Smarter Trading Strategies Based on Market Sentiment

Our analysis of trader performance across different market sentiment conditions (Fear, Greed, Extreme Greed, Neutral) revealed clear behavioral patterns. These patterns can be transformed into practical trading strategies to enhance profitability and reduce risk.

1. Capitalize on Fearful Markets

- **Finding:** Fear days exhibited the highest trading activity (**133,871 trades**) and the strongest profitability (**average PnL ≈ 50**, total PnL ≈ 6.7M USD).
- **Strategy:** Increase trading frequency during Fear or Extreme Fear conditions, as markets present more predictable opportunities.
- **Action Rule:** If the Fear & Greed Index ≤ 30 → **scale up trading positions** and execute more trades.

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2. Avoid Overconfidence During Greed

- **Finding:** Greed days showed highly variable profitability, with inconsistent results and unstable trade sizes (ranging up to 10,000+ USD).
- **Strategy:** Maintain discipline by standardizing trade sizes. Overconfident large trades during Greed conditions reduce efficiency.
- **Action Rule:** If sentiment = Greed → **stick to smaller, consistent trade sizes** and use strict stop-losses.

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3. Exercise Caution in Extreme Greed

- **Finding:** Despite optimistic sentiment, Extreme Greed periods had **fewer trades (~7,000)** and lower average profitability (~25). Traders tend to hold back, suggesting limited opportunities.
- **Strategy:** Avoid chasing euphoric markets. Focus only on high-conviction setups where risk/reward is clearly favorable.
- **Action Rule:** If sentiment index ≥ 80 (Extreme Greed) → **trade selectively with smaller position sizes**.

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4. Reduce Exposure in Neutral Markets

- **Finding:** Neutral days had the **lowest profitability (avg PnL ≈ 22)**, lowest average trade size (~3,000 USD), and minimal engagement.
- **Strategy:** Neutral markets do not offer strong trading signals. Reducing exposure prevents unnecessary losses.
- **Action Rule:** If sentiment = Neutral → **avoid trading or maintain only minimal exposure**.

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5. Balance Risk and Return with Volatility Filters

- **Finding:** Profitability (`pnl_mean`) is strongly correlated with volatility (`pnl_std`, correlation = 0.94). Higher returns come only with higher risk.
- **Strategy:** Monitor volatility and scale trade sizes accordingly. Profits are maximized when risk is controlled.
- **Action Rule:** On high-volatility days → **tighten stop-losses and reduce position sizes** to manage risk.

Summary of Strategies

- **Fear = Opportunity → Trade more, capture volatility.**
- **Greed = Overconfidence → Trade smaller, manage risk.**
- **Extreme Greed = Caution → Trade selectively.**
- **Neutral = Apathy → Stay out or reduce exposure.**

By aligning trading strategies with prevailing market sentiment, traders can achieve smarter, more disciplined performance that balances opportunity with risk management.

Trading Performance vs Market Sentiment

Exploring Hidden Patterns & Smarter Trading Strategies.

Executive Summary

We merged daily trading performance with market sentiment to uncover how trade behavior changes under **Fear, Greed, Extreme Greed, and Neutral** conditions.

Key takeaways:

- **Fear days**: highest activity and **best average profitability**.
- **Greed**: inconsistent results; bigger variation in trade sizes and returns.
- **Extreme Greed**: fewer opportunities; traders become cautious.
- **Neutral**: lowest opportunity; weak profitability and participation.

These insights translate into **actionable, sentiment-aware trading rules** that improve discipline and risk control.

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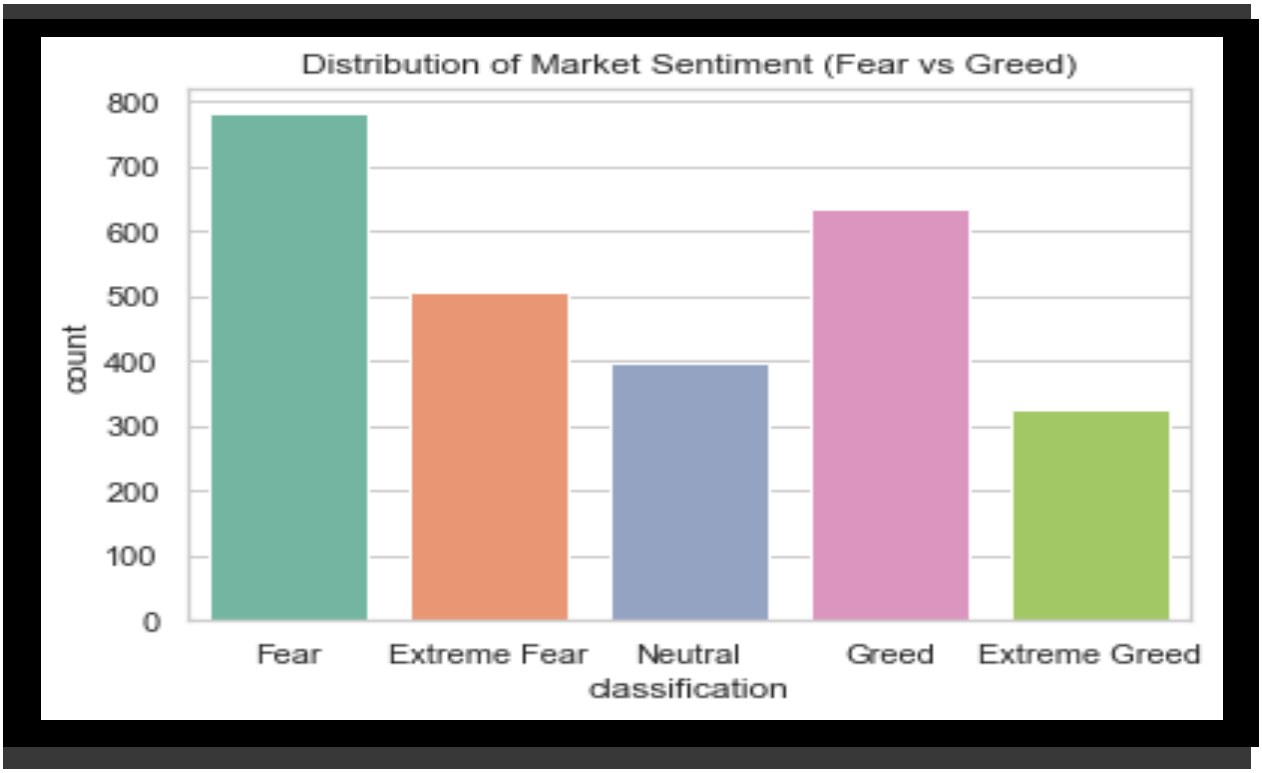
1) Data & Methodology (Brief)

- **Datasets**:
  - `sentiment_df` (daily sentiment: Fear/Greed classes and scores)
  - `trader_df` (transaction-level trades: PnL, size, price, fees, etc.)
- **Prep**: Convert timestamps → daily `Date`; aggregate `trader_df` to daily metrics:
  - `pnl_mean`, `pnl_sum`, `pnl_std`, `avg_size_usd`, `volume_usd_sum`, `num_trades`, `unique_traders`, `unique_assets`
- **Merge**: `merged_df = daily_trader ⋈ sentiment_df` on `Date`
- **Analysis**: Groupwise stats by sentiment, correlations, and diagnostic charts.

2) Sentiment Landscape

2.1 Distribution of Market Sentiment



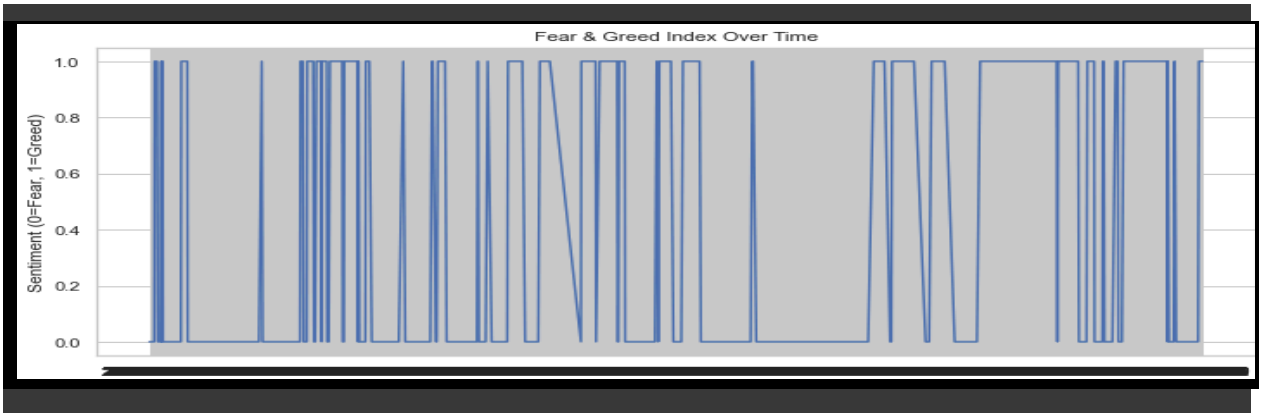
What this shows
Days classified by sentiment (Fear, Greed, Extreme Greed, Neutral).

What we looked for.
Balance vs. skew—does the market spend more time fearful or greedy?

What we found

- **Fear** days are most common in the dataset; **Extreme Greed** is rare.
- Skew toward Fear implies traders spend most time in defensive/bearish environments.

2.2 Sentiment Trend Over Time



What this shows
Daily oscillation between Fear (0) and Greed (1) across the timeline.

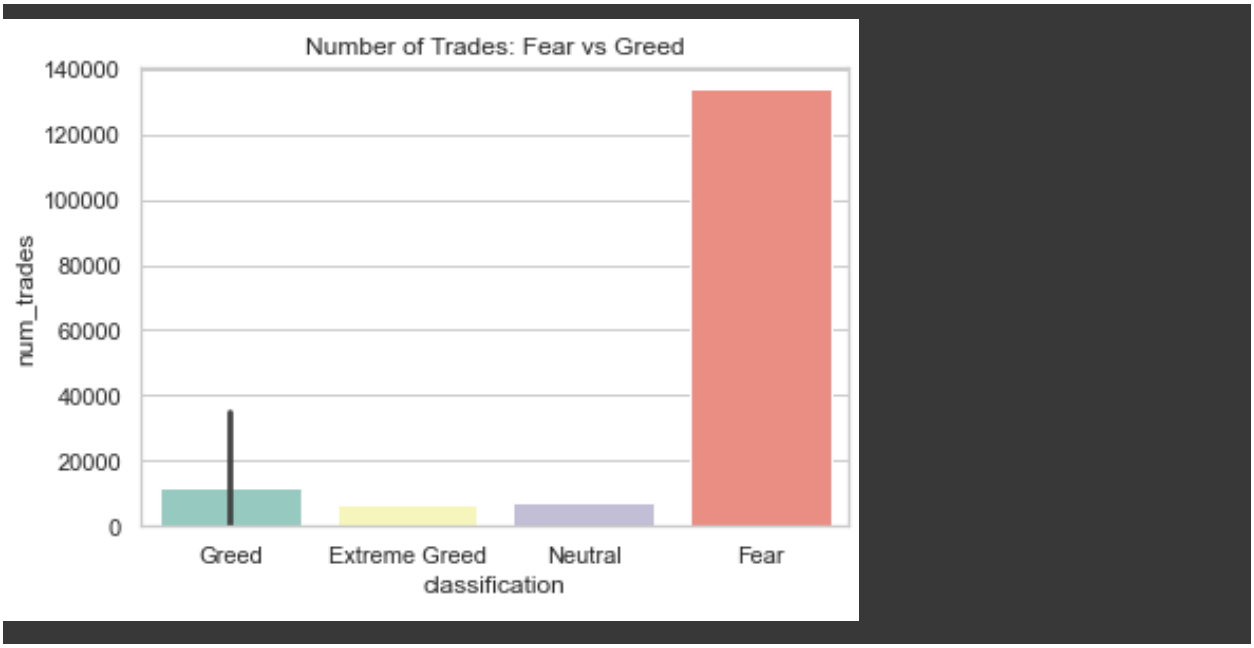
What we looked for
Persistence vs. flip-flops—do long streaks exist or is sentiment volatile day-to-day?

What we found

- Frequent switches between Fear and Greed → **sentiment is volatile**.
- This suggests a backdrop where **short-term positioning** and **risk management** matter.

3) Trading Behavior by Sentiment

3.1 Number of Trades by Sentiment



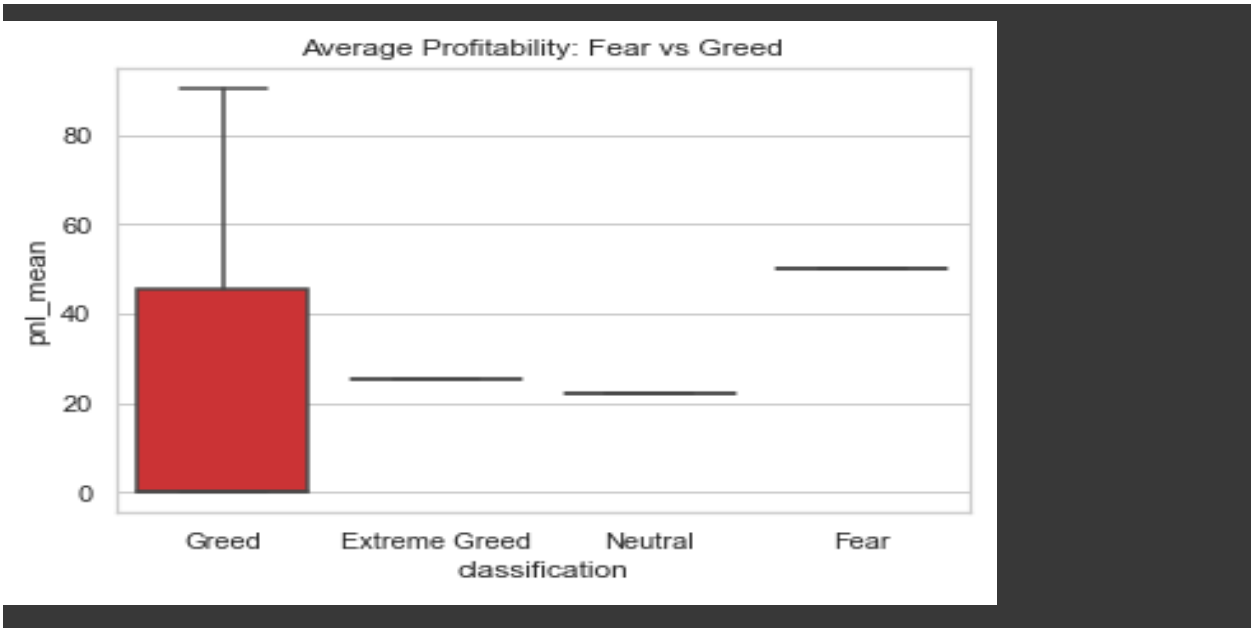
What this shows
Average daily **trade count** under each sentiment class.

What we looked for
Participation and market engagement—who's active when?

What we found

- **Fear** dominates with ~**133,871** trades/day (highest).
- **Greed/Neutral/Extreme Greed** trail far behind.
- **Interpretation**: Fearful markets create more tradable signals; traders engage more.

3.2 Average Profitability (PnL) by Sentiment



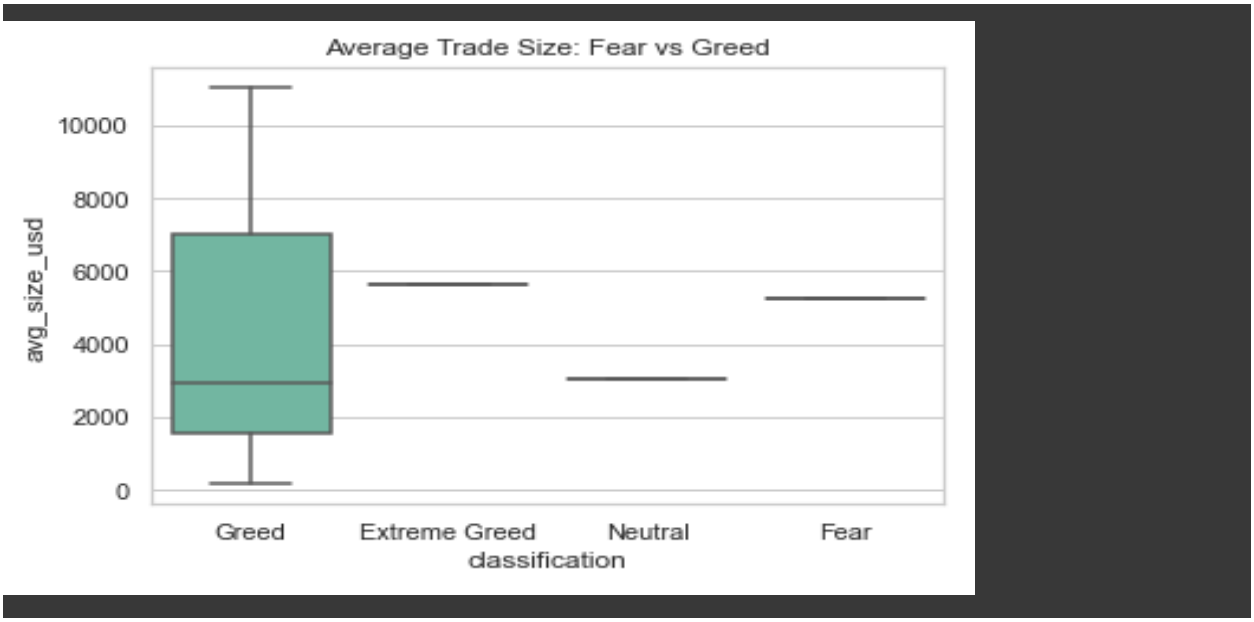
What this shows
Average per-day **pnl_mean** across sentiment classes.

What we looked for
Which sentiment conditions are actually **profitable**, not just active?

What we found

- **Fear** has the **highest** average profitability (**~50**).
- **Greed** shows wide variability (some days strong, some weak).
- **Neutral** is lowest (**~22**); **Extreme Greed ~25**.
- **Interpretation**: Fear offers the best **risk-adjusted opportunity**; Greed outcomes are unstable.

3.3 Average Trade Size (USD) by Sentiment



What this shows
Average trade size under each sentiment.

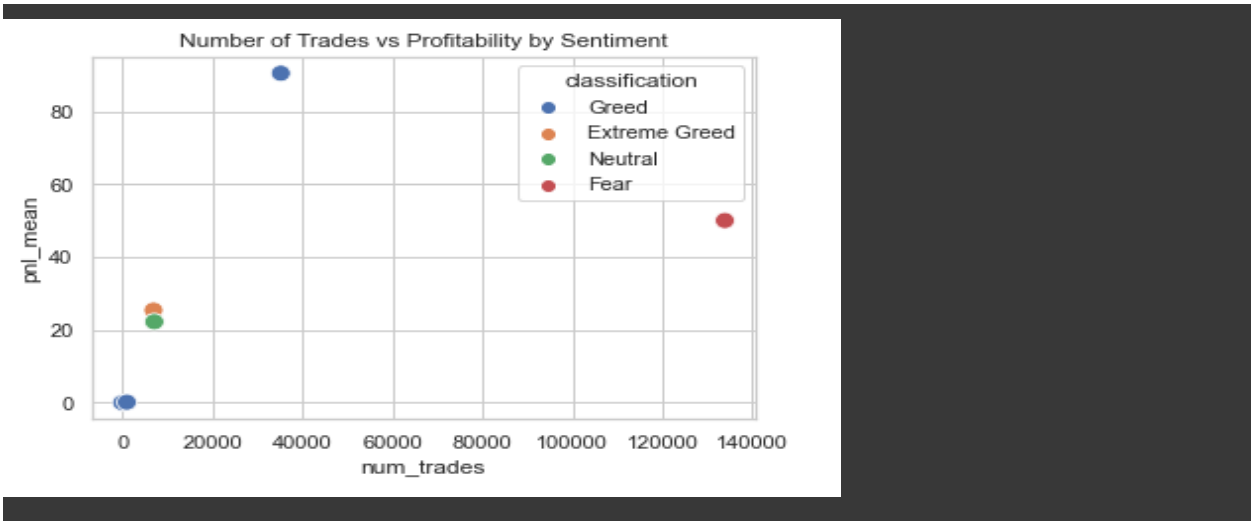
What we looked for
Sizing discipline vs. overconfidence.

What we found

- **Greed**: **high variability** in trade sizes (some very large outliers).
- **Fear/Extreme Greed**: more standardized around 5–6k USD.
- **Neutral**: smallest (~3k USD).
- **Interpretation**: Greed conditions induce **inconsistent sizing** (overconfidence risk). Fear enforces **more disciplined sizing**.

4) Relationships & Hidden Patterns

4.1 Scatter: Number of Trades vs Average Profit (pnl_mean)



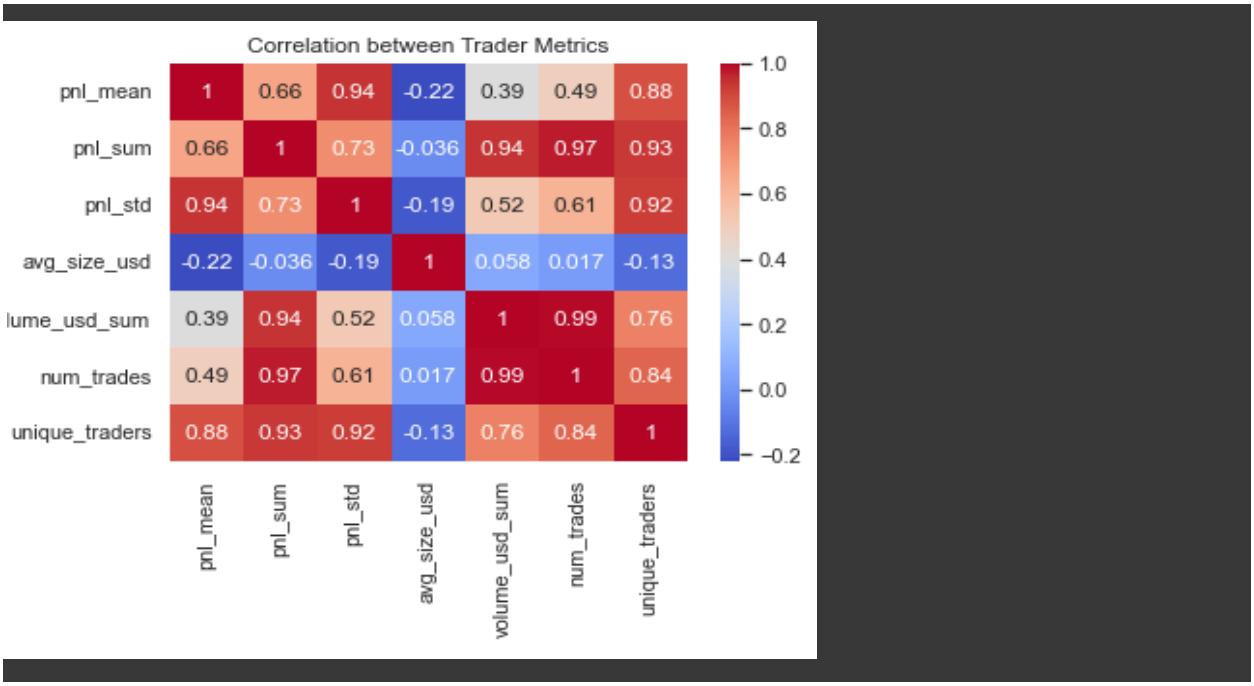
What this shows
Activity vs. efficiency—do more trades correlate with better average returns?

What we looked for
Whether participation drives profitability.

What we found

- **Fear**: many trades + higher pnl_mean → **consistent profitability with high engagement**.
- **Greed/Extreme Greed/Neutral**: fewer trades; profitability is lower or unstable.
- **Interpretation**: Markets in Fear yield **both** opportunity and consistency.

4.2 Correlation Heatmap (Trader Metrics)



What this shows

Correlations among `pnl_mean`, `pnl_sum`, `pnl_std`, `avg_size_usd`, `volume_usd_sum`, `num_trades`.

What we looked for

Structural relationships behind the numbers.

What we found (notable)

- **pnl_mean ↔ pnl_std: ~0.94 (strong +)** → Higher profit comes with **higher volatility** (classic risk-return trade-off).
- **pnl_sum ↔ num_trades: ~0.97 (strong +)** and **pnl_sum ↔ volume_usd_sum: ~0.94 (strong +)** → Total daily profit is **volume/participation-driven**.
- **avg_size_usd ↔ pnl_mean: ~−0.22 (weak −)** → **Bigger trade size does not improve efficiency**; may slightly hurt it.
- **Interpretation**:
    - Profitability scales with **how much** and **how many** trades are done (especially on Fear days).
    - Chasing large trade sizes does **not** help; steady sizing + participation works better.

5) Key Findings (Condensed)

- **Fear** days deliver the **best average profitability** and **highest engagement** (trades, volume, unique traders).
- **Greed** days are **unreliable**—profit and size swing widely (overconfidence risk).
- **Extreme Greed** sees **low participation** and middling profits—fewer opportunities despite optimism.
- **Neutral** days are **least profitable** and **least interesting** (skip or minimize exposure).
- **Risk ↔ Return**: Higher average PnL comes with higher volatility; total profits scale with participation (not size).

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6) Smarter Trading Strategies Based on Market Sentiment

6.1 Capitalize on Fearful Markets

- **Evidence**: Highest trades (133,871), highest avg PnL (50), highest volume.
- **Action**: When **sentiment index ≤ 30 (Fear/Extreme Fear) → increase trade frequency** and keep **consistent position sizes**.
- **Risk Control**: Use **volatility-aware stops**; expect higher pnl_std (risk-return trade-off).

6.2 Avoid Overconfidence in Greed

- **Evidence**: Inconsistent PnL; large dispersion in trade sizes; avg PnL (~30).
- **Action**: When **Greed → standardize (cap) trade size**, avoid impulsive large bets; rely on **rule-based entries**.
- **Risk Control**: **Tighter stops** and **pre-defined take-profit** to prevent round-trips.

6.3 Be Selective in Extreme Greed

- **Evidence**: Lower participation, lower avg PnL (~25); opportunities are scarce.
- **Action**: When **index ≥ 80 (Extreme Greed) → trade less**, prioritize **high-conviction setups** only.
- **Risk Control**: Smaller positions; skip marginal trades.

6.4 Reduce Exposure in Neutral Markets

- **Evidence**: Lowest avg PnL (~22), smallest sizes, low engagement.
- **Action**: When **Neutral** → **stay out** or keep **minimal exposure**; redeploy risk to better regimes.

6.5 Use Volatility Filters to Balance Risk & Return

- **Evidence**: **pnl_mean ↔ pnl_std ~ 0.94** (higher profits require higher risk).
- **Action**: **Scale position size inversely with daily pnl_std** (or realized volatility).
- **Risk Control**: Dynamic stop-loss (tighter when volatility spikes).

Rule of Thumb Summary

- **Fear = Opportunity** → Trade more, stay disciplined on sizing, expect higher variance.
- **Greed = Overconfidence Risk** → Trade smaller & steadier, enforce tight risk.
- **Extreme Greed = Caution** → Be very selective, reduce frequency.
- **Neutral = Apathy** → Stand aside or keep micro-exposure.

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7) Limitations & Next Steps

- **Sample Size**: Merged daily set is small; results are directional, not definitive.
- **Confounding**: Asset mix, time-of-day effects, or event news may influence outcomes.
- **Next Steps**:
    - Expand to more dates / more assets.
    - Add **intraday** features (volatility, spread, order-flow imbalance).
    - Backtest the sentiment rules with **position sizing formulas** (e.g., volatility targeting).

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8) Appendix: Metric Glossary

- **pnl_mean**: Average closed PnL per day.
- **pnl_sum**: Total closed PnL per day.
- **pnl_std**: Standard deviation of PnL per day (risk/volatility proxy).
- **avg_size_usd**: Average trade size in USD.
- **volume_usd_sum**: Total traded notional (USD) per day.
- **num_trades**: Number of trades per day.
- **unique_traders**: Distinct accounts active per day.