



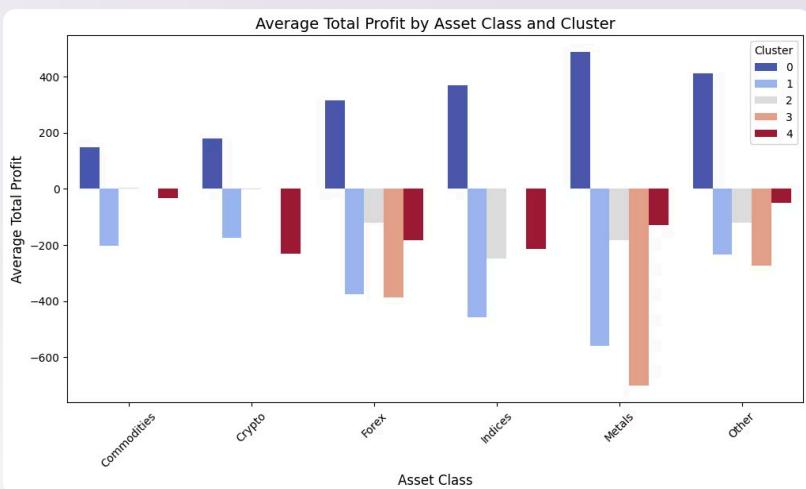
# Trading Data Analysis and Performance Insights

**Date:** June 15, 2025

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**Objective:** Leverage trading data analysis to identify profitable strategies, segment traders, and predict high performers for strategic decision-making.

# Executive Summary



## Objective

Analyze trading data to uncover trader behavior, segment traders, and predict performance using machine learning model.



## Dataset

1083,719 trade records with metrics like profit, lot size, and trade duration, etc.



## Key Findings

Identified 5 trader segments with distinct behaviors.

Developed Trader Quality Score (TQS) based on profit factor, win/loss streaks, and risk-reward ratio.

Achieved 99% accuracy in classifying high/low performers using XGBoost.



## Recommendations

Incentivize high performers, retrain underperformers, and optimize XAUUSD strategies.

# Data Analysis Insights

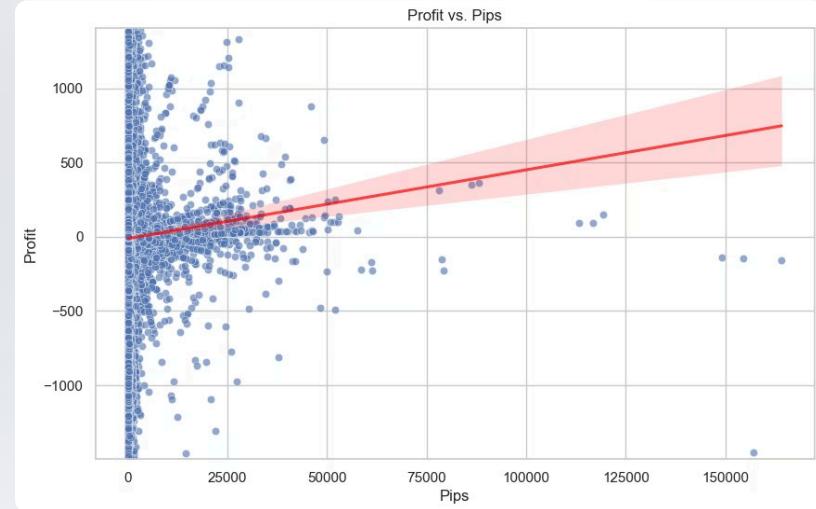
## Dataset Overview

- 703,234 trades across Forex, Crypto, Metals, Indices, and Commodities.
- Key features: profit, lot\_size, pips, trade\_duration, symbol.

## Findings

- High skewness in profit, lot\_size, pips → Outliers trimmed (1st–99th percentiles).
- Strong correlation: profit and profit rate vs. pips.
- XAUUSD shows high volatility; Action 0 outperforms Action 1.
- Short trades dominate, but longer trades yield higher profits.

**Implication:** Focus on high-pip, short-duration trades with Action 0 for profitability.



# Trader Segmentation

## Steady Performers

~20,000 traders, 55.08% win rate, \$21.82 avg. profit: Consistent, low-risk.

## Low-Activity Losers

~270 traders, 42.11% win rate, -\$14.64 avg. profit: Low activity, consistent losses.



## High-Volume Losers

~30,000 traders, 31.27% win rate, -\$38.58 avg. profit: High activity, significant losses.

## Aggressive Traders

~15,000 traders, 51.82% win rate, -\$6.56 avg. profit: High trade volume, moderate losses.

## Niche Speculators

~32 traders, 30.02% win rate, -\$21.94 avg. profit: High-risk, niche assets.

**Methodology:** K-Means clustering (k=5) on metrics like num\_trades, win\_rate, lot\_size.

**Insight:** Steady Performers drive profitability; High-Volume Losers need intervention.



# Trader Quality Score (TQS)



## Profit Factor

Gross profit / gross loss (higher is better)

## Win/Loss Streaks

Max consecutive wins vs. losses

## Risk-Reward Ratio

Avg. win size / avg. loss size

### TQS Formulation:

- Normalized metrics (MinMaxScaler, 0–1).
- Weighted sum: 30% profit factor, 20% risk-reward, 20% total profit, 15% win streak, 15% inverse loss streak.

### Results:

- Top traders (e.g., user 1004649): TQS 0.72, 72.73% win rate, \$8,051 profit.
- Bottom traders (e.g., user 1049141): TQS 0.10, 2.14% win rate, -\$19,817 loss.

**Implication:** TQS ranks traders for targeted incentives and interventions.

# Machine Learning Classification



## Objective

Classify traders as high (top 25% TQS) or low performers



## Models

Random Forest: 98% accuracy, XGBoost: 99% accuracy



## Key Features

max\_win\_streak, win\_rate, total\_profit drive predictions

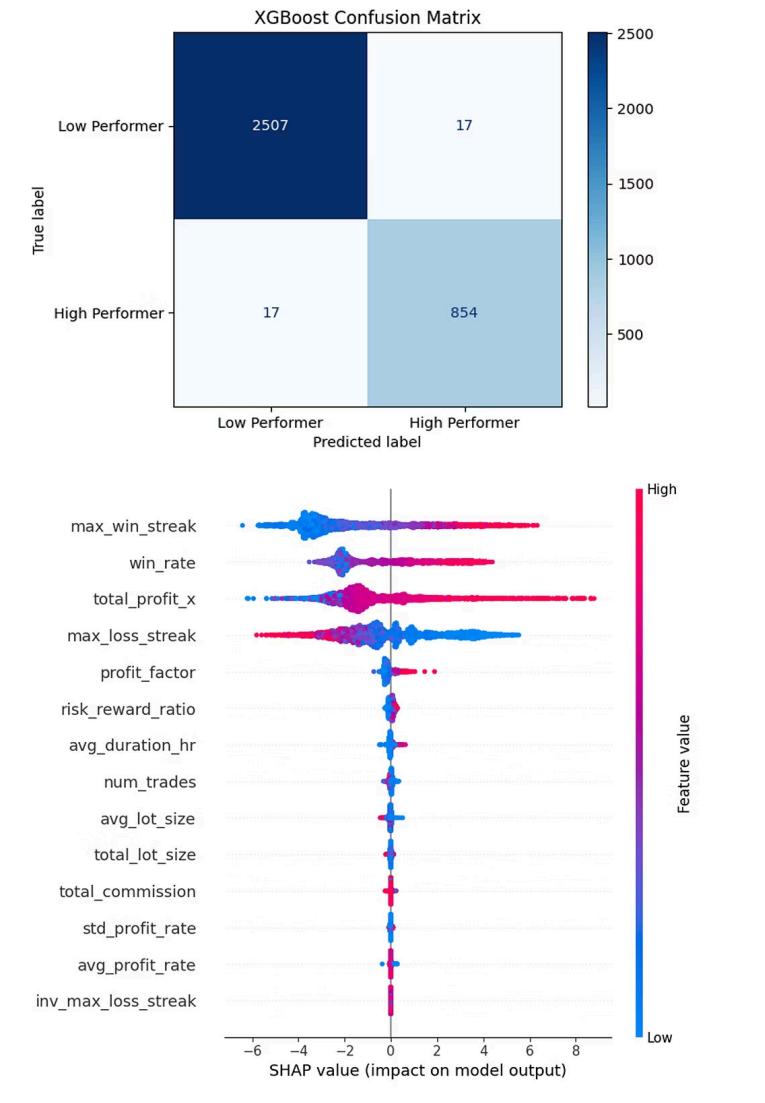
### Models:

- Random Forest: 98% accuracy, 0.96 F1-score for high performers.
- XGBoost: 99% accuracy, 0.98 F1-score for high performers (preferred model).

### Key Features (SHAP analysis):

- max\_win\_streak, win\_rate, total\_profit drive predictions.
- max\_loss\_streak, profit\_factor also significant.

**Insight:** High performers are characterized by consistent wins and high profits; model is highly reliable.



# Strategic Recommendations

## Incentivize High Performers

- Reward Steady Performers (Cluster 0) with lower fees or premium tools.
- Promote top TQS traders (e.g., user 1004649) for capital allocation.

## Retrain Underperformers

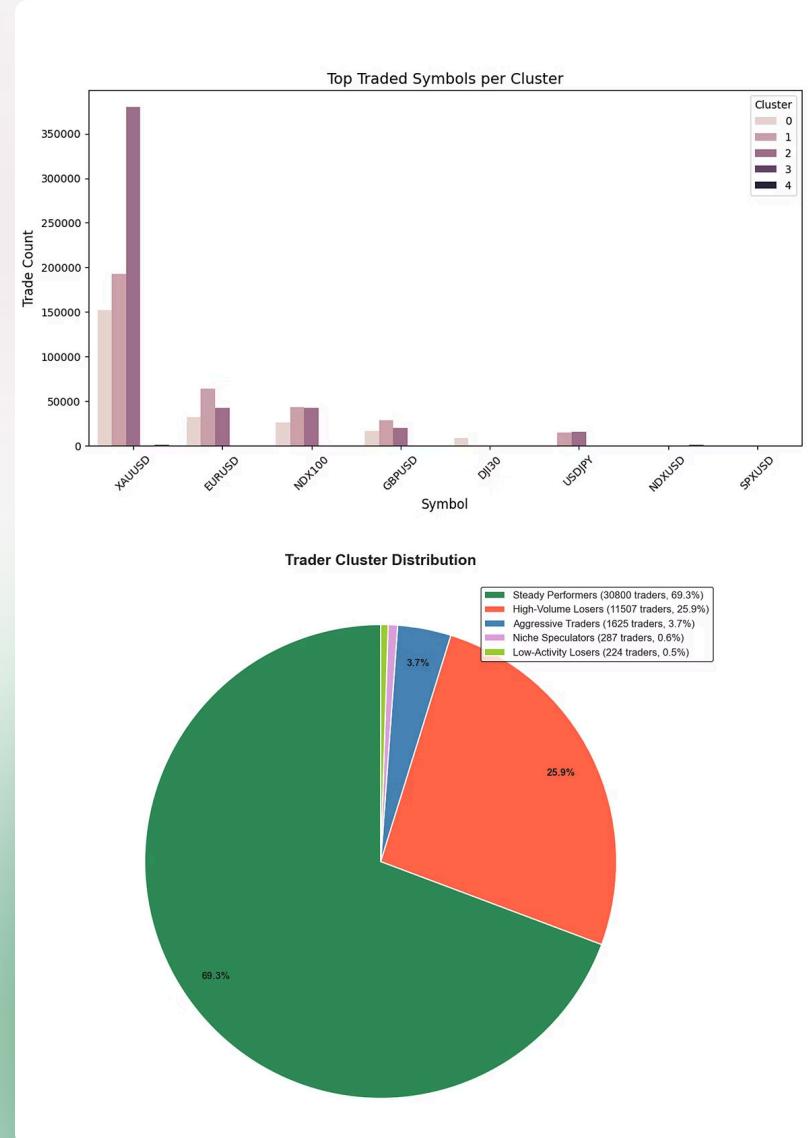
- Provide training for High-Volume Losers (Cluster 1) and Low-Activity Losers (Cluster 4).
- Cap trades for risky Niche Speculators (Cluster 3).

## Optimize Trading Strategies

- Focus on XAUUSD and EURUSD (dominant symbols).
- Encourage short, high-pip trades with Action 0.
- Use automatic stop-loss/take-profit to reduce losses.

## Platform Enhancements

- Integrate TQS and ML model into dashboards for real-time monitoring.
- Develop risk management tools for Cluster 1 and 4 traders.



# Next Steps



## Implementation

- Deploy XGBoost model for real-time trader classification.
- Build TQS-based leaderboards to motivate traders.
- Launch targeted training programs for underperformers.



## Further Analysis

- Explore time-series patterns in trade frequency.
- Test additional metrics (e.g., Sharpe ratio, drawdown).
- Expand ML model to predict profit trends.



## Stakeholder Engagement

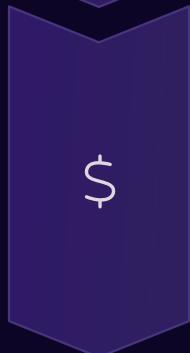
- Schedule workshops with brokers and investors to align on incentives.
- Monitor regulatory compliance for high-risk traders (Clusters 3, 4).

# Conclusion



## Value Delivered

- Comprehensive analysis of 1083,719 trades reveals actionable insights.
- Trader segmentation and TQS enable targeted strategies.
- 99% accurate ML model supports confident decision-making.



## Business Impact

- Enhance profitability by focusing on Steady Performers and XAUUSD.
- Reduce losses through retraining and risk management.
- Strengthen platform competitiveness with data-driven tools.



## Call to Action

Approve implementation plan to drive trader performance and platform growth.