18.7%	-0.7%
COVID crash	-38.0%	-33.5%	-4.6%
COVID recovery	+61.8%	+48.2%	+13.6%
2022 tightening	-12.8%	-24.0%	+11.2%
2023 correction	-7.9%	-9.8%	+1.9%
2025 selloff	-14.6%	-9.8%	-4.8%

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