Analysis of Trader Behavior vs. Market Sentiment

Here's a breakdown of the findings based on the analysis of trader data against the daily Fear & Greed Index.

Executive Summary

The analysis reveals that trader activity is not uniform across different market sentiments. The "Greed" phase, in particular, stands out as the period of highest activity, profitability, and volatility. Interestingly, this "Greed" does not seem to correlate with a simple optimistic "long" bias; in fact, the data suggests traders may be increasing their "short" positions during these times.

Critical Caveat: Before we dive in, it's important to look at the sentiment_distribution.png chart. Our dataset is small and heavily skewed. We have 3 days of "Greed" data, but only 1 day each for "Fear," "Neutral," and "Extreme Greed." There is no data for "Extreme Fear" days. This means our findings for "Greed" are the most statistically relevant, while the other categories are just single-day snapshots.

Key Finding 1: Profitability and Volatility Spike During "Greed"

As seen in the pnl_vs_sentiment.png plot, the "Greed" category is the only one with significant PnL (Profit and Loss) activity.

- The median daily PnL during "Greed" is substantially positive (around 1.6 million).
- More importantly, the *range* (the "whiskers" on the box plot) is enormous, stretching from near-zero to over 3 million. This indicates that "Greed" days are not just profitable; they are extremely volatile, with the potential for both large gains and significant losses.
- In contrast, "Fear," "Neutral," and "Extreme Greed" days all show flat PnL clustered near zero.

In plain terms: "Greed" is when the most money is made and lost. Other periods are comparatively quiet.

Key Finding 2: Trading Volume is Highest During "Greed"

The volume_vs_sentiment.png chart supports the PnL findings.

- "Greed" days have the highest median trading volume and the widest range of activity.
- "Extreme Greed" also shows high volume, though it's a flat line (representing only one day of data).
- "Neutral" and "Fear" days show very little trading volume in comparison.

In plain terms: This confirms that "Greed" is the primary driver of market activity in this dataset. When the market is greedy, people are trading far more, which naturally leads to the higher PnL swings we see in the first chart.

Key Finding 3: The Long/Short Ratio is Surprisingly "Bearish" During "Greed"

This is the most counter-intuitive finding, shown in long_short_vs_sentiment.png. You would normally expect "Greed" (optimism) to mean more people are "going long" (betting on price increases), which would create a long/short ratio *above* 1.0.

Our data shows the opposite:

- The median long/short ratio during "Greed" is actually around 0.5, meaning there was significantly more *short* volume than *long* volume.
- The highest ratios (indicating more long-side optimism) actually occurred on "Neutral" (around 1.3) and "Fear" (around 1.1) days.

In simple terms: This suggests that as the market becomes "Greedy," some traders in this dataset are not joining the buying frenzy. Instead, they appear to be taking counter-positions, increasing their shorts to bet against the rising optimism, perhaps expecting a pullback.