Behavioral Archetypes in Market Response

One-Page Summary

Key Questions Addressed

Theme	Question
Domain-Specific Sentiment	Are bespoke Airlines industry dictionaries required to evaluate news sentiment, and do they outperform standard NLP models like FinBERT?
Investor Archetypes	Are there identifiable investor archetypes where certain news categories elicit stronger responses from specific archetypes?

Conceptual Ideas Proposed

- A **four-lever sentiment scoring system**, combining *Actor*, *Lever*, *Magnitude*, and *Novelty*, with custom rules for each. Overall sentiment is defined as their product, enabling structured, interpretable signals tailored to the Airlines domain.
- **Behavioral archetype modeling** using three investor types — *Anxious*, *Mean Reverting*, and *Patient* — each linked to distinct temporal response kernels such as spike and Gaussian functions. This setup captures differentiated reactions to market news.

Key Results

- **Structured sentiment scoring matches or exceeds standard NLP models:** Regressions on same-day excess returns for DAL show *modest but typical explanatory power* for news–returns relationships. For *Fuel and Oil Prices* news, both our method and FinBERT yield $R^2 \approx 0.05$, with a lower p-value for our model (0.045 vs. 0.068). For *Company News*, our model achieves higher R^2 (0.05 vs. 0.0021) and a lower p-value (0.0220 vs. 0.64).
- **Behavioral archetype tuning improves clarity:** Tuning the *spike kernel* for the *Anxious* archetype gives a p-value of 0.034 for *Fuel and Oil Prices* news, versus 0.13 for *Patient*. Alternative kernels show near-significant results (e.g., p = 0.084 for *Safety* news), indicating further tuning potential and supporting interpretability.

Illustrative Tables

Model	Horizon	R^2	p-value	Coefficient
Structured Score	t	0.0508	0.0220	0.0120
	$t+1$	0.0192	0.1653	0.0074
	$t+1+2$	0.0163	0.2038	0.0066
FinBERT Score	t	0.0021	0.6454	0.0028
	$t+1$	0.0196	0.1606	-0.0084
	$t+1+2$	0.0131	0.2537	0.0068

Table 1: Regression results for Company news headlines. Structured scores show stronger signal at t; FinBERT performance is weak overall.

Theme	Archetype	Baseline Spike Kernel		Sharp Spike Kernel	
		Coef.	p-value	Coef.	p-value
Fuel and Oil	Anxious	-0.0358	0.051	**-0.0320**	0.034
	Patient	0.0732	0.149	0.0689	0.130
	Momentum	-0.0468	0.130	-0.0471	0.107
Company	Anxious	0.0119	0.259	0.0093	0.282
	Patient	-0.0063	0.849	-0.0008	0.978
	Momentum	0.0056	0.788	0.0032	0.871

Table 2: Comparison of archetype regression coefficients under baseline vs. sharp spike kernel. Sharpening the Anxious kernel improves significance and interpretability for Fuel and Oil Prices, suggesting immediate market reaction is key in that theme.