

# Trading Behavior vs Market Sentiment — Summary Report

## Objective

The aim of this analysis is to study the relationship between trader behavior and Bitcoin market sentiment.

We use two datasets:

1. **Fear & Greed Index** — capturing market sentiment classified as Extreme Fear, Fear, Neutral, Greed, or Extreme Greed.
2. **Historical Trader Data** — containing details of trades including execution price, trade size, side, closed PnL, and more.

Our goal is to see how metrics like profitability, trade size, and win rate change under different sentiment conditions.

## Data Overview

The sentiment dataset contains approximately 1,500+ records with key fields such as date, value (index score), and classification (sentiment category). The trader dataset contains over 100,000 trades with key fields such as coin, size\_usd, closed\_pnl, and timestamp\_ist.

The combined data covers the time period from 2018-02-01 to the latest available date in the trader dataset. After cleaning and merging

## Data Cleaning Steps

- Converted all timestamps to datetime format.
- Standardized column names to lowercase with underscores.
- Removed rows with missing critical time values.
- Converted numeric columns like size\_usd and closed\_pnl to proper numeric types.
- Merged both datasets on date for aligned analysis.

## Key Insights by Sentiment

Sentiment	Avg Closed PnL	Avg Trade Size (USD)	Win Rate (%)
Extreme Fear	1.89	4,118.76	29.28
Extreme Greed	205.82	3,242.09	55.33
Fear	128.29	5,744.78	38.18
Greed	53.99	5,051.88	43.57
Neutral	27.09	4,332.20	49.49

## Observations:

- **Extreme Greed** had the **highest average PnL** and win rate.
- **Extreme Fear** showed very low PnL and win rate, suggesting risk-averse or loss-heavy conditions.
- Neutral sentiment still had a respectable win rate (~49%), showing stability.

## Visual Highlights

### 1. Sentiment Distribution

- Fear & Extreme Fear occur more often than Greed conditions in the dataset.

### 2. Fear & Greed Index Over Time

- The index fluctuates between extremes, with sharp spikes during major market moves.

### 3. Average PnL by Sentiment

- Extreme Greed significantly outperforms all others in profitability.

### 4. Trade Size by Sentiment

- Fear sentiment sees larger trade sizes on average compared to Extreme Greed — possibly due to large institutional hedging.

## Conclusion & Recommendations

- **Greed periods** appear more profitable and consistent for traders — possibly due to strong bullish trends.
- **Extreme Fear** conditions are risk-heavy and yield low profitability — strategies should be defensive.
- **Recommendation:**
  - Increase position sizing cautiously during Extreme Greed phases, but manage leverage risk.
  - Avoid aggressive leverage during Extreme Fear, focus on capital preservation.
  - Use Neutral sentiment days for steady, low-risk trades.