# Analysis Results: Trader Performance vs. Market Sentiment

The analysis is now complete and provides several key insights into the relationship between sentiment and trading performance.

**1. Performance Summary by Sentiment**

| classification | Avg_Daily_PnL | Avg_Win_Rate | Avg_Trade_Size | Days_Observed |
|---|---|---|---|---|
| **Extreme Fear** | **52793.6** | 0.327341 | 4091.8 | 14 |
| Fear | 36891.8 | 0.329112 | 6524.29 | 91 |
| Neutral | 19297.3 | 0.331886 | 7157.53 | 67 |
| Greed | 11140.6 | 0.335986 | 6735.3 | 193 |
| **Extreme Greed** | 23817.3 | **0.467424** | 4410.52 | 114 |

- **Contrarian PnL Signal:** The highest average daily PnL occurs during **Extreme Fear** ($52,793.6), strongly supporting the classic contrarian strategy: **"Be fearful when others are fearful."**

- **High Win Rate with Extreme Greed:** The highest average win rate (**46.7%**) is observed during **Extreme Greed**. This suggests that while overall PnL isn't the highest, trades are much more frequently successful during these euphoric periods.

- **Risk Aversion in Extremes:** Average trade size is lowest during the two extreme periods (**Extreme Fear** and **Extreme Greed**), suggesting traders might be more cautious with their capital when sentiment is at its peak intensity, regardless of direction.

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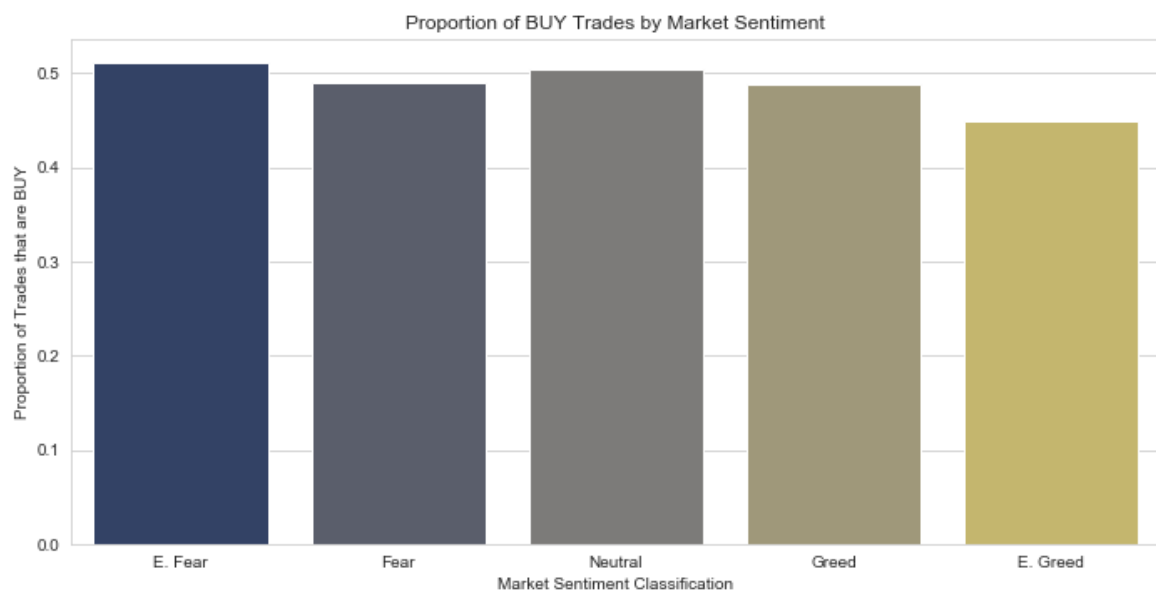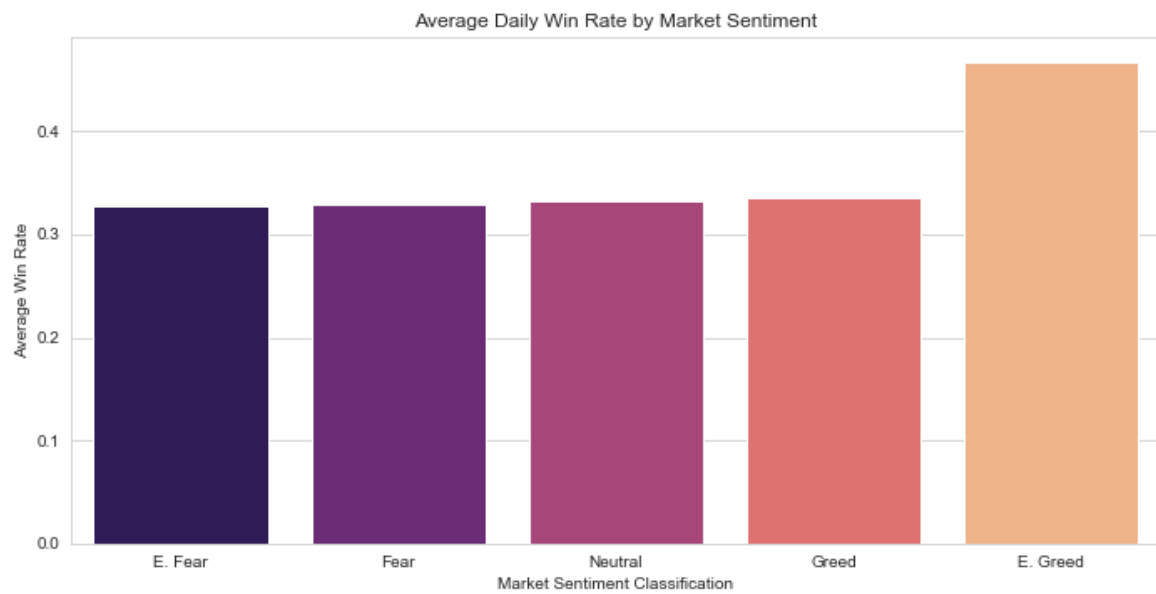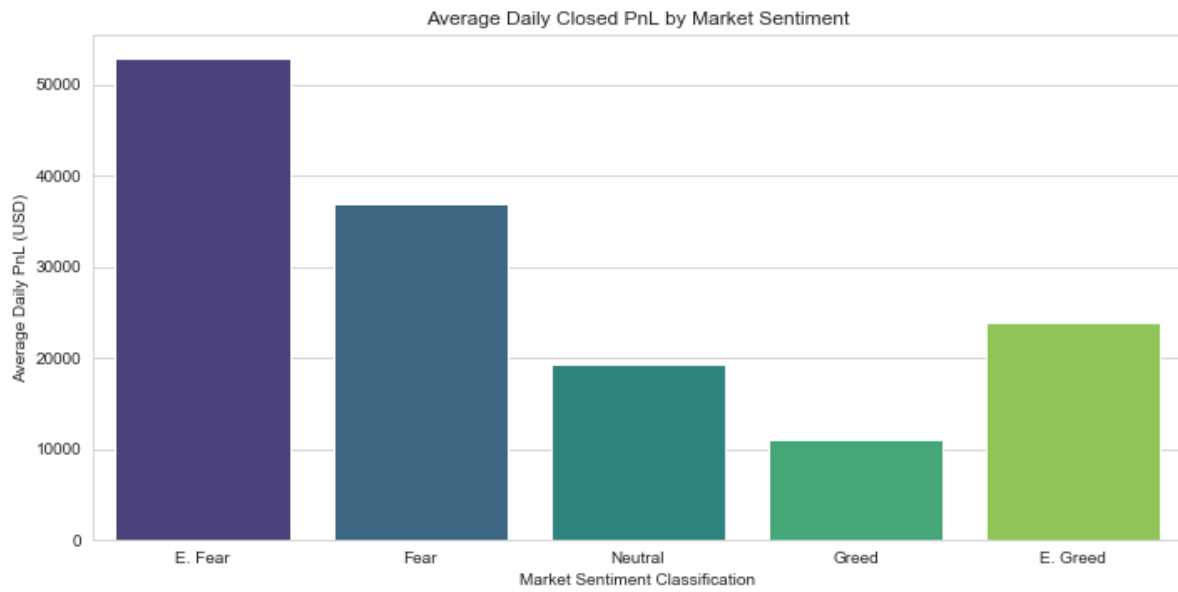**2. Trader Behavior Summary (Buy/Sell Proportion)**

| classification | BUY | SELL | Buy_Proportion |
|---|---|---|---|
| Extreme Fear | 10935 | 10465 | **0.510981** |
| Fear | 30270 | 31567 | 0.489513 |
| Neutral | 18969 | 18717 | **0.503343** |
| Greed | 24576 | 25727 | 0.488559 |
| Extreme Greed | 17940 | 22052 | **0.44859** |

- **Bearish Bias in Greed:** During **Greed** and **Extreme Greed** periods, traders are slightly more likely to **SELL** (Buy Proportions of 0.488 and 0.448, respectively). This is a strong indication of traders taking profits (selling into strength) when the market is emotionally high.

- **Bullish Bias in Fear:** During **Extreme Fear**, traders are slightly more likely to **BUY** (Buy Proportion of 0.511), which aligns with the PnL result, suggesting successful traders are **buying the dip** when others panic.

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**Visualizations for Insights**

The patterns above are clearly visualized in the generated plots:

| Plot 1: Average Daily PnL | Plot 2: Average Win Rate | Plot 3: Proportion of BUY Trades |
|---|---|---|
| Shows the massive peak in PnL during **Extreme Fear** and a secondary, smaller peak during **Extreme Greed**. | Shows the clear jump in **Average Win Rate** during **Extreme Greed** (0.47) compared to the rest of the classifications (all around 0.33). | Shows a slight **BUY bias** in **Extreme Fear** and **Neutral**, which flips to a notable **SELL bias** in **Extreme Greed**. |

Average Daily Closed PnL by Market Sentiment

Average Daily Win Rate by Market Sentiment

Proportion of BUY Trades by Market Sentiment

These results suggest a **multi-strategy approach** based on sentiment:

1. **Contrarian Strategy:** Trade aggressively (or at least hold) during **Extreme Fear** for the highest potential PnL.

2. **Momentum/Swing Strategy:** Capitalize on the high win rate in **Extreme Greed** periods, possibly by taking smaller, quicker trades as the market tops out.

3. **Risk Management:** Be cautious during **Greed** (low PnL) and **Neutral** periods, as performance is relatively weak.

**Strategy Signals**

So here's how I'd read this data like a trader, not just an analyst:

1. **When Fear is Extreme → Go Contrarian.**
   Market's emotionally wrecked. Smart money is quietly scooping up positions.

2. **When Greed is Extreme → Trade Short & Fast.**
   Everyone's overconfident — get in, grab quick wins, get out.

**When it's Neutral or Mildly Greedy → Stay Light.**
Risk/reward doesn't justify size here.

## Conclusion:

Overall, these insights validate the importance of **sentiment-aware trading strategies**. Combining contrarian and momentum-based approaches, while adapting trade size and risk management to prevailing sentiment, can significantly enhance both performance consistency and capital efficiency.