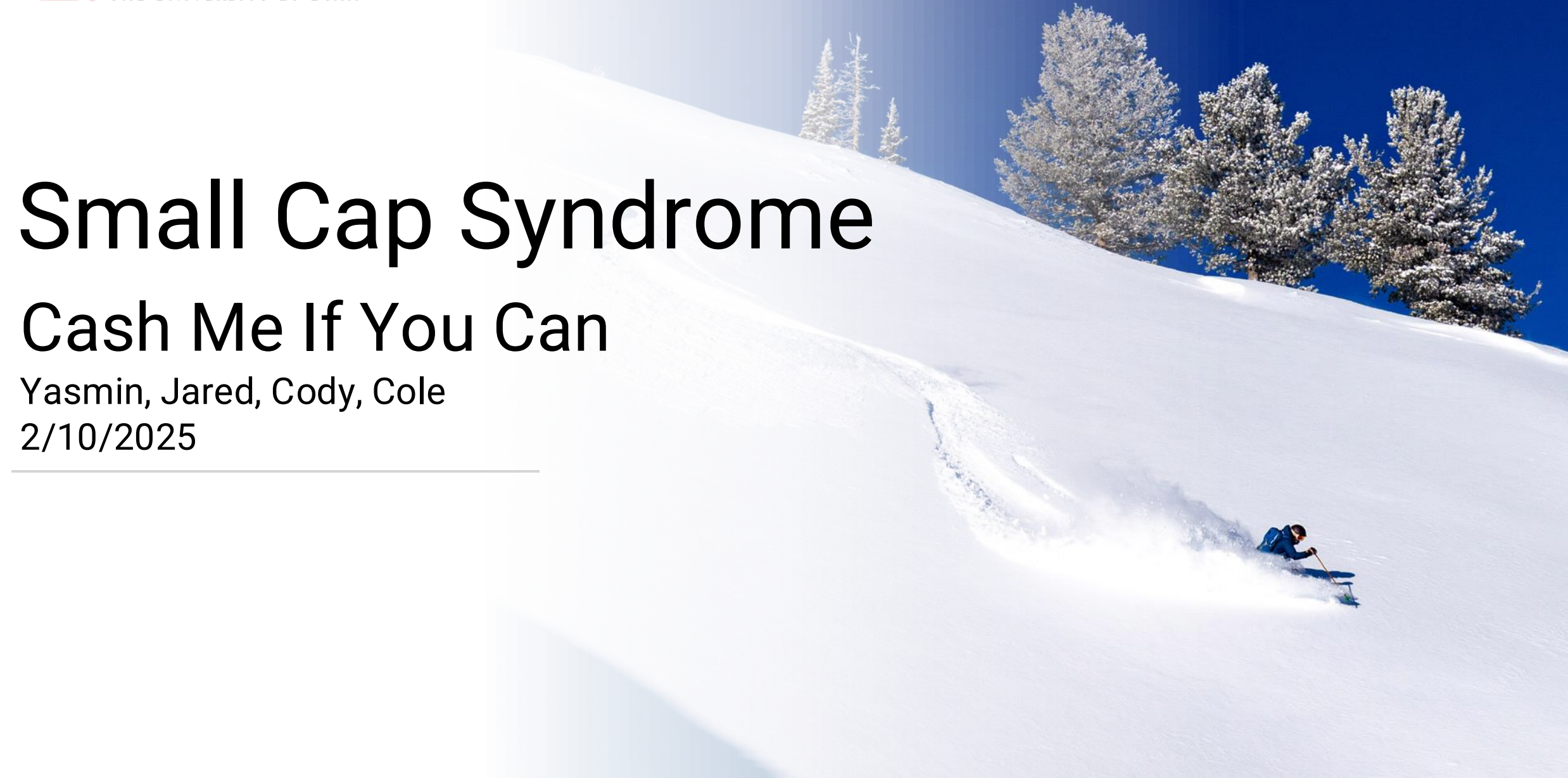


Small Cap Syndrome

Cash Me If You Can

Yasmin, Jared, Cody, Cole
2/10/2025



Executive Summary



Strategy

Systematic: Small- and mid-cap exposure using profitability and price trends to identify stocks with growth potential.



Performance

10-year: Annualized **return of 22%** with a **Sharpe ratio of 0.84** and a beta of 1.16.



Recommendation

Invest \$50,000 in the Small Cap Syndrome Strategy (\$5k per).



Profitable Small/Mid-Caps Perform Better

Targeting Smaller Companies

- **Profitable small caps have significantly outperformed** their unprofitable counterparts.
- Equity portfolios targeting similar risk levels **typically allocate 10-20% to small/mid-caps.**

How MSIF benefits:

- **Diversification:** New exposure to high-growth opportunities in underrepresented sectors.

Profits lead to outperformance



Source: Charles Schwab, Bloomberg, as of 12/6/2024.

*A closer look explains small/mid-cap underperformance—nearly **45% of Russell 2000 stocks** were unprofitable, compared to only **~5% in the S&P 500***



Relative Strength Index (RSI)

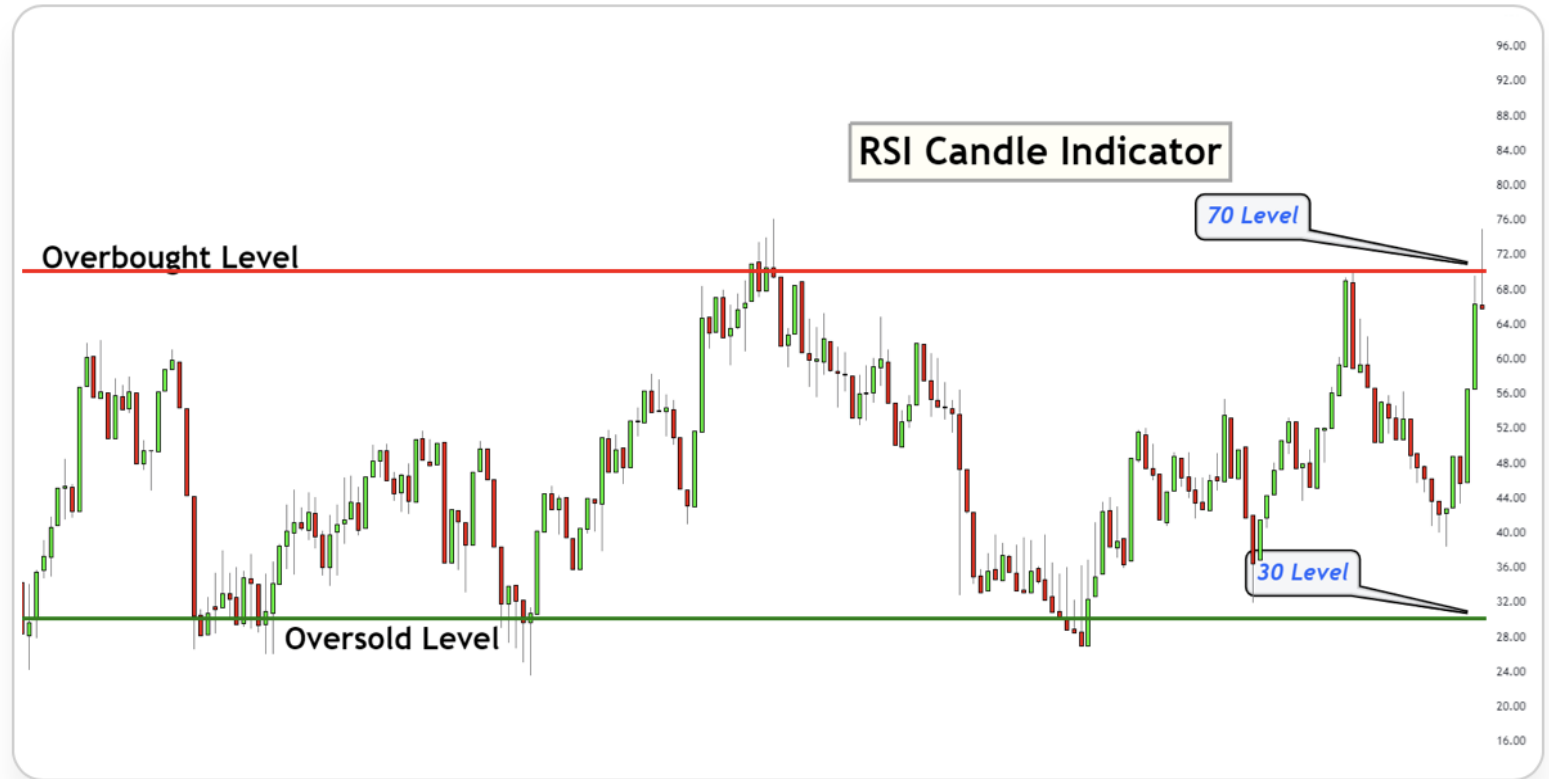
RSI is a trend and momentum tool, not just an overbought/oversold signal

Why RSI?

- Traditional RSI focuses on identifying reversals.
- **True strength**—it's actually a trend-following indicator.

How CMIYC benefit:

- Research shows that **stocks with strong past returns (3-12 months)** tend to continue outperforming.
- RSI can be used to confirm **which stocks are in a sustained uptrend**, rather than just short-term spikes.



"Combining RSI range AND momentum helps identify sustained uptrends and upside potential"



Relative Strength Index (RSI) cont.

Our Focus

- Filters for steady price trends by **avoiding extreme overbought or oversold stocks.**

Limitations

- Research shows **RSI alone doesn't confirm direction**, requires other factors for validation.
- In strong uptrends, **RSI can stay above 70 for extended periods**, signaling **continued strength** rather than an immediate sell signal.



Strategy Design

Description

- Identifying profitable small- and mid-cap stocks with steady long-term growth and stable short-term relative strength.

Origin

- From **Charles Schwab's 2025 U.S. Stocks and Economy Outlook**, which highlights the outperformance of profitable small caps, and **Finding Consistent Trends with Strong Momentum** (Hill, 2019), which shows that RSI ranges and momentum signals can identify sustained uptrends.

Hypothesis

- If a profitable small- or mid-cap stock shows steady growth and RSI remains in an upward trend, it is likely to sustain strong performance.



Backtesting Parameters

Screening Criteria

Parameter	Description	Stock Universe
U.S Exchange	Total Active Equities	14,146 stocks
Market Cap – <i>small & mid</i>	$250\text{M} \geq \text{Market Cap} \leq 10\text{B}$	3,756 stocks
Profitable Companies	TTM NOPAT > 0	1,522 stocks
Exclude Penny Stocks	Price 1 day ago > 5	1,475 stocks



Backtesting Parameters

Strategy Criteria

Parameter	Description	Stock Universe
30 Day RSI	$40 \geq \text{RSI} \leq 70$	1,317 stocks
12 mo. Steady Growth	Top Quartile CAGR	327 stocks



Backtesting Parameters

Sub-Criteria

Parameter	Description	Stock Universe
Current PEG Ratio	$0 \geq \text{PEG} \leq 1.5$	41 stocks
Debt to Equity	$50 \geq \text{D/E Ratio} \leq 100$	11 stocks
1YR. Annualized Sharpe	Top 10 Ranking - <i>backstop</i>	10 stocks



Backtesting Structure

Testing

Criterion	Description
Testing Period	1yr, 3yr, 5y, 10yr
Weighting Scheme*	Equal Weighted
# of Holdings	Capped at 10
Rebalance Freq.*	Quarterly
Benchmark	S&P 500, Russell 2000
# of Backtests	~150 Scenarios

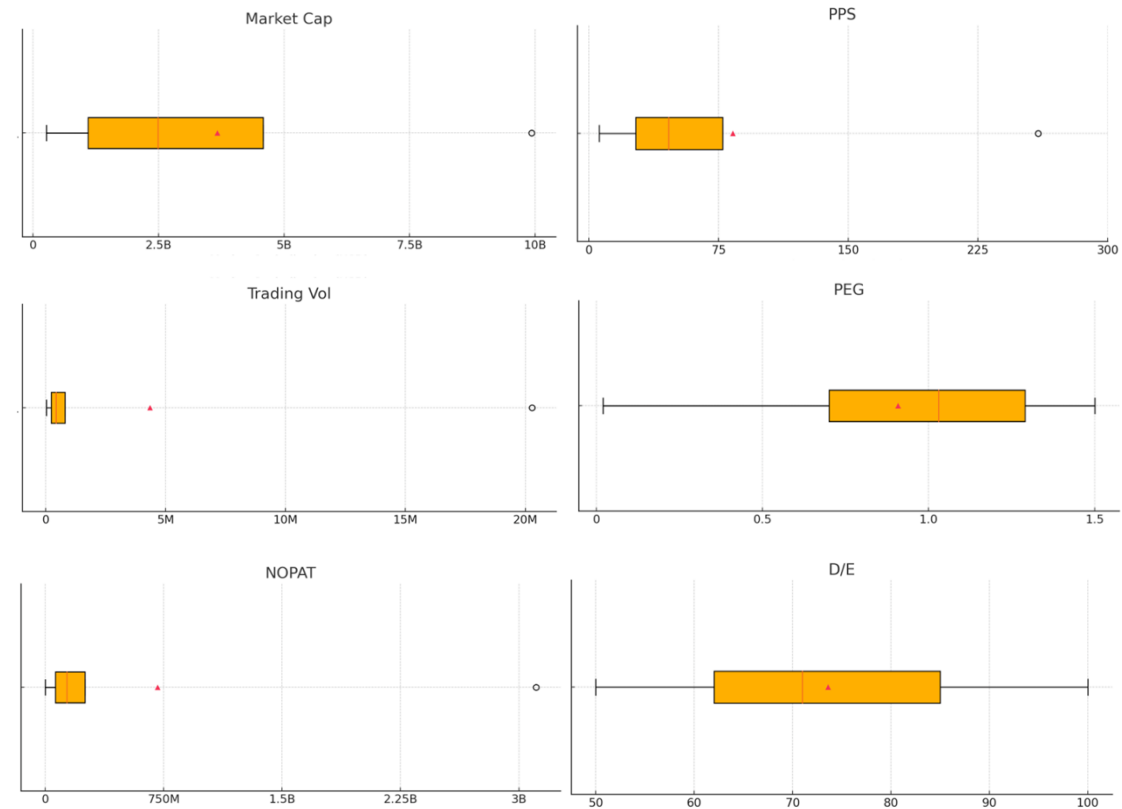


Backtesting Results – Stock Characteristics

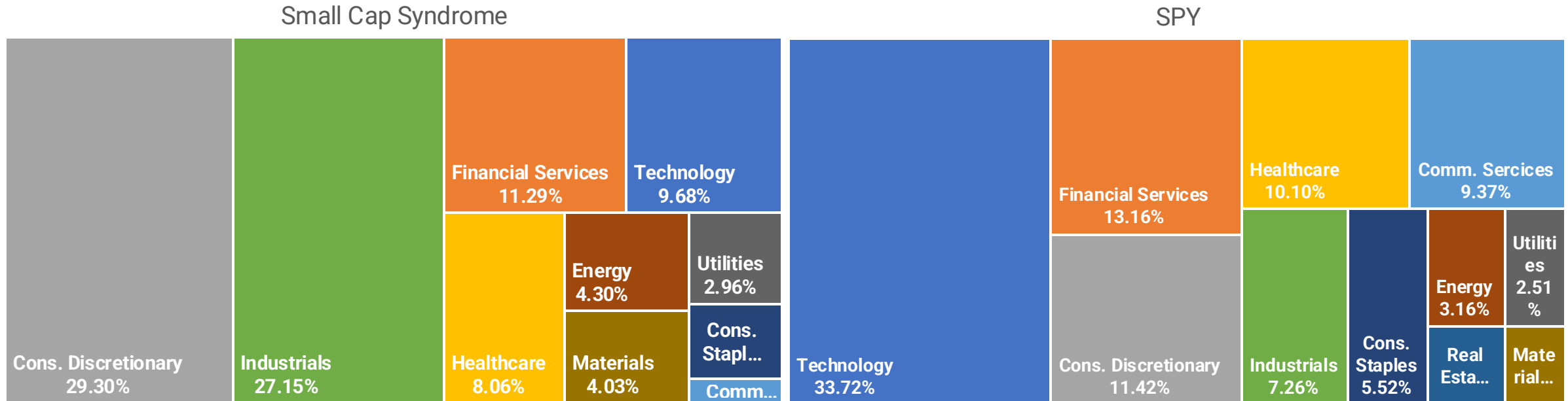
<u>10-Year Analysis</u>	MKT Cap (in Mil \$)	Trade Vol (in thou)	NOPAT (in Mil \$)	PPS	PEG	D/E
Mean	\$ 3,217.0	866.2	\$ 224.5	\$ 57.86	0.96	0.73
Min	\$ 269.1	32.6	\$ 0.60	\$ 5.95	0.02	0.50
25%	\$1,097.4	225.9	\$ 63.6	\$ 27.18	0.70	0.62
Median	\$ 2,490.0	423.5	\$ 135.7	\$ 46.14	1.03	0.71
75%	\$ 4,600.5	803.0	\$ 250.0	\$ 77.45	1.29	0.85
Max	\$ 9,926.4	20,272.3	\$ 3,107.9	\$ 259.87	1.50	1.00

Over 40 Quarters:

- 400 holdings included 224 unique tickers
- 56% (176) appeared only once
- Ticker count: 2ea appear 7x's, 5ea appear 5x's, 10ea appeared 4x's
- Longest consecutive holding of a single ticker was 4 quarters
- **67.8% average rebalance turnover**



Backtesting Results – Sector Analysis



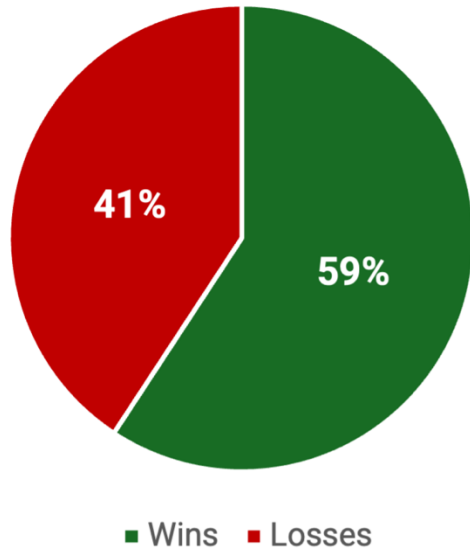
<u>10-Year Analysis</u>	Info. Tech	Cons. Discr.	Energy	Health Care	Industrial	Material	Comm. Services	Financial	Utilities	Cons. Staples	Real Estate
SCS	10%	30%	4%	8%	27%	4%	1%	11%	3%	2%	-
SPY	34%	11%	3%	10%	7%	2%	9%	13%	3%	6%	2%

The 10-year correlation was 0.57, and YTD correlation is 0.72

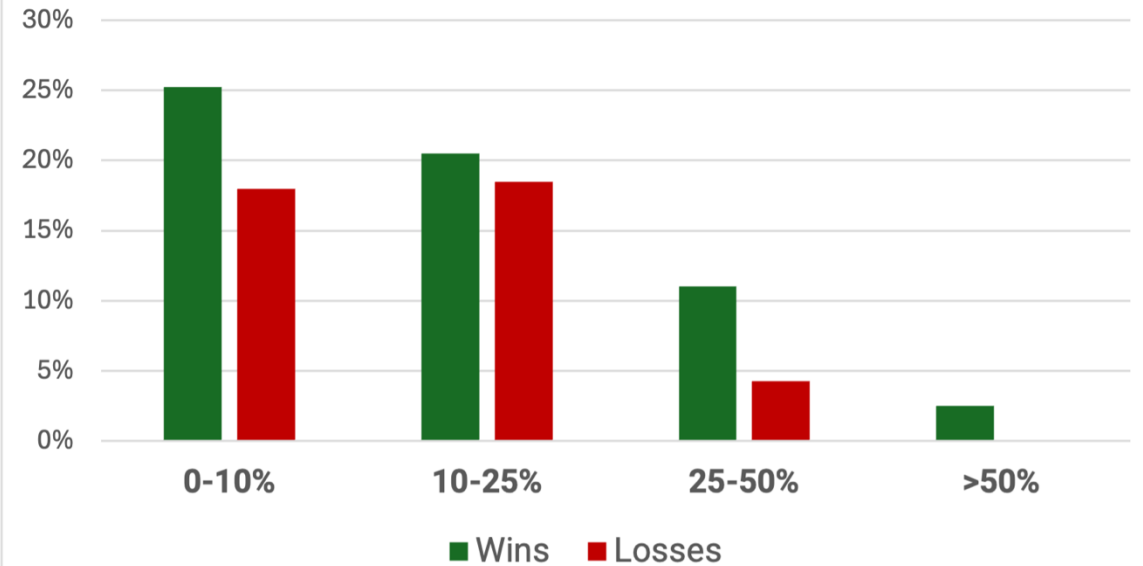


Positive/Negative Returns- Performance

Percentage of Wins and Losses-10 yrs



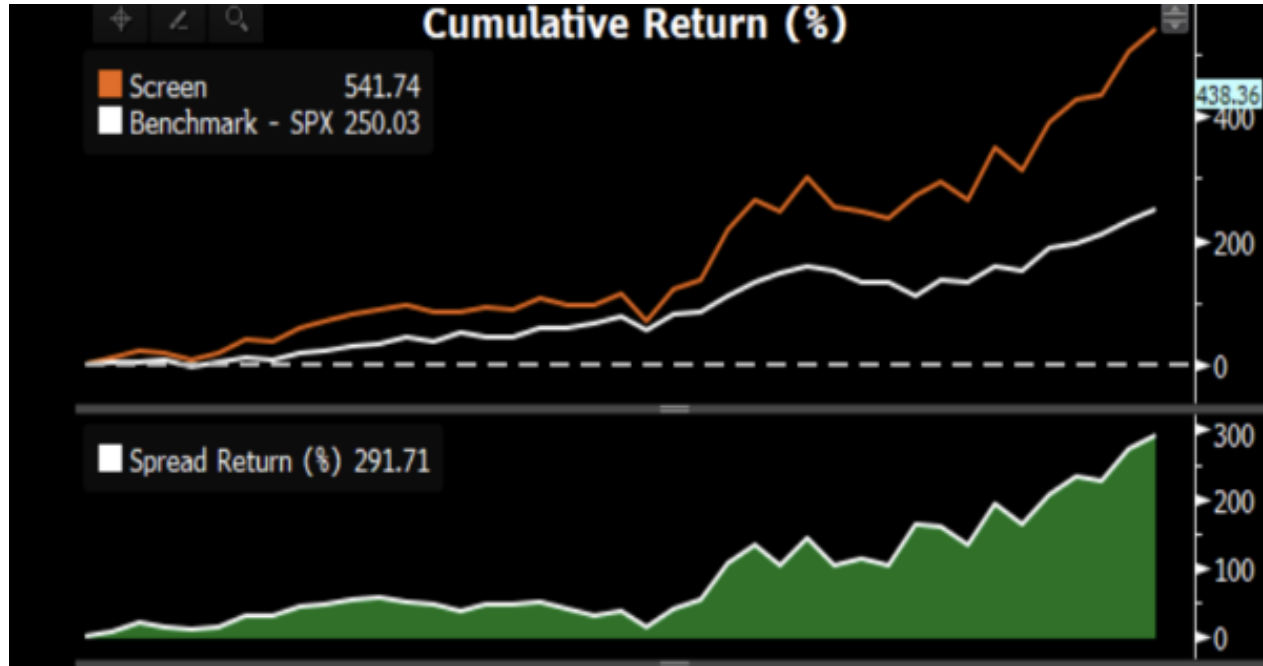
Scale of Wins & Losses- 10 yrs



Max Return (holdings)	Min Return (holdings)	Max Return (stock)	Min Return (stock)
34.3%	-20.9%	135.0%	-46.8%



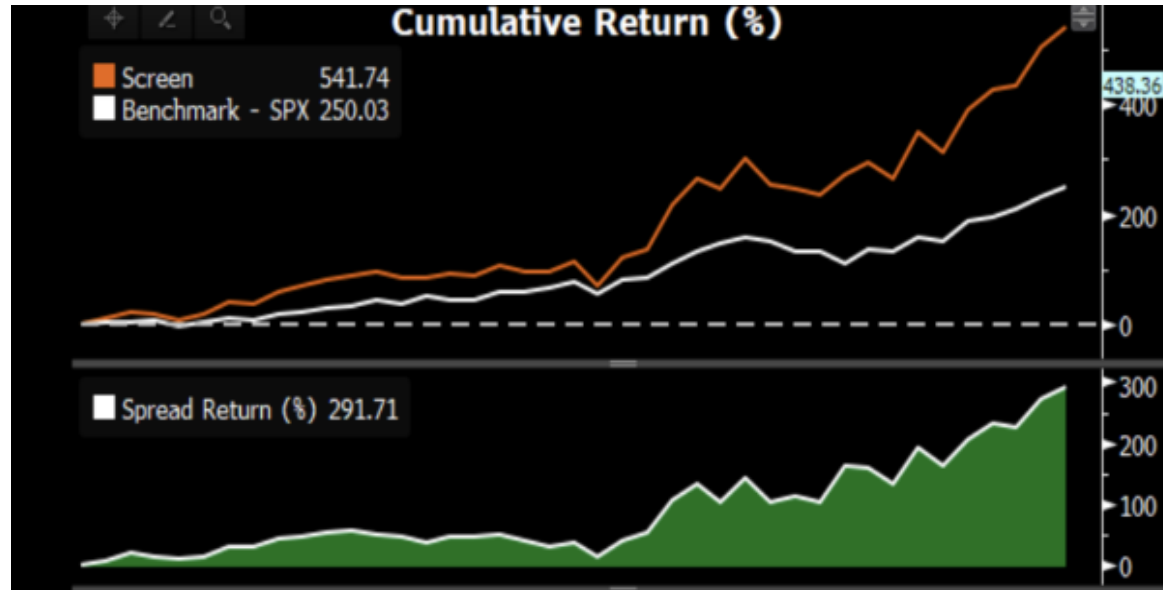
Backtesting Results – Performance



Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024*	Avg
SCS	19.1%	13.3%	39.8%	1.2%	1.3%	22.3%	70.1%	-7.1%	10.7%	46.6%	21.7%
SPY	1.3%	12.0%	21.7%	-4.6%	31.2%	18.4%	28.9%	-18.2%	26.2%	24.9%	14.2%



Backtesting Results – Performance

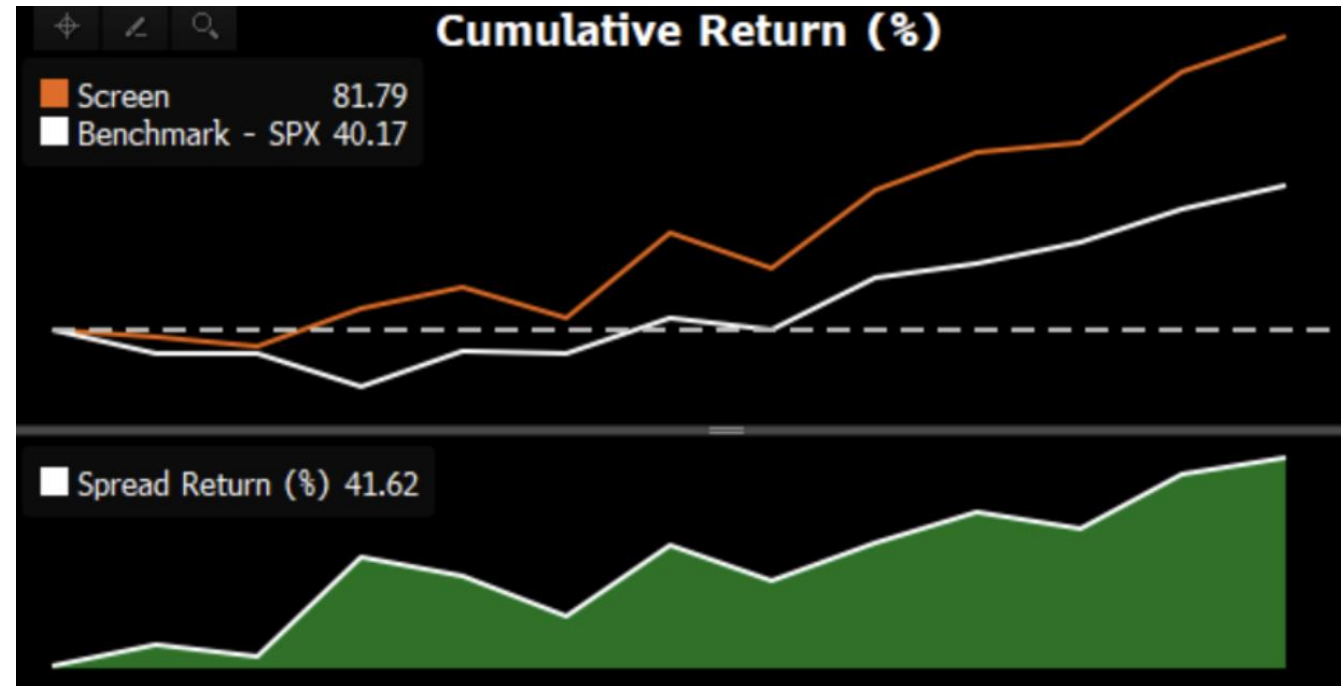


10 yr Risk Free rate assumption: 2%
1 yr Risk Free rate assumption: 4%

Period	Return	α^*	β^*	σ^*	Max DD*	Sharpe*	Treynor*	Idio. Risk*	Info Ratio*
1yr SCS	30.6%	2.1%	1.48	22.9%	N/A	1.16	0.18	13.1%	0.42
1yr SPY	22.5%	-	1.00	12.7%	-8.4%	1.46	0.19	-	-
10yr SCS	21.7%	5.6%	1.16	23.5%	-20.9%	0.84	0.16	15.4%	0.40
10yr SPY	14.2%	-	1.00	15.3%	-38.8%	0.79	0.12	-	-



Backtesting Results – 3 Years Performance



Period	Return (C)	Return (A)	α^*	β^*	σ^*	Max DD*	Sharpe*	Correl
3yr SCS	81.8%	22.0%	+12.4%	1.19	25.0%	-7.8%	0.80	0.70
3yr SPY	40.2%	11.9%	-	1.00	17.6%	-33.7%	0.56	1.00



Recommended Action Plan - Purchases

Name	Ticker	P/E Ratio	Trading Volume (thousands)	Market Cap (billions)	Share Price	# of Shares	\$ Allocated	Weight
ATOUR LIFEST-ADR	ATAT	72.3	814.8	\$ 3.73	\$ 27.11	182	\$ 5,000	10%
COLUMBIA BANKING	COLB	10.3	1,355.6	\$ 5.73	\$ 27.34	180	\$ 5,002	10%
FLOWSERVE CORP	FLS	25.9	1,137.6	\$ 8.14	\$ 61.95	80	\$ 5,028	10%
HEALTH EQUITY INC	HQY	75.3	671.6	\$ 9.56	\$ 110.31	45	\$ 5,018	10%
INTERDIGITAL INC	IDCC	20.0	331.5	\$ 4.61	\$ 181.99	24	\$ 4,905	10%
IMAX CORP	IMAX	49.2	621.2	\$ 1.27	\$ 24.13	197	\$ 5,002	10%
MAGNITE INC	MGNI	75.8	1,571.2	\$ 2.43	\$ 17.24	236	\$ 4,996	10%
CONSTRUCTION P-A	ROAD	70.8	540.3	\$ 4.47	\$ 79.82	58	\$ 5,032	10%
VICTORY CAPITA-A	VCTR	15.8	276.4	\$ 4.23	\$ 65.02	71	\$ 5,011	10%
VSE CORP	VSEC	47.1	237.3	\$ 2.10	\$ 102.15	47	\$ 4,967	10%



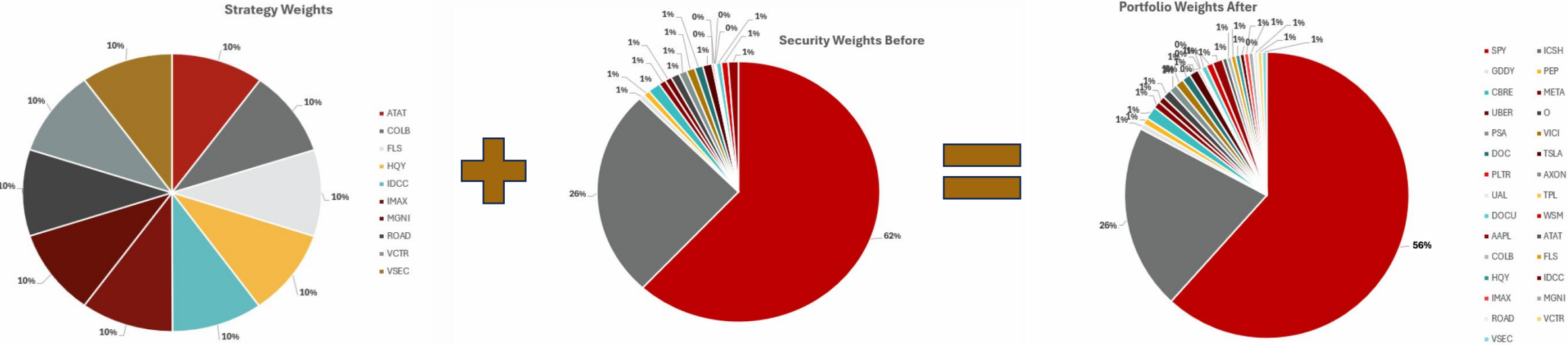
Sell Proposal – Performance Comparison

	SPDR S&P 500 ETF Trust (SPY)	iShares Ultra Short-Term Bond (ICSH)	Small Cap Syndrome
Date Adopted	11/26/24	11/26/24	TBD
Profile	Large Cap	Fixed-Income	Systematic
% of Overall Fund	62.0%	26%	5.1%
\$ Allocated	\$ 609,782	\$ 257,005	\$ 49,962
Return (10 yr)	14.2%	2.2%	21.7%
β (10 yr)	1.00	0.05	1.16
σ (10 yr)	15.3%	0.8%	23.5%
Sharpe (10 yr)	0.79	0.63	0.84

Proposal: Sell off ~\$50,000 of SPY ETF, leave ICSH as is



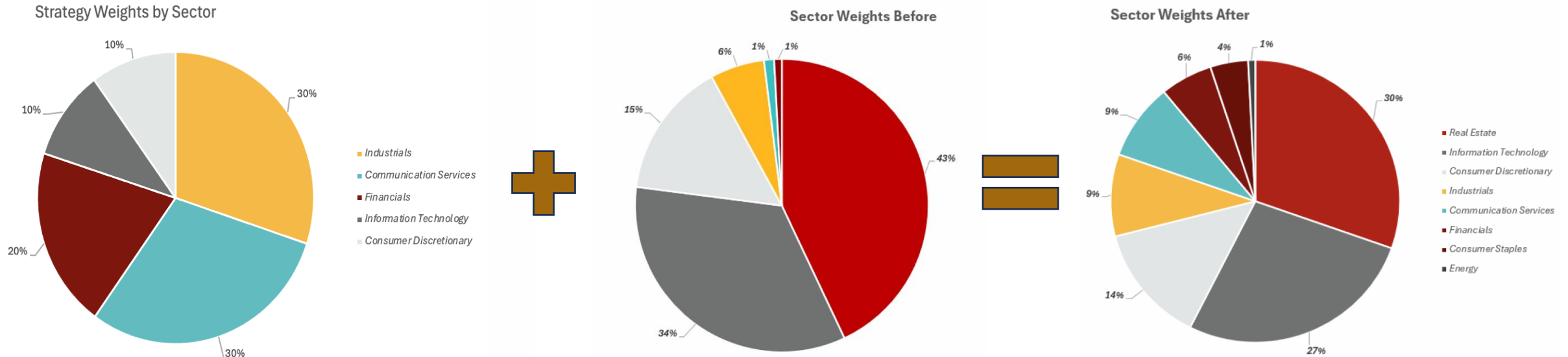
Effect on the Portfolio (Total)



Portfolio	Exp. Return	St. Dev*	Beta*	Sharpe Ratio*	Idio. Risk*
Existing	18.9%	10.6%	0.78	1.35	10.1%
Adjusted	19.3%	11.3%	0.84	1.29	10.8%



Effect on the Portfolio (Sectors)



Sector	Real Estate	Info. Tech	Cons. Descr.	Industrial	Comm. Serv.	Financials	Cons. Staple.	Energy	Industrial	Materials	Utilities
Existing	43%	34%	15%	6%	1%	1%	0%	0%	0%	0%	0%
Adjusted	30%	27%	14%	9%	9%	6%	4%	0%	0%	0%	0%
Chg.	↓ 13%	↓ 7%	↓ 1%	↑ 3%	↑ 8%	↑ 5%	↑ 4%	-	-	-	-



Summary & Recommendation

Strategy Merits



- **Absolute Performance** (*average returns, win rate*)
- **Relative Performance** (*beat SPY 8 out of 10 past years, Sharpe, Max DD*)
- **Quality Screeners** (*not a price momentum strategy*)
- **New Fund Exposure** (*small/mid cap + cons. staples*)



- **Higher beta than target, Volatility**

Action Plan



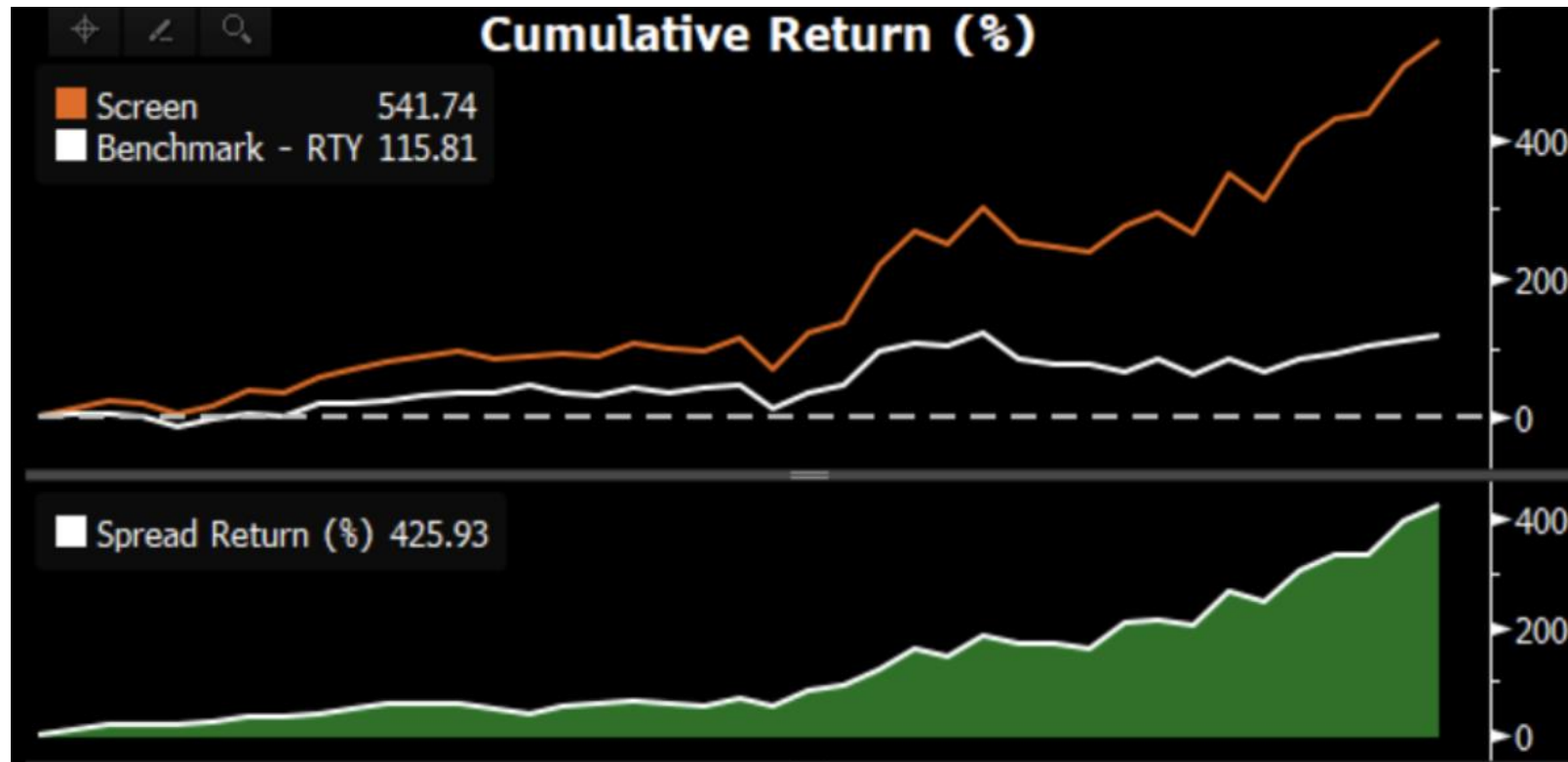
Recommendation: **Invest \$50,000** in Small Cap Syndrome, rebalancing every quarter



Appendix



Strategy Compared to Russell 2000 Index

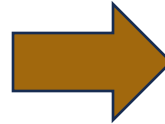


Period	Return (C)	Return (A)	α^*	β^*	σ^*	Max DD*	Sharpe*	Correl
10yr SCS	541.7%	21.7%	+5.6%	1.16	23.5%	-20.9%	0.84	0.83
10yr IWM	115.8%	7.8%	-	1.00	20.7%	-33.8%	0.38	1.00



Effect on the Portfolio (Active Holdings)

Name	Ticker	\$ Allocated	% Allocated
CBRE GROUP, INC.	CBRE	\$ 14,277	1.45%
APPLE INC.	AAPL	\$ 11,382	1.15%
TESLA, INC.	TSLA	\$ 10,487	1.06%
REALTY INCOME CORPORATION	O	\$ 9,742	0.99%
VICI PROPERTIES INC.	VICI	\$ 9,485	0.96%
HEALTHPEAK PROPERTIES, INC.	DOC	\$ 9,334	0.95%
PUBLIC STORAGE.	PSA	\$ 9,078	0.92%
Meta Platforms, Inc.	META	\$ 7,860	0.80%
WILLIAMS-SONOMA, INC.	WSM	\$ 7,668	0.78%
UBER TECHNOLOGIES, INC.	UBER	\$ 7,460	0.76%
PEPSICO, INC.	PEP	\$ 7,229	0.73%
GODADDY INC.	GDDY	\$ 6,342	0.64%
DOCUSIGN, INC.	DOCU	\$ 5,881	0.60%
PALANTIR TECHNOLOGIES INC.	PLTR	\$ 2,217	0.22%
TEXAS PACIFIC LAND CORPORATION	TPL	\$ 1,345	0.14%
AXON ENTERPRISE, INC.	AXON	\$ 679	0.07%
UNITED AIRLINES HOLDINGS, INC.	UAL	\$ 327	0.03%



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GODADDY INC.	GDDY	\$ 6,342	0.64%
DOCUSIGN, INC.	DOCU	\$ 5,881	0.60%
CONSTRUCTION PARTNERS, INC.	ROAD	\$ 5,032	0.51%
FLOWERVE CORPORAION (XNYS:FLS)	FLS	\$ 5,028	0.51%
HEALTHQUITY, INC. (XNAS:HQY)	HQY	\$ 5,018	0.51%
VICTORY CAPITAL HOLDINGS, INC. (XNAS:VCTR)	VCTR	\$ 5,011	0.51%
COLUMBIA BANKING SYSTEM, INC. (XNAS:COLB)	COLB	\$ 5,002	0.51%
IMAX CORPORATION (XNYS:IMAX)	IMAX	\$ 5,002	0.51%
Atour Lifestyle Holdings Limited (XNAS:ATAT)	ATAT	\$ 5,000	0.51%
MAGNITE, INC. (XNAS:MGNI)	MGNI	\$ 4,996	0.51%
VSE CORPORATION (XNAS:VSEC)	VSEC	\$ 4,967	0.50%
InterDigital, Inc. (XNAS:IDCC)	IDCC	\$ 4,905	0.50%
PALANTIR TECHNOLOGIES INC. (XNAS:PLTR)	PLTR	\$ 2,217	0.22%
TEXAS PACIFIC LAND CORPORATION (XNYS:TPL)	TPL	\$ 1,345	0.14%
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UNITED AIRLINES HOLDINGS, INC. (XNAS:UAL)	UAL	\$ 327	0.03%



Key Terms

Performance Metrics

- **Alpha (α):** Measures a strategy's performance relative to a benchmark. Positive alpha indicates outperformance.
- **Sharpe Ratio:** Risk-adjusted return based on total risk (Return - Risk-Free Rate) / Standard Deviation.
- **Sortino Ratio:** Similar to Sharpe, but only considers downside risk, ignoring positive volatility.
- **Information Ratio:** Measures returns above a benchmark relative to the tracking error.
- **Treynor Ratio:** Risk-adjusted performance based on beta (Return - Risk-Free Rate) / Beta.

Parameters

- **Market Cap:** Total value of a company's shares (Share Price \times Total Shares Outstanding).
- **P/E Ratio:** Price-to-Earnings Ratio. Measures how much investors pay per dollar of earnings.
- **Rebalance:** Adjusting portfolio holdings to match the desired allocation (e.g., quarterly).

Risk Measures

- **Beta (β):** Measures sensitivity to market movements. A beta of 1 means the stock moves with the market.
- **Idiosyncratic Risk:** Risk unique to a specific asset, not due to market movements (e.g., company-specific events).
- **Systematic Risk:** Market-wide risk that affects all securities (e.g., interest rate changes).
- **Standard Deviation (σ):** Measures volatility by showing how much returns deviate from the average.
- **Max Drawdown:** The maximum observed loss from peak to trough during a specific period.
- **SML (Small Minus Large):** Measures the excess return of small-cap stocks over large-cap stocks.
- **HMB (High Minus Low):** Measures the excess return of high book-to-market stocks over low book-to-market stocks.

