

## QES US Healthcare v2.0 – Risk Model Factsheet

Wolfe Research's Luo's QES team has been top-ranked in Quantitative Research, Portfolio Strategy, Economics, Accounting & Tax Policy, and ESG categories in the Institutional Investor magazine's research surveys over the past decade. We leverage our 300+ risk factor library, in-house risk model engine, and expertise in portfolio construction to deliver innovations in risk model design. QES risk models offer next generation style factors, enhanced stock exposures to styles, expanded model coverage, holdings-based factor covariances, alignment of factor portfolios & returns, and intelligent initial estimates of idiosyncratic risk. The QES risk model suite is designed to be more intuitive than conventional models for front-office decision-makers including PMs, CIOs, risk managers, and traders.

This Healthcare risk model uses our domain knowledge in the sector to offer more systematic explanatory power for specialists. We suggest that sector specialists consider risk through both the sector and broad market lenses.

### Model Settings

Item	Description
<b>Risk Estimation Universe</b>	US All-Cap Healthcare Equities
<b>Model History</b>	2007 onwards
<b>Security Coverage</b>	40,000+ securities
<b>Investment Horizon</b>	Medium-term
<b>Variance Half-Life</b>	84 trading days
<b>Covariance Half-Life</b>	252 trading days
<b>Style Exposures</b>	75% regression beta + 25% z-score

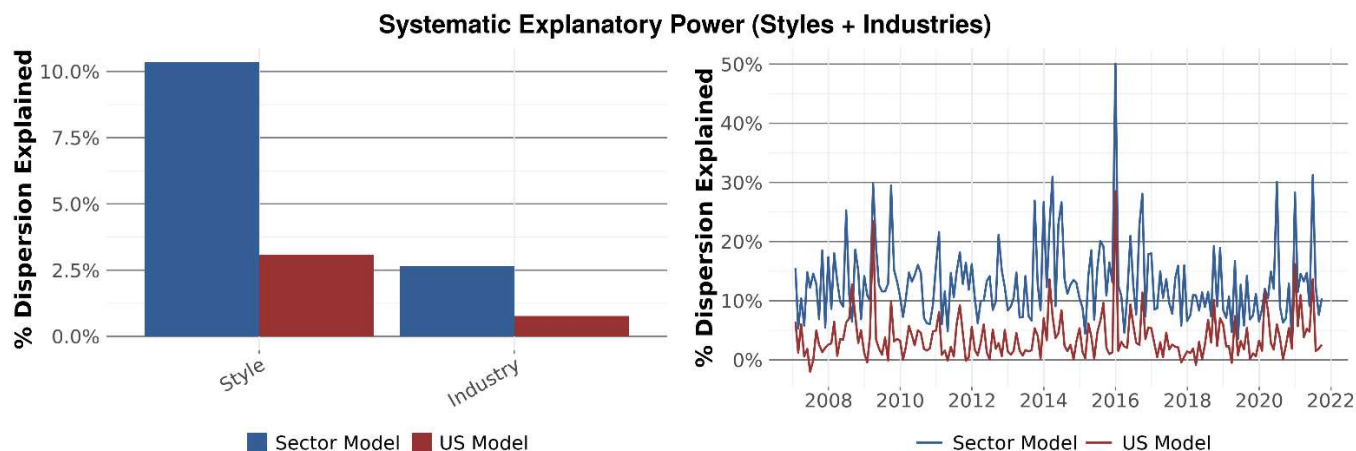
### Factors & Descriptions

QES Factor Name	Signal Description
<b>Earnings Yield</b>	Next 12-month median consensus EPS divided by current share price.
<b>Sales-to-EV</b>	Ratio of last 12-month sales to sum of net debt, preferred shares, market cap, noncontrolling interest.
<b>Growth</b>	Median consensus sales growth expectations for FY2 versus FY1.
<b>Revisions</b>	Combination of 3-month changes in mean consensus EPS and Sales over the next 12-months.
<b>ROIC</b>	Ratio of trailing 12-month income before extraordinary items to invested capital.
<b>Gross Margin</b>	Ratio of trailing 12-month gross profit (sales minus cost-of-goods sold) to sales.
<b>Interest Coverage</b>	Ratio of trailing 12-month EBIT to interest expense.
<b>Leverage</b>	Combination of debt-to-equity and debt-to-total capital at current market value.
<b>Total Yield</b>	Ratio of total value of dividends and buybacks less issuance over trailing 12-months to market-cap.
<b>Momentum</b>	Total return of the past 12-months excluding the most recent 1-month.
<b>Volatility</b>	Realized volatility, based on daily returns over the past 12-months.
<b>Size</b>	Market capitalization, common shares outstanding multiplied by the current share price.
<b>Liquidity</b>	Past 3-month average dollar volume divided by average market capitalization.
<b>R&amp;D-to-Sales</b>	Ratio of R&D expense to total sales over trailing 12-months.
<b>HF Crowding</b>	Combination of hedge fund intensity (% of float) and level (market value) based on 13F filings.
<b>Short Interest</b>	Ratio of shares borrowed for shorting to inventory available for lending.
<b>ETF Flow</b>	Change in ownership (as % of float) by US-listed equity ETFs over the prior 3 months.
<b>QES Industries</b>	Binary one or zero values identifying each stock's QES Industry classification.

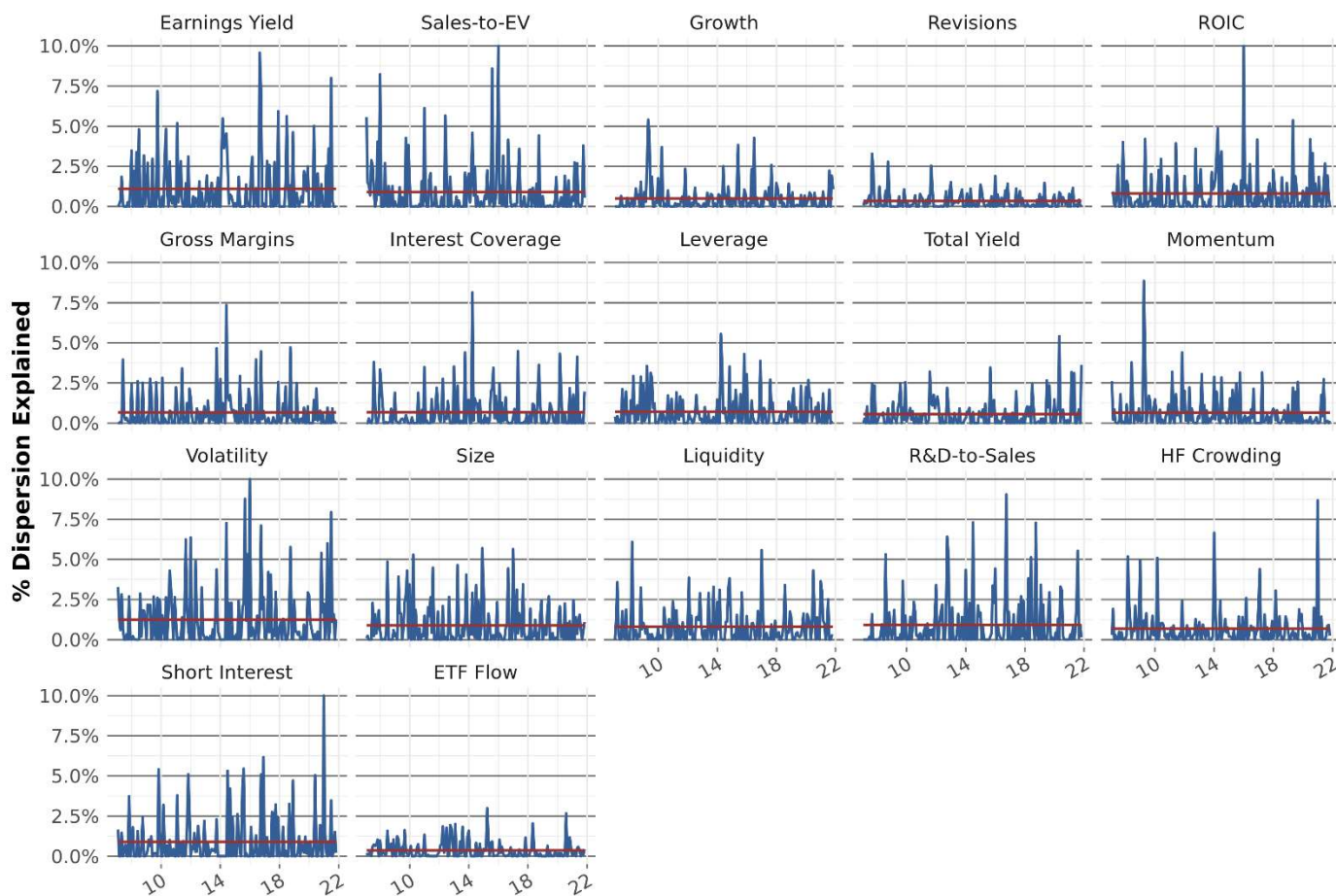
Sources: Wolfe Research Luo's QES. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

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## Explanatory Power for Opportunity Set



Sources: Wolfe Research Luo's QES, Bloomberg Finance LLP, FactSet, FTSE Russell, MSCI, Refinitiv, S&P Global. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

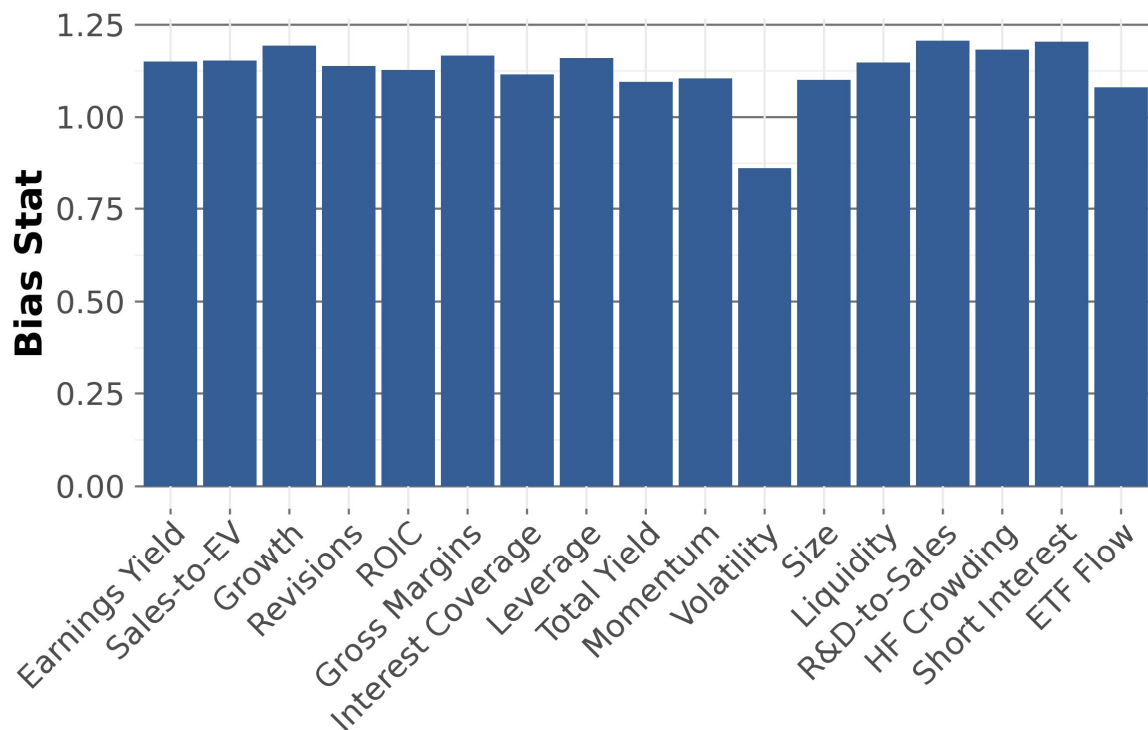


Sources: Wolfe Research Luo's QES, Bloomberg Finance LLP, FactSet, FTSE Russell, MSCI, Refinitiv, S&P Global. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

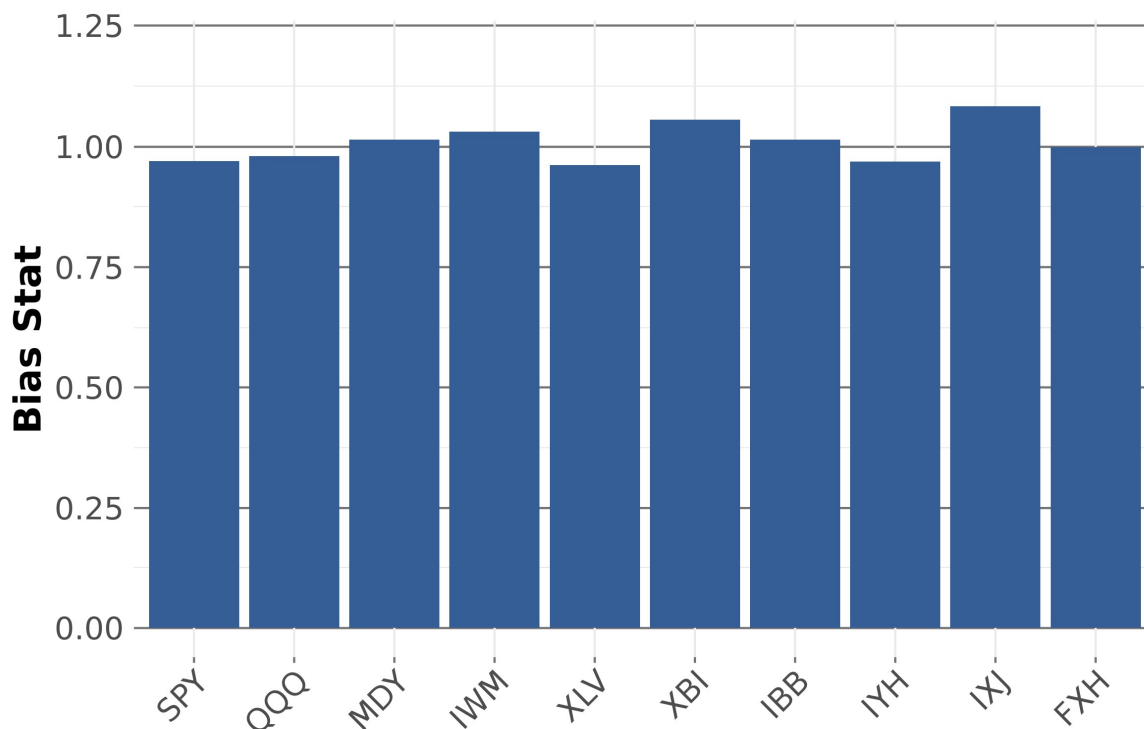
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## Bias Statistics

\* Bias Stats for Style FMPs



\* Bias Stats for ETFs

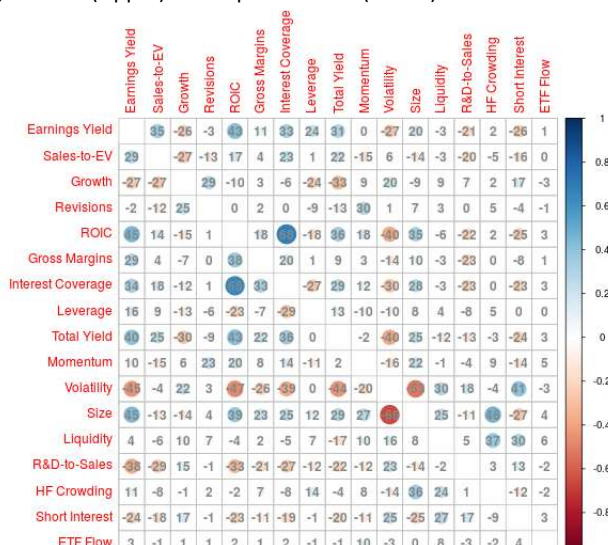


Sources: Wolfe Research Luo's QES, Bloomberg Finance LLP, FactSet, FTSE Russell, MSCI, Refinitiv, S&P Global. Dec 1, 2021. Past performance results do not guarantee similar results in the future. Note: ARKK bias stat only covers the time period from March 2020 to present.

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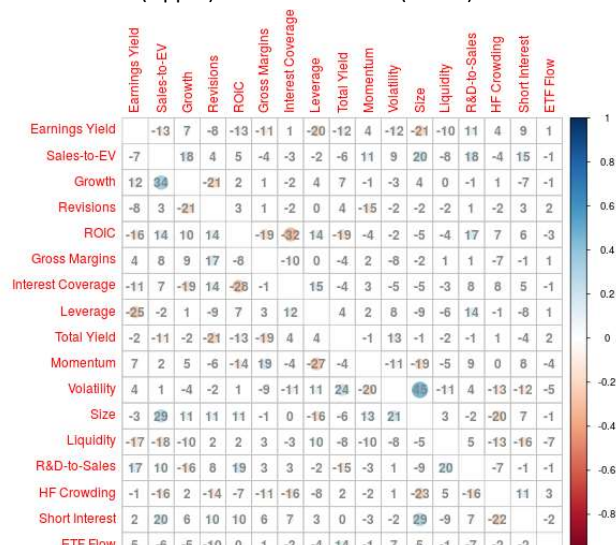
## Factor Correlations

\*Signal Rank (Upper) and Exposure Rank (Lower)



## Portfolio Optimization Tests

\* FMPs Ex-Ante (Upper) and FMPs Ex-Post (Lower)



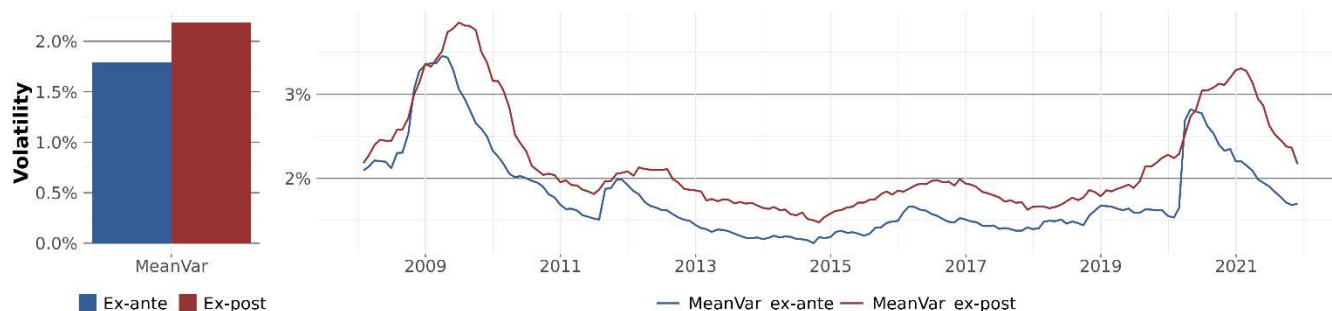
Sources: Wolfe Research Luo's QES, Bloomberg Finance LLP, FactSet, FTSE Russell, MSCI, Refinitiv, S&P Global. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

## Portfolio Optimization Tests

\*Minimum Variance



\*Mean-Variance

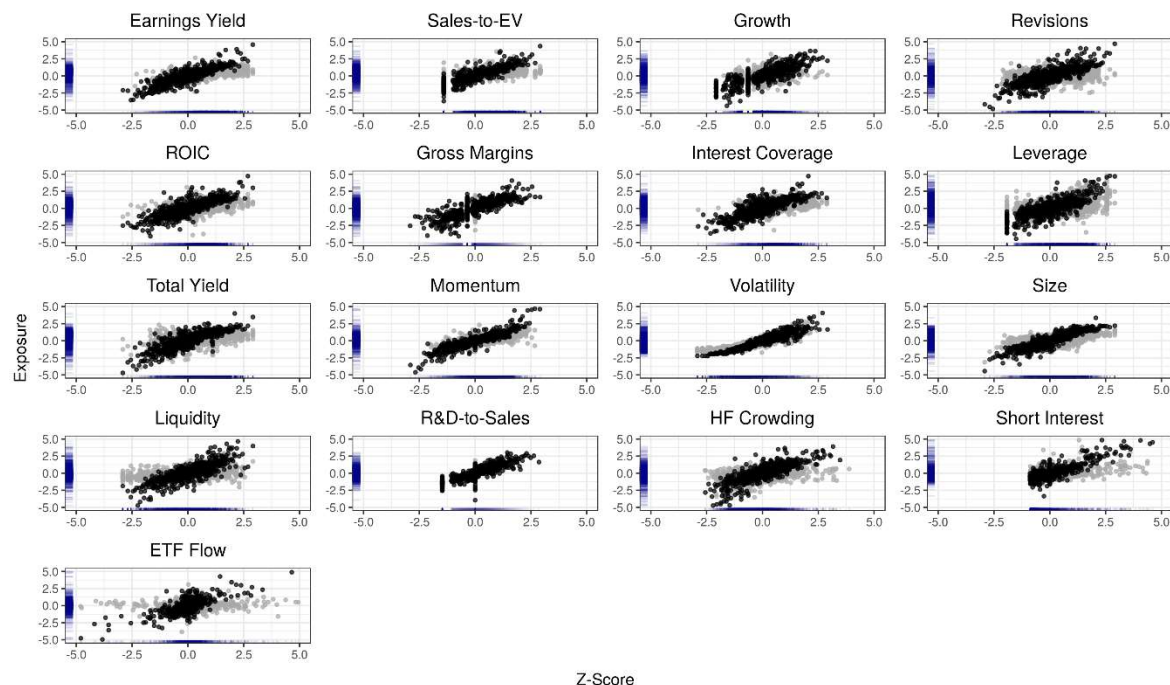


Sources: Wolfe Research Luo's QES, Bloomberg Finance LLP, FactSet, FTSE Russell, MSCI, Refinitiv, S&P Global. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

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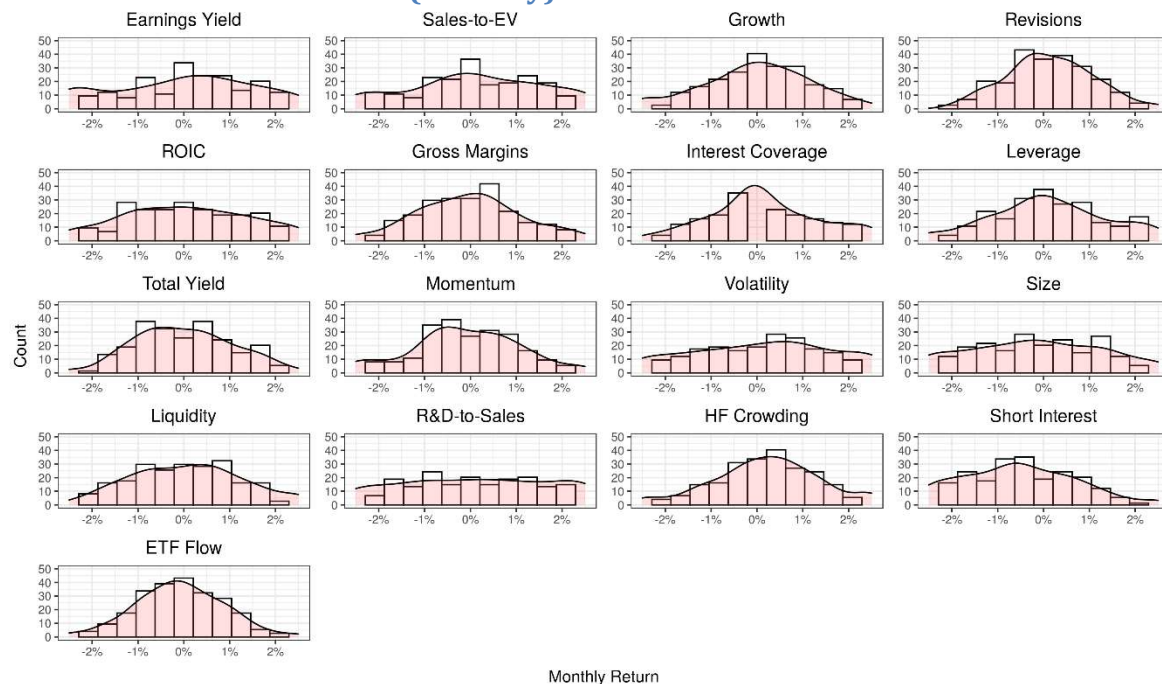
## Exposure Distribution (Current)

\*In Sector (Black) and In Universe (Grey)



Sources: Wolfe Research Luo's QES, Bloomberg Finance LLP, FactSet, FTSE Russell, MSCI, Refinitiv, S&P Global. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

## Factor Return Distribution (Monthly)



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