Analysis of Historical Trade Data from Binance Accounts

An Analsis Report

Submitted By

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Deliverables	Link
1. Jupyter Notebook or Python script with complete analysis and code.	https://drive.google.com/file/d/1g9VH6VN68pEsMTJFdJEy1AGcCAAJJjcB/view?usp=drive_link
2. CSV file containing calculated metrics and top 20 accounts	https://docs.google.com/spreadsheets/d/1RYGJmhuzsUEfNxN0AN5XrWP4NR2AKSU2/edit?usp=drive_link&ouid=108690563565595805874&rtpof=true&sd=true

Note: If the above deliverables do not open by clicking on the links directly, copy the entire link and paste it into your browser to access the files

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Introduction

This report presents the analysis of historical trade data from various Binance accounts over a period of 90 days. The objective of this analysis is to calculate key financial metrics for each account, including Return on Investment (ROI), Profit and Loss (PnL), Sharpe Ratio, Maximum Drawdown (MDD), Win Rate, and the number of win positions, in order to rank the accounts based on their performance.

The dataset consists of unique Port_IDs representing Binance accounts, along with detailed trade history including timestamps, asset types, trade sides (BUY/SELL), price, and quantity. By applying various data exploration and cleaning techniques, followed by feature engineering and metric calculations, this report aims to provide insights into the performance of each account and deliver a ranking of the top 20 accounts based on these financial metrics.

This report outlines the methodology and assumptions made during the analysis, presents the findings, and concludes with a summary of insights derived from the dataset.

Assumptions

Data Completeness:

- It was assumed that the dataset was complete and no trades or important details were omitted. Missing values were handled appropriately by imputation or exclusion.

Accurate Trade Classification:

- It was assumed that the trade classifications (BUY/SELL, long/short) were correctly labeled in the dataset, and the position side matched the expected trade behavior.

Consistent Financial Metrics:

- Financial metrics like ROI, PnL, and Sharpe Ratio were calculated assuming that all trade details (price, quantity, realized profit) were accurate and properly reported.

Risk-Free Rate for Sharpe Ratio:

- The risk-free rate used in the Sharpe Ratio calculation was assumed to be constant and based on a typical rate, unless specified otherwise.

No External Factors:

- It was assumed that external factors such as market conditions, news, or events outside of the dataset did not significantly affect the performance of the accounts.

Understanding of Data - Definitions and Formulae

A) Definition of Each Column:

1. Port_IDs

- **Description**: **Unique identifier** for each Binance account or trading portfolio.
- **Usage**: Helps group and analyze trades by account for calculating metrics like ROI, PnL, and Sharpe Ratio.

2. time

- **Description**: Timestamp of the trade, indicating when the trade was executed.
- **Usage**: Useful for analyzing trading patterns over time, calculating metrics like Maximum Drawdown (MDD), and identifying trends.
- **Information**: The timestamp `1718899616000` appears to be in **epoch time** or **Unix timestamp**, which is measured in milliseconds since January 1, 1970 (UTC). To use this timestamp for analysis, you can convert it to a human-readable datetime format.
- **Action:**
  Convert Time to human readable format.

3. symbol

- **Description**: The trading pair involved in the trade (e.g., BTC/USDT, ETH/USDT).
- **Usage**: Helps understand which assets were traded and analyze performance for specific trading pairs.
- **Information:**
  A trading pair in cryptocurrency is a combination of two different types of assets that can be traded against each other on a crypto exchange:
  1. **Crypto-Cross pair:** A trading pair that consists of two digital assets, such as BTC/ETH
  2. **Fiat-to-crypto pair:** A trading pair that consists of a cryptocurrency and a fiat currency, such as BTC/USD

     Trading pairs are the fundamental building blocks of cryptocurrency exchanges. They show the value of one crypto relative to another, and are similar to forex pairs like USD/EUR or GBP/JPY.

4. side

- **Description**: Indicates whether the trade was a **BUY**or **SELL** action.
- **Usage**: Essential for calculating ROI, PnL, and determining positions (e.g., opening or closing a trade).

5. price

- **Description**: Conversion price**. Linked to symbol column.**

  E.g At Timestamp 1.7189E+12 , symbol is DOGEUSDT and price is 0.12182 then
- **This means that 1 DOGE was equivalent to $0.12182 USDT.**
- **Therefore it the price at which 1 unit is traded.**
- **Usage**: Important for calculating profit, loss, and ROI by comparing the trade price with other trades in the same position.
- **Information:**
  Yes, typically in trading datasets like those from cryptocurrency exchanges, the price column represents the value of **1 unit of the asset traded** in terms of the quote currency.

  For example:
  If the trading pair is BTC/USDT and the price is 20000, it means:
  1 Bitcoin (BTC) was traded for 20,000 USDT

6. fee

- **Description**: The trading **fee charged for the transaction**, typically deducted from the trade value.
- **Usage**: Reduces net profit and must be accounted for when calculating metrics like PnL.
- **Information:**
  The fees charged by the platform are generally not included in the total traded value. The total traded value typically refers to the gross value of the trades without accounting for transaction fees or platform charges.

7. feeAsset

- **Description**: The asset in which the fee was paid - here only **USDT** in entire data
- **Usage**: Helps in detailed cost analysis, especially if fees are paid in different currencies.
- **Information:** USDT, also known as Tether, is a stablecoin cryptocurrency that's pegged to the value of the US dollar:
  I. **What it is?**
  USDT is a blockchain-based currency that's designed to be a less volatile alternative to other cryptocurrencies.
  II. **How it works?**
  Each USDT token is theoretically backed by an equivalent amount of dollars held in reserves. This means that the value of USDT is pegged to the US dollar at a 1:1 ratio.
  III. **What it's used for?**
  USDT can be used as:
  A store of value
  A payment method for services on and off the blockchain
  A transaction currency on some platforms
  IV. **Who uses it?**
  USDT is popular with traders who want to quickly switch between cryptocurrencies and traditional currencies.

V. **How it's issued?**
USDT is issued as a token on various blockchains, including Ethereum and Tron.

VI. **Who issues it?**
Tether Limited, a Hong Kong-based company, first issued USDT in 2014.

8. quantity

- **Description**: **Usage**: Used to measure the **size of a trade** and calculate PnL and ROI.The total monetary value of the trade in terms of the base asset.

9. quantityAsset

- **Description**: The actual amount of the traded cryptocurrency (e.g., 0.5 BTC or 10 ETH).
- **Usage**: Useful for understanding the size of the trade in terms of the asset, especially for calculating metrics like Sharpe Ratio and MDD.

10. realizedProfit

- **Description**: The profit or loss from the trade, expressed in monetary terms.
- **Usage**: A positive value indicates profit, while a negative value indicates loss. Critical for calculating overall PnL and Win Rate.

11. realizedProfitAsset

- **Description**: The asset in which the profit or loss is realized here USDT
- **Usage**: Useful for analyzing the impact of trades in different currencies.

12. baseAsset

- **Description**: The primary currency being traded in the trading pair (e.g., BTC in BTC/USDT).
- **Usage**: Helps distinguish between base and quote assets in the trading pair for precise analysis.
- **Information:**

  Base Asset:
  Definition: The base asset is the primary currency being traded in a trading pair.

  Example: In the pair BTC/USDT, BTC (Bitcoin) is the base asset. This means that the value of one unit of the base asset (1 BTC) is being expressed in terms of the quote asset.
  Usage: The base asset is what you're buying or selling, and the price is quoted in terms of the quote asset.

  Quote Asset:

Definition: The quote asset is the secondary currency used to determine the value of the base asset in the trading pair.
Example: In the pair BTC/USDT, USDT (Tether) is the quote asset. The price of Bitcoin is expressed in USDT, meaning how much USDT you need to buy or sell 1 BTC.
Usage: The quote asset is the currency you're using to buy or sell the base asset.

Example: In the trading pair ETH/USDT:
ETH is the base asset (the cryptocurrency you're trading) and USDT is the quote asset (the currency you're using to trade ETH).
If the price of ETH/USDT is 2000, it means that 1 ETH equals 2000 USDT.

13. qty

- **Description**: The amount of cryptocurrency involved in the trade (e.g., 0.5 BTC).
- **Usage**: Helps calculate metrics like ROI and the size of positions.

14. positionSide

- **Description**: Indicates the type of position, such as **LONG** or **SHORT**.
- **Usage**: Critical for determining trade direction and categorizing positions as opening or closing.

15. activeBuy

- **Description**: Indicates whether the trade is an active **BUY** order (possibly a boolean flag).
- **Usage**: Can be used to filter and analyze active trades.
- Information: In crypto trading, an active buy refers to an order placed by a trader to purchase a specific cryptocurrency at a particular price or better. An "active" buy order is typically one that is currently open and awaiting execution, either because it is waiting for the price to meet the trader's specified level or because it is a market order that will execute as soon as possible at the current market price.

  Here are some key points about active buy orders:

Types of Active Buy Orders:

- Market Order:
  An order to buy a cryptocurrency immediately at the best available price in the market. It is executed instantly.
  Example: If you place a market buy order for 1 BTC, you will buy at the current market price.
- Limit Order:
  An order to buy a cryptocurrency at a specific price or lower. The order will remain active until the market reaches the specified price.
  Example: If you place a limit buy order for 1 BTC at 25,000 USDT, the order will remain active until the price of Bitcoin drops to 25,000 USDT or lower.

- Stop-Limit Order:
  An order placed to buy a cryptocurrency once it reaches a certain price level (the stop price), with a limit on the price at which it can be bought.
  Example: A trader might set a stop-limit order to buy 1 BTC at 30,000 USDT, but with a limit price of 30,100 USDT. The order will be triggered when the market price hits 30,000 USDT but will only execute if the price is below 30,100 USDT.

  "Active" Refers to:
  Open Orders: An active buy order is one that hasn't been filled yet and remains open in the order book. It will stay active until the order is either executed or canceled by the trader.
  Pending Execution: The order will remain active until either the market price meets the trader's conditions (for limit orders) or the market moves in the trader's favor (for market orders).

  In short, an active buy is an open order that is still waiting to be executed based on the conditions set by the trader.

How the Columns Are Related:

- **symbol** defines the trading pair (e.g., SOL/USDT).
- **baseAsset** is the asset you're buying or selling (e.g., SOL), while **quoteAsset** (implied by **quantityAsset**) is what you're using to trade it (e.g., USDT).
- The **side** (BUY/SELL) tells you whether you are buying or selling the base asset.
- **price** tells you the trading price of the base asset in terms of the quote asset.
- **quantity** tells you how much of the base asset you are trading, and **quantityAsset** tells you in which currency the quantity is measured (usually the quote asset).
- **fee** is the cost of the trade, paid in **feeAsset** (often the quote asset).
- **realizedProfit** tells you the profit or loss from the trade, measured in the same asset as the **realizedProfitAsset**.
- **positionSide** tells you whether you're holding a **LONG** or **SHORT** position in the market.
- **activeBuy** indicates if the position is still open (active) or closed (inactive).

B) Definitions and Formulae of Financial Metrics

1. ROI (Return on Investment)

ROI measures the percentage return on an investment relative to its initial cost.

$$\text{ROI} = \frac{\text{Final Value of Investment} - \text{Initial Value of Investment}}{\text{Initial Value of Investment}} \times 100$$

Where:

- Final Value of Investment: The value of the asset at the end of the investment period.
- Initial Value of Investment: The value of the asset at the beginning of the investment period.

2. PnL (Profit and Loss)

PnL measures the profit or loss made from a trade, considering the difference between the sale price and the purchase price.

$$\text{PnL} = (\text{Selling Price} - \text{Purchase Price}) \times \text{Quantity}$$

Where:

- Selling Price: The price at which the asset was sold.
- Purchase Price: The price at which the asset was bought.
- Quantity: The amount of the asset traded.

3. Sharpe Ratio

The Sharpe Ratio measures the risk-adjusted return of an investment. It is the ratio of the excess return (over the risk-free rate) to the standard deviation (risk) of returns.

$$\text{Sharpe Ratio} = \frac{R_{\text{portfolio}} - R_{\text{risk-free}}}{\sigma_{\text{portfolio}}}$$

Where:

- Rportfolio: The average return of the portfolio.

- Rrisk-free: The return on a risk-free asset (such as government bonds).
- σportfolio: The standard deviation of the portfolio's returns (a measure of risk).

4. MDD (Maximum Drawdown)

MDD measures the largest loss from a peak to a trough of an investment, before a new peak is reached. It quantifies the biggest percentage drop in portfolio value over a specified period.

$$\text{MDD} = \frac{\text{Peak Value} - \text{Trough Value}}{\text{Peak Value}} \times 100$$

Where:

- Peak Value: The highest value the portfolio reached during the observation period.
- Trough Value: The lowest value the portfolio reached before the next peak.

5. Win Rate

Win Rate is the percentage of profitable trades (those with a positive PnL) relative to the total number of trades.

$$\text{Win Rate} = \frac{\text{Number of Winning Trades}}{\text{Total Number of Trades}} \times 100$$

Where:

- Number of Winning Trades: The count of trades that resulted in a profit.
- Total Number of Trades: The total count of trades made, including both profitable and losing trades.

6. Win Positions

Win Positions refer to the total number of profitable positions (i.e., trades with a positive PnL).

$$\text{Win Positions} = \text{Number of Trades with Positive PnL}$$

Where:

- Positive PnL: Trades where the realized profit is greater than zero.

7. Total Positions

Total Positions refer to the total number of trades made, including both profitable and unprofitable trades.

$$\text{Total Positions} = \text{Total Number of Trades}$$

Where:

- Total Number of Trades: The complete count of trades executed, including wins and losses

Methodology

Data Exploration and Cleaning:

1. **Separate Data into Columns**
   Ensure that the data is properly separated into individual columns based on the delimiters (e.g., commas, tabs) in the dataset. This will allow each data entry to be placed in its appropriate column.

2. **Remove Unnecessary Writing of Headers**
   If the dataset contains any repeated header rows, remove them to avoid duplication. Retain only the first instance of the header row for proper column labeling.

3. **Convert All Column Headers to Proper Case**
   Modify the column headers so that the first letter of each word is capitalized (also known as title case). This can be done by using Excel or Python functions like .title() or .capitalize(). Example: 'port_id' becomes 'Port ID', 'realizedProfit' becomes 'Realized Profit (USDT)'.

4. **Remove Null Values**
   Identify and remove any rows or columns that contain null or missing values. Specifically, the row with Port_ID = 3919965573764932864 and the empty column with no data should be deleted.

5. **Convert Timestamp to Human-Readable Format**
   Convert the Time column (timestamp) into a human-readable date and time format. You can use the Excel TEXT() function or Python's pd.to_datetime() to convert timestamps to formats like "YYYY-MM-DD HH:MM:SS".

6. **Remove Unnecessary Columns**
   Remove the columns that are not required for the analysis, such as Feeasset, Quantityasset, and Realizedprofitasset, as these are irrelevant to the task.

7. **Rename Columns**
   7.1. Rename the following columns to provide clearer and more meaningful names:
   7.2. 'Port_Ids' → 'Port ID'
   7.3. 'Price' → 'Unit Price'
   7.4. 'Quantity' → 'Total Quantity Traded (USDT)'
   7.5. 'Time' → 'Trade Execution Time'
   7.6. 'Fee' → 'Platform Fee (USDT)'
   7.7. 'Qty' → 'Quantity Traded In Base Asset'
   7.8. 'Realizedprofit' → 'Realized Profit (USDT)'
   7.9. 'Positionside' → 'Position Side'
   7.10. 'Activebuy' → 'Active Buy'

Feature Engineering:

1. **Calculated Metrics**: Features such as Profit and Loss (PnL), Return on Investment (ROI), and Sharpe Ratio were calculated using standard financial formulas.
2. **Trade Classification**: Trades were classified based on the side (BUY/SELL) and position side (long/short), and quantities were adjusted accordingly.
3. **Profit Calculation**: Realized profit for each trade was computed based on the trade price and quantity.
4. **Other Metrics**: Metrics like Maximum Drawdown (MDD), Win Rate, and Win Positions were derived from the trade history, identifying profitable trades and calculating the overall account performance.

Ranking Algorithm:

1. Each account was scored based on calculated metrics. A weighted scoring system was applied, where different metrics such as ROI, PnL, and Sharpe Ratio were given different weightages based on their importance in evaluating account performance.
2. The top 20 accounts were identified based on their total scores, which combined all the relevant metrics.

Findings

1. **Top Accounts**:
    1.1. The top 20 accounts were ranked based on a combination of financial metrics. Accounts with higher ROI, PnL, and Sharpe Ratios generally performed better in the ranking.
2. **ROI and PnL**:
    2.1. A few accounts demonstrated significantly higher ROI and PnL, indicating strong trade strategies and successful investments. These accounts typically had consistent positive returns across multiple trades.
3. **Sharpe Ratio**:
    3.1. Accounts with higher Sharpe Ratios exhibited better risk-adjusted returns, meaning they were able to generate higher returns per unit of risk.
4. **Win Rate**:
    4.1. A higher Win Rate was correlated with better overall performance in terms of profitability, although Win Rate alone did not guarantee a higher ranking.
5. **Maximum Drawdown (MDD)**:
    5.1. Accounts with lower MDD values showed more stable performance, with smaller declines during periods of loss, contributing to better rankings.
6. **Trends and Insights**:
    6.1. Several accounts showed consistent profitability despite volatile market conditions, indicating disciplined trading strategies and risk management techniques.
    6.2. Accounts with high volatility in returns, as indicated by larger MDD values, had lower rankings due to the risk they exhibited.

Analysis of Results:

1. Top 20 Accounts:

Port ID	Total Positions	Win Positions	Win Rate (%)	PnL (USDT)	ROI (%)	Sharpe Ratio	MDD	Final Score of Composite Indicator	Rank
3.82609E+18	108	63	58.33	532.66	12.18	0.675	12.93	0.647132745	1
3.76817E+18	14	6	42.86	243.67	8.78	0.424	0.00	0.468321481	2
3.95605E+18	28	20	71.43	1373.56	1.11	0.525	0.00	0.365830437	3
3.98681E+18	3554	2780	78.22	16337.46	0.87	0.330	2.38	0.365163326	4
4.03913E+18	133	59	44.36	1264.29	3.16	0.522	0.00	0.363856308	5
3.99924E+18	4522	2366	52.32	42574.47	0.54	0.228	300.81	0.358005387	6
3.89102E+18	437	283	64.76	2856.30	1.74	0.432	0.00	0.348481698	7
4.02264E+18	6052	2634	43.52	2176.83	1.85	0.559	116.00	0.342298468	8
4.03543E+18	89	43	48.31	2493.75	1.91	0.470	0.00	0.330582312	9
3.97723E+18	83	33	39.76	2427.29	4.10	0.305	0.00	0.323793055	10
4.02975E+18	856	367	42.87	3662.14	3.17	0.354	0.00	0.323716297	11
4.03928E+18	327	181	55.35	1038.81	1.02	0.472	0.00	0.318425167	12
3.94353E+18	1759	964	54.80	2361.42	1.06	0.428	32.30	0.310528245	13
3.94466E+18	45	20	44.44	2074.45	2.08	0.407	0.00	0.309813714	14
4.02942E+18	102	38	37.25	2799.90	1.30	0.512	0.00	0.307119996	15
3.90708E+18	4137	2540	61.40	18016.00	1.10	0.223	2060.71	0.306137333	16
3.88675E+18	1249	931	74.54	7195.18	0.90	0.222	38.21	0.302987552	17
4.04186E+18	97	38	39.18	2327.34	1.34	0.457	0.00	0.295853093	18
4.0287E+18	687	373	54.29	17601.40	0.41	0.276	585.68	0.295813855	19
4.01711E+18	252	143	56.75	2899.93	0.47	0.394	0.00	0.292557145	20

2. Financial Metrics of All Accounts

Port ID	Total Positions	Win Positions	Win Rate (%)	PnL (USDT)	ROI (%)	Sharpe Ratio	MDD
3.67275E+18	474	210	44.30	566.60	0.4764	0.1853	80.78
3.73319E+18	689	553	80.26	2923.98	0.2511	0.0603	2743.12
3.76817E+18	14	6	42.86	243.67	8.7791	0.4243	0.00
3.7844E+18	6050	1829	30.23	2521.81	0.3398	0.1066	271.29
3.78676E+18	82	37	45.12	205.02	0.3321	0.2152	123.46
3.78847E+18	3069	1369	44.61	13960.97	0.8368	0.1529	1772.22
3.81823E+18	1421	482	33.92	6419.61	0.7892	0.1543	2036.54
3.81955E+18	68	26	38.24	980.06	0.6898	0.2147	0.00
3.82609E+18	108	63	58.33	532.66	12.1785	0.6751	12.93
3.85851E+18	996	243	24.40	-280.97	-0.0357	-0.0136	827.31
3.86585E+18	882	451	51.13	1406.07	0.7106	0.2436	78.66
3.87863E+18	2811	1415	50.34	3921.23	0.4105	0.1561	1039.84
3.87982E+18	872	289	33.14	4268.01	2.0617	0.1309	1961.03
3.88092E+18	145	49	33.79	-176.83	-0.1091	-0.0386	609.39
3.88675E+18	1249	931	74.54	7195.18	0.8994	0.2217	38.21
3.88758E+18	6050	2893	47.82	2417.51	0.2145	0.0879	577.61
3.89102E+18	437	283	64.76	2856.30	1.7434	0.4325	0.00
3.90708E+18	4137	2540	61.40	18016.00	1.0992	0.2227	2060.71
3.91089E+18	75	17	22.67	1803.30	0.8922	0.1083	663.32
3.91098E+18	640	274	42.81	6761.65	0.7175	0.3310	201.72
3.912E+18	64	30	46.88	605.72	0.6217	0.1729	229.55
3.91465E+18	483	200	41.41	343.47	0.0800	0.0110	3893.07
3.91917E+18	1267	609	48.07	1456.37	0.0632	0.0115	9684.34
3.92377E+18	1259	359	28.51	772.73	0.1565	0.0724	205.53

3.92537E+18	1458	486	33.33	6789.44	0.3753	0.2749	162.06
3.92642E+18	478	163	34.10	1309.46	0.1355	0.0503	1119.09
3.93069E+18	288	140	48.61	1947.24	0.2932	0.0631	1193.91
3.93199E+18	6050	2430	40.17	10374.97	0.5711	0.0508	1651.13
3.9321E+18	2589	778	30.05	3860.31	0.2187	0.0833	669.46
3.93581E+18	1715	602	35.10	2301.96	0.1183	0.0633	1394.97
3.93641E+18	20	6	30.00	10681.51	1.7911	0.2990	0.00
3.93771E+18	511	201	39.33	1117.53	0.0897	0.0163	3858.82
3.93932E+18	315	118	37.46	9775.39	1.0163	0.2038	87.00
3.93993E+18	5928	2148	36.23	2378.88	0.6557	0.2260	78.62
3.94102E+18	112	55	49.11	4234.09	0.4893	0.0878	4945.00
3.94263E+18	4969	1903	38.30	6611.90	0.5464	0.0680	6083.73
3.94353E+18	1759	964	54.80	2361.42	1.0608	0.4281	32.30
3.94409E+18	6063	2774	45.75	7581.49	0.7088	0.2991	97.20
3.94424E+18	858	227	26.46	-1187.89	-0.1242	-0.0237	5867.43
3.94466E+18	45	20	44.44	2074.45	2.0836	0.4075	0.00
3.94609E+18	6085	1930	31.72	-40.67	-0.0555	-0.0057	453.51
3.94921E+18	4530	1675	36.98	1317.58	0.3328	0.0588	131.16
3.94933E+18	384	72	18.75	425.97	0.8228	0.1361	44.75
3.95172E+18	3447	1215	35.25	5260.02	0.2005	0.0584	1073.14
3.95209E+18	172	58	33.72	1032.61	0.6092	0.1737	0.00
3.95343E+18	527	110	20.87	4924.76	0.4085	0.1671	675.69
3.95376E+18	583	180	30.87	6048.87	0.3712	0.1240	957.02
3.95605E+18	28	20	71.43	1373.56	1.1146	0.5249	0.00
3.95608E+18	3916	2019	51.56	16790.01	1.0322	0.0995	635.05
3.95751E+18	1113	300	26.95	3174.18	0.3221	0.0252	3268.44
3.96087E+18	2391	1233	51.57	19567.47	0.2333	0.1629	2234.00
3.96202E+18	1273	337	26.47	9314.49	0.1459	0.0741	1828.49

3.96614E+18	1932	1028	53.21	4883.80	0.3039	0.0525	1661.45
3.9753E+18	2438	1040	42.66	2536.08	0.3833	0.2626	91.89
3.97539E+18	1829	512	27.99	2330.27	0.1552	0.0952	451.23
3.97609E+18	2814	1226	43.57	5901.15	0.3961	0.1407	1074.72
3.97708E+18	5018	1638	32.64	4622.35	0.1853	0.0896	753.47
3.97712E+18	1624	456	28.08	603.98	0.0272	0.0300	905.22
3.97723E+18	83	33	39.76	2427.29	4.1025	0.3047	0.00
3.97845E+18	784	344	43.88	5888.66	0.2549	0.1218	1201.62
3.98181E+18	105	12	11.43	2836.47	1.1056	0.1971	181.89
3.98307E+18	43	14	32.56	2424.83	2.7189	0.3602	0.00
3.98681E+18	3554	2780	78.22	16337.46	0.8716	0.3298	2.38
3.98774E+18	6050	1381	22.83	12464.61	0.5570	0.0499	3386.66
3.98807E+18	2385	890	37.32	3424.47	0.3587	0.0373	135.65
3.98819E+18	5238	1711	32.67	2599.76	0.3540	0.0937	1194.03
3.98821E+18	371	141	38.01	3283.94	0.3529	0.0739	2247.37
3.99141E+18	311	93	29.90	1787.99	0.6553	0.1220	372.97
3.99301E+18	695	331	47.63	3078.66	0.4633	0.1410	60.84
3.99322E+18	3087	1434	46.45	1884.47	0.2373	0.0919	314.18
3.99488E+18	653	361	55.28	3658.77	0.8283	0.1194	175.48
3.99553E+18	6051	1295	21.40	-12346.68	-0.1868	-0.0642	14186.54
3.9966E+18	2661	980	36.83	3509.04	1.0693	0.1134	160.68
3.99857E+18	266	95	35.71	9603.59	0.4680	0.2623	214.72
3.99866E+18	147	72	48.98	1449.33	0.3074	0.3824	0.00
3.99924E+18	4522	2366	52.32	42574.47	0.5437	0.2275	300.81
3.99985E+18	3318	1443	43.49	5843.15	0.8730	0.2259	325.77
4.00022E+18	958	537	56.05	1803.62	0.7204	0.2481	151.90
4.00088E+18	6050	2714	44.86	-836.10	-0.0089	-0.0023	14682.68
4.00241E+18	576	107	18.58	3686.97	2.4922	0.1258	38.34

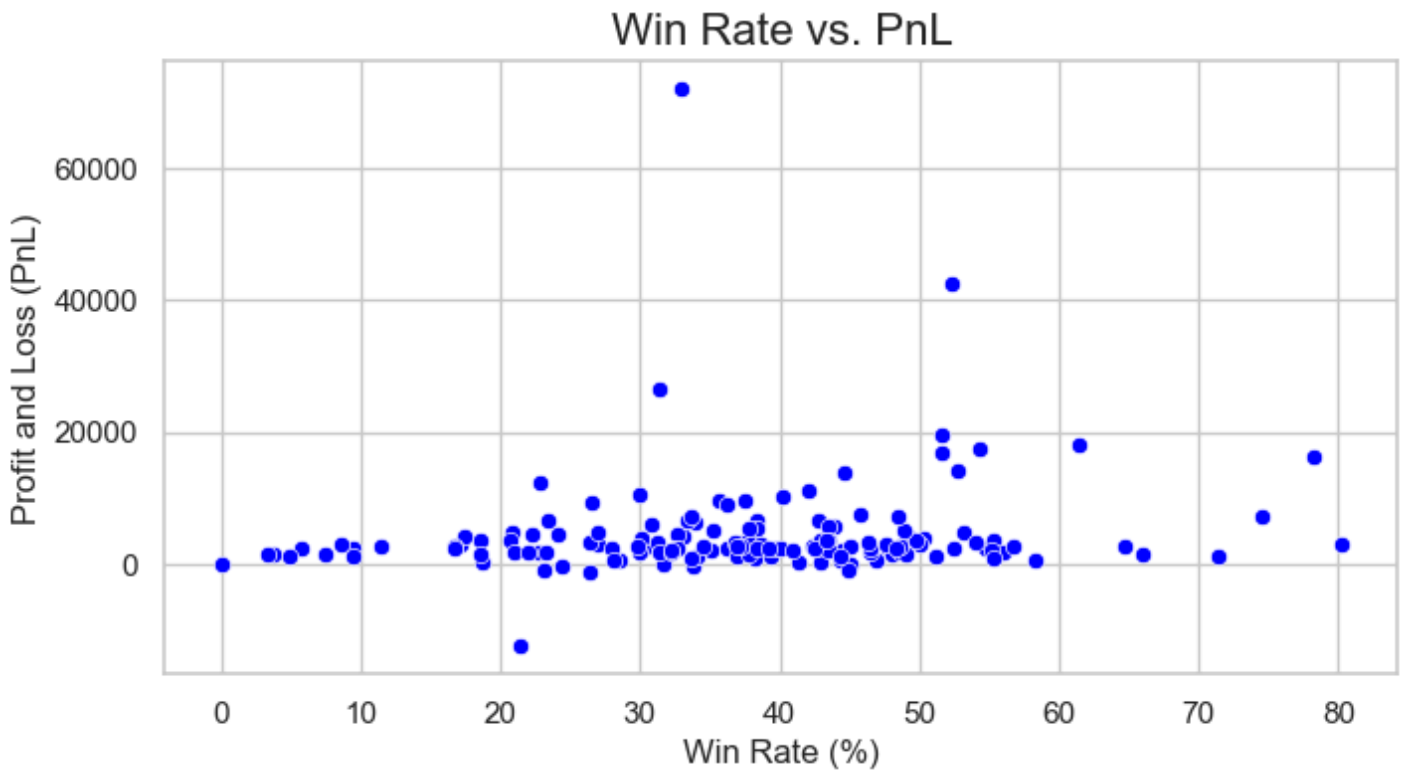
4.00441E+18	507	175	34.52	2905.76	0.6061	0.1891	486.27
4.00471E+18	27	2	7.41	1667.20	3.2109	0.2774	0.00
4.00637E+18	681	117	17.18	3018.54	2.0306	0.0910	688.06
4.00854E+18	535	249	46.54	2330.85	0.6893	0.1076	543.76
4.00871E+18	394	166	42.13	11298.71	0.3082	0.2663	509.55
4.0088E+18	975	527	54.05	3332.73	0.0766	0.0387	4879.95
4.01163E+18	6056	2326	38.41	5483.15	0.2781	0.0773	1133.24
4.01299E+18	627	251	40.03	2500.34	1.5615	0.2150	216.82
4.01396E+18	358	236	65.92	1690.03	0.7033	0.2293	347.86
4.01398E+18	294	61	20.75	3778.88	3.1435	0.1622	0.00
4.01482E+18	529	111	20.98	2013.65	0.2319	0.1911	94.40
4.01616E+18	712	310	43.54	3742.69	0.1254	0.1575	647.84
4.01711E+18	252	143	56.75	2899.93	0.4712	0.3940	0.00
4.01726E+18	6050	2034	33.62	7141.37	0.1146	0.0301	4788.43
4.01732E+18	545	273	50.09	3134.74	1.9573	0.2132	0.00
4.0199E+18	571	242	42.38	2640.30	1.0535	0.2847	0.00
4.0202E+18	6050	1993	32.94	71998.86	0.3116	0.0607	21338.05
4.02124E+18	6050	2290	37.85	1498.19	0.0856	0.0947	490.49
4.02167E+18	1682	528	31.39	26427.33	0.4044	0.0683	2537.87
4.02257E+18	705	372	52.77	14197.58	0.2331	0.2996	385.08
4.02264E+18	6052	2634	43.52	2176.83	1.8477	0.5587	116.00
4.02362E+18	827	339	40.99	2087.77	0.7999	0.2533	3.09
4.0237E+18	42	4	9.52	2408.22	3.1860	0.3002	0.00
4.0237E+18	70	6	8.57	3151.95	3.3076	0.2759	0.00
4.02618E+18	197	46	23.35	6796.19	0.4072	0.1396	1824.64
4.02775E+18	460	207	45.00	2638.22	0.1834	0.0898	483.91
4.02843E+18	121	36	29.75	2633.02	0.8856	0.2643	6.62
4.0287E+18	687	373	54.29	17601.40	0.4065	0.2757	585.68

4.0293E+18	230	72	31.30	3354.15	0.6732	0.2385	0.54
4.02942E+18	102	38	37.25	2799.90	1.2978	0.5116	0.00
4.02951E+18	52	3	5.77	2413.65	3.0493	0.2449	1.27
4.02951E+18	53	2	3.77	1537.90	3.4222	0.1959	0.00
4.02975E+18	856	367	42.87	3662.14	3.1705	0.3539	0.00
4.03039E+18	85	8	9.41	1347.76	3.0648	0.2007	0.00
4.0304E+18	492	86	17.48	4413.76	0.4737	0.1678	57.61
4.03056E+18	121	32	26.45	3358.38	0.6689	0.3241	0.00
4.03057E+18	105	51	48.57	2789.88	0.8710	0.3329	4.03
4.03063E+18	233	116	49.79	3796.35	0.1574	0.2104	670.81
4.03064E+18	1294	679	52.47	2581.61	0.2762	0.0905	47.19
4.03071E+18	60	2	3.33	1612.84	3.2010	0.1841	0.00
4.03117E+18	225	85	37.78	5360.43	0.5834	0.2956	80.90
4.03118E+18	302	73	24.17	4545.24	0.7712	0.2145	22.34
4.03141E+18	82	4	4.88	1351.27	3.0525	0.1578	0.00
4.03141E+18	244	90	36.89	2726.80	1.3301	0.2983	17.58
4.03145E+18	114	44	38.60	3124.54	1.0425	0.2253	3.90
4.03149E+18	1889	683	36.16	9082.70	0.1159	0.1561	3682.11
4.03167E+18	229	72	31.44	1984.72	0.4892	0.2685	64.53
4.0324E+18	223	123	55.16	2060.57	0.2640	0.1078	1104.52
4.03361E+18	516	115	22.29	4602.24	0.2772	0.1088	647.29
4.03364E+18	149	25	16.78	2848.14	0.7075	0.2144	0.00
4.03436E+18	799	391	48.94	5284.65	0.2047	0.1574	1659.35
4.03479E+18	321	123	38.32	2521.08	3.0864	0.2082	0.00
4.03503E+18	395	66	16.71	2517.32	2.0996	0.1090	632.42
4.03543E+18	89	43	48.31	2493.75	1.9099	0.4696	0.00
4.03655E+18	147	68	46.26	3296.88	0.5617	0.2427	0.00
4.03707E+18	446	83	18.61	1540.40	2.5932	0.1644	0.00

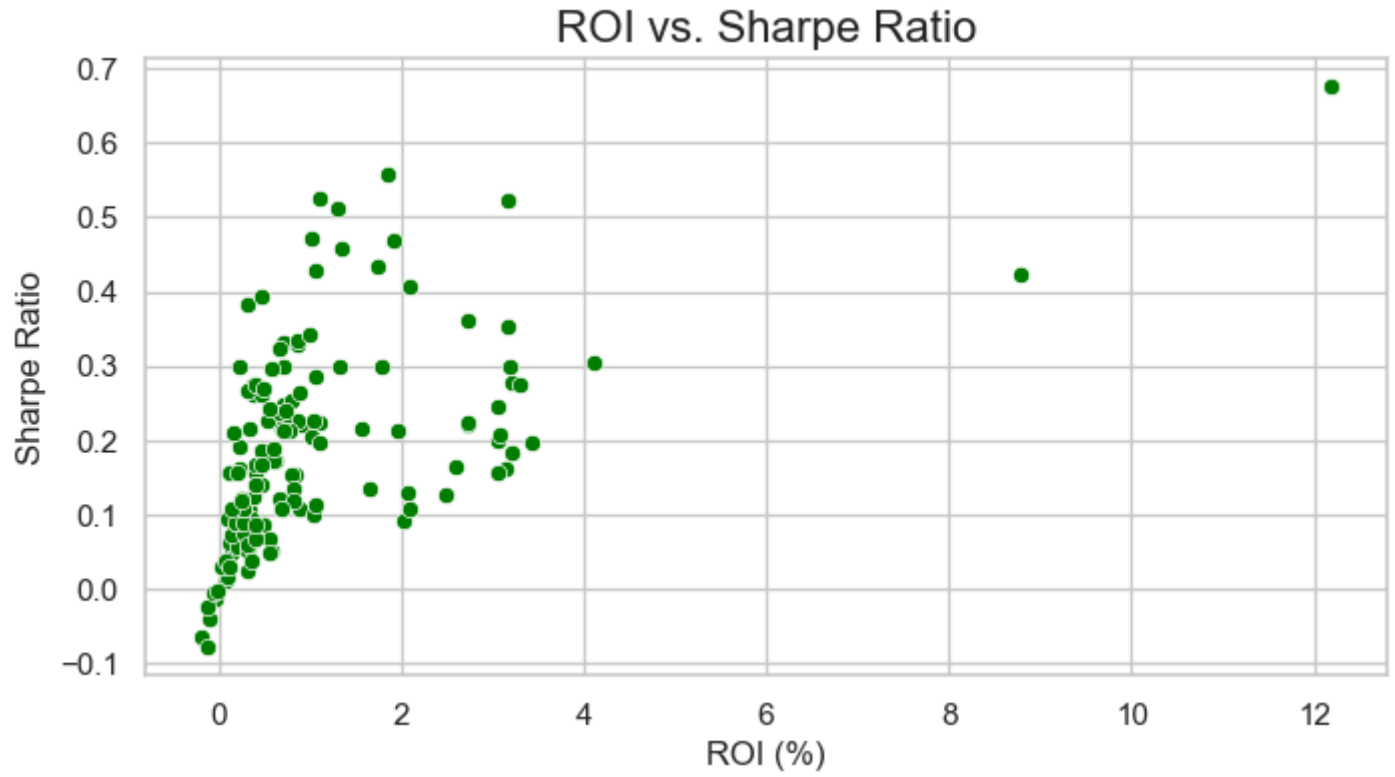
4.03712E+18	1595	772	48.40	7237.92	0.1297	0.1091	1198.33
4.03718E+18	73	31	42.47	2331.43	0.7268	0.2406	0.00
4.03728E+18	504	136	26.98	4760.37	0.2572	0.1198	1680.71
4.03751E+18	953	413	43.34	3552.34	0.3962	0.0881	635.45
4.03772E+18	317	102	32.18	1897.32	2.7371	0.2221	0.00
4.03779E+18	254	59	23.23	1934.58	2.7357	0.2231	0.00
4.03877E+18	100	22	22.00	1741.91	1.6535	0.1350	0.00
4.03913E+18	133	59	44.36	1264.29	3.1625	0.5220	0.00
4.03928E+18	327	181	55.35	1038.81	1.0221	0.4717	0.00
4.04038E+18	76	0	0.00	0.00	0.0000		0.00
4.04084E+18	59	19	32.20	2151.70	0.9855	0.341667606	0.00
4.0418E+18	368	85	23.10	-776.34	-0.1343	-0.0779291	1026.62
4.04186E+18	97	38	39.18	2327.34	1.3390	0.45719346	0.00

3. Insights and Visualisations

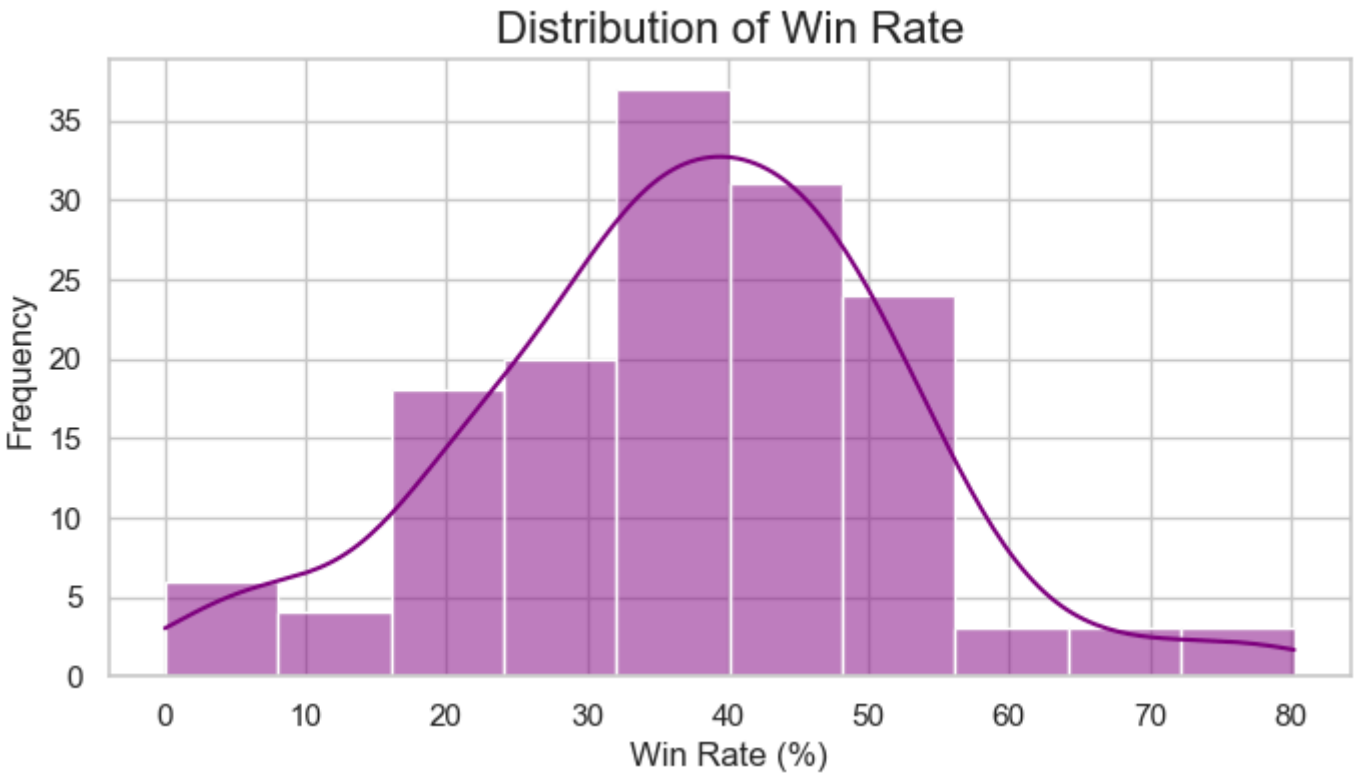
1. **Win Rate vs. PnL**: A scatter plot to check how the win rate correlates with profit and loss.



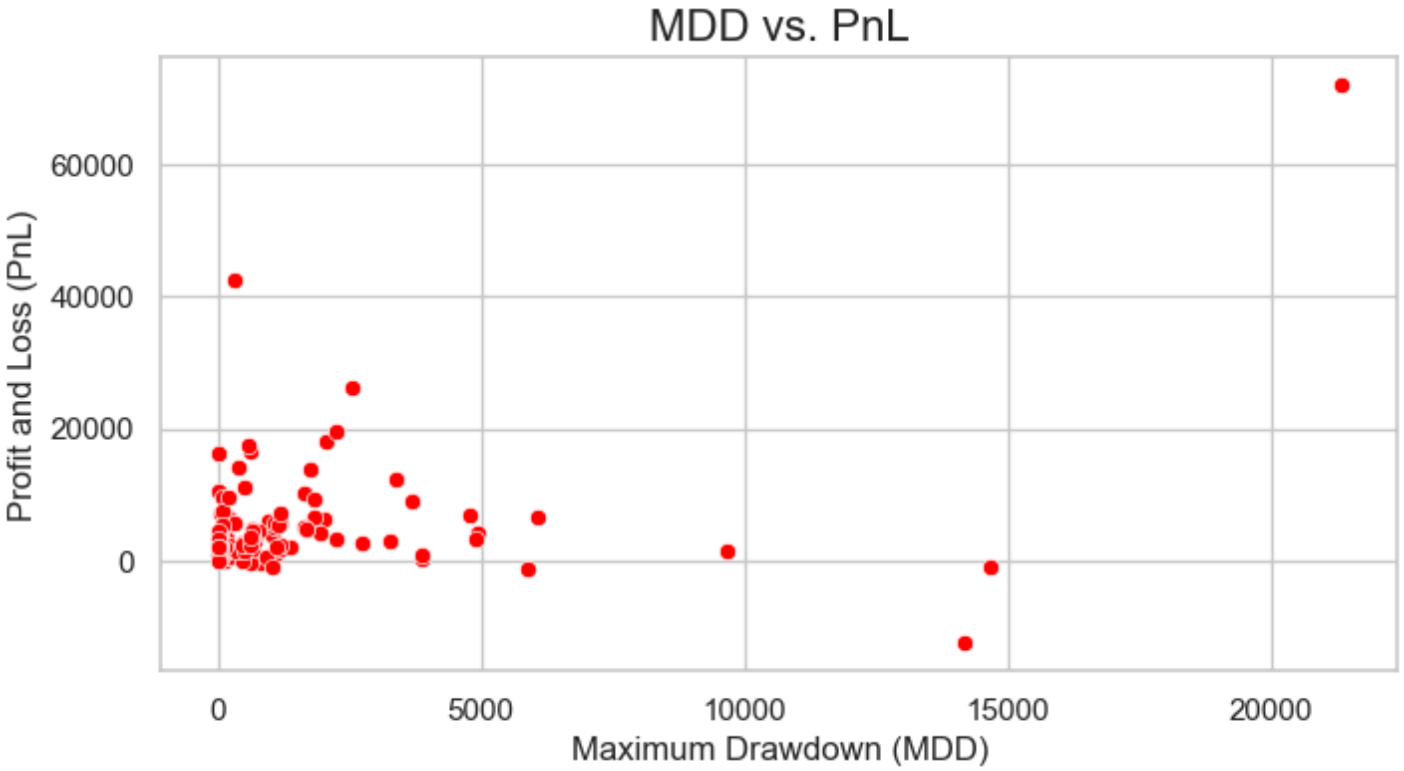
2. **ROI vs. Sharpe Ratio**: A scatter plot to check the relationship between Return on Investment (ROI) and the Sharpe Ratio.



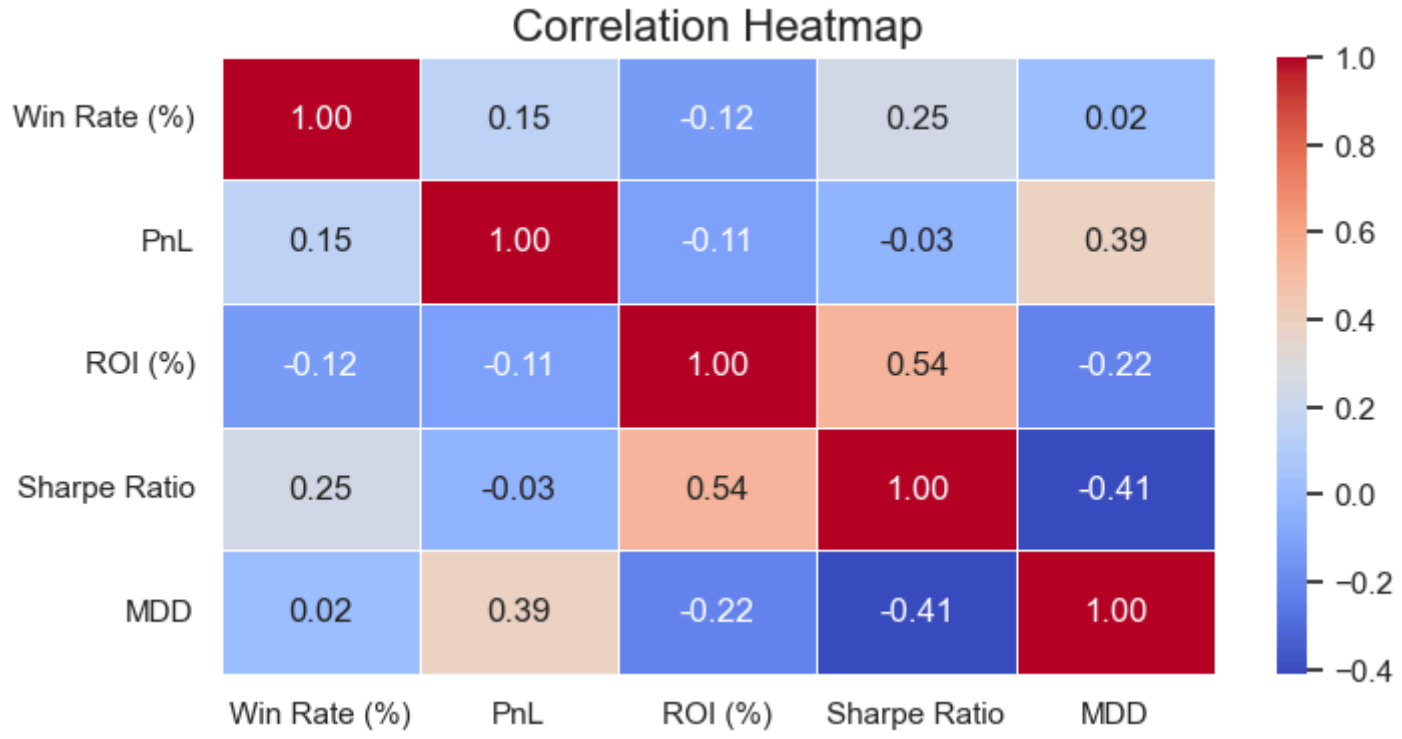
3. **Distribution of Win Rate**: A histogram to visualize the distribution of win rates.



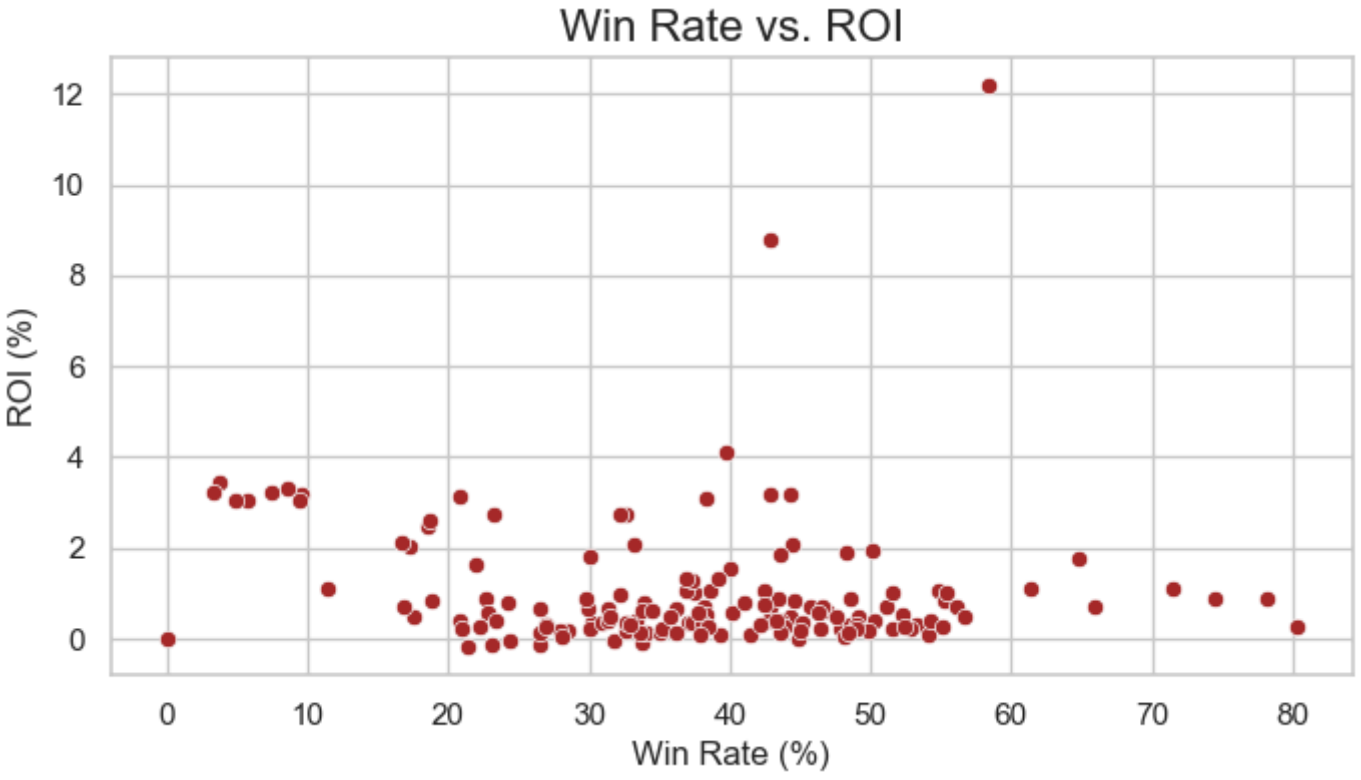
4. **MDD vs. PnL**: A scatter plot to understand the relationship between Maximum Drawdown (MDD) and Profit and Loss (PnL).



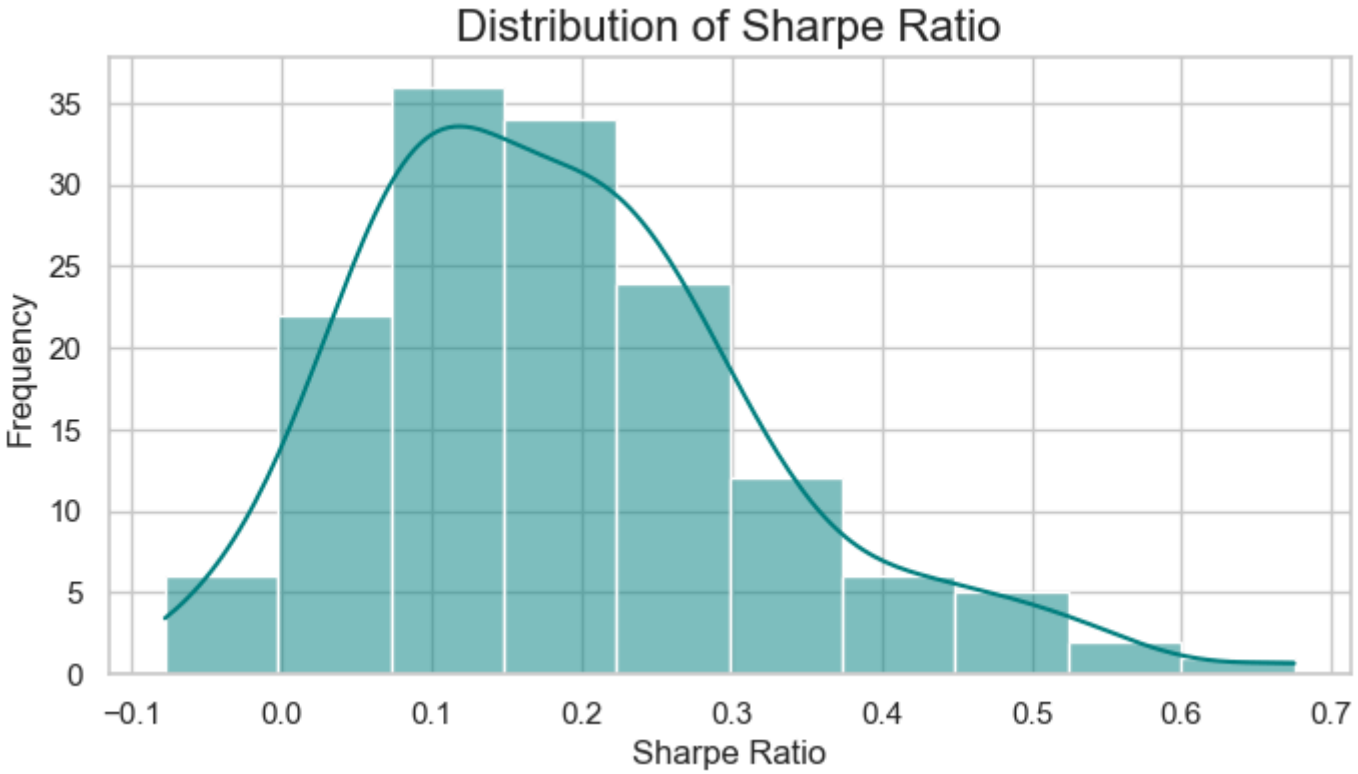
5. **Correlation Heatmap**
   A correlation heatmap shows the relationships between all numerical columns in the dataset, which can help in identifying trends and potential dependencies between variables like Win Rate (%), PnL, ROI (%), Sharpe Ratio, and MDD.



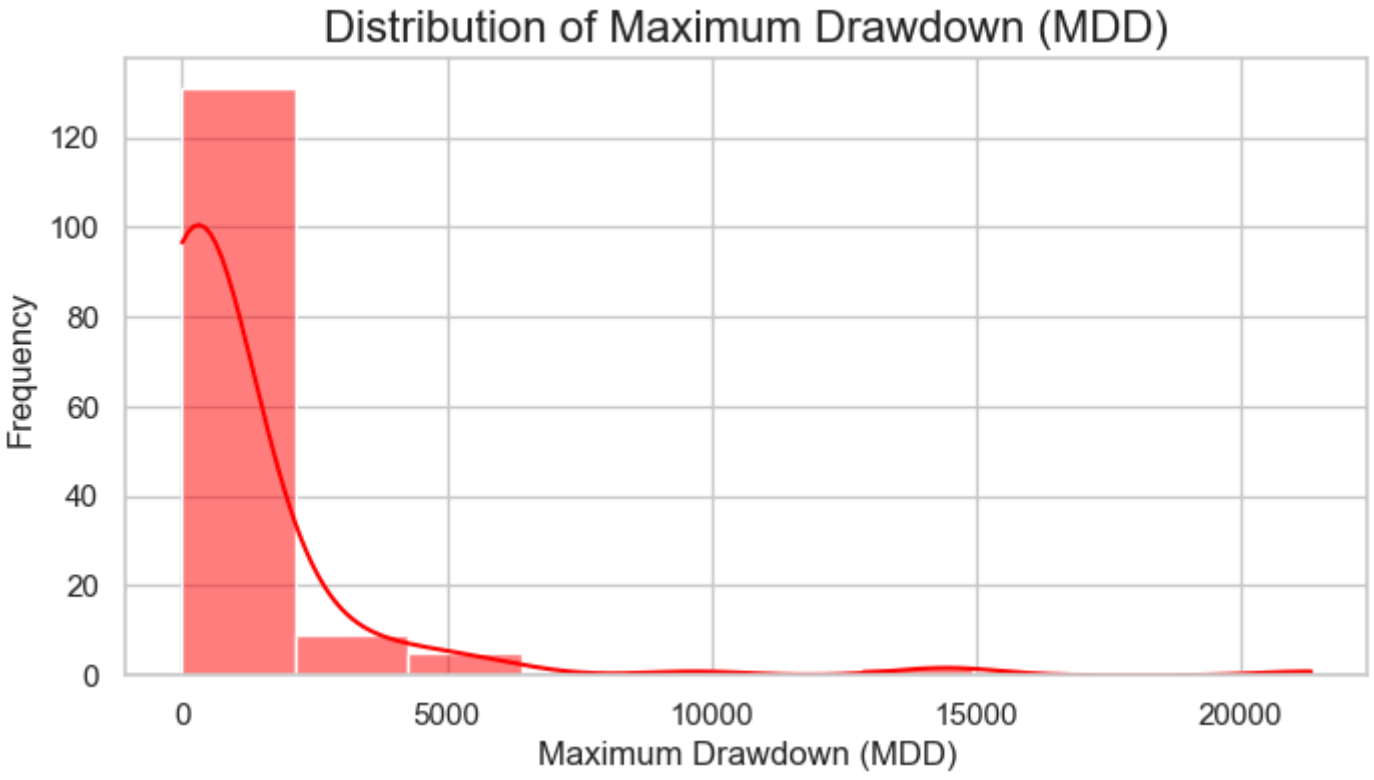
6. **Win Rate vs. ROI (Scatter Plot)**
   A scatter plot of Win Rate (%) vs. ROI (%) will help assess if there is a correlation between the win rate and return on investment for the accounts.



7. **Sharpe Ratio Distribution (Histogram)**
   You can visualize the distribution of the Sharpe Ratio using a histogram. It helps understand the spread of risk-adjusted returns across the accounts.



8. **MDD (Maximum Drawdown) Distribution (Histogram)**
   Visualize the distribution of the MDD across the dataset to check how much drawdown (negative performance) is affecting the accounts.



Conclusion

1. **Performance Insights:**
    - The scatter plot of Win Rate vs. Profit and Loss (PnL) highlighted the relationship between trade success and profitability. Accounts with higher Win Rates generally showed better PnL, though outliers indicated that success is not solely dependent on Win Rate.
    - ROI and Sharpe Ratio analysis identified accounts with the best risk-adjusted returns, enabling prioritization of high-performing accounts.
2. **Risk Assessment:**
    - The Maximum Drawdown (MDD) vs. PnL scatter plot illustrated the risk-reward tradeoff. Accounts with minimal MDD and higher PnL emerged as potential benchmarks for low-risk, high-reward strategies.
3. **Trading Activity Overview:**
    - The comparison of Total Positions vs. Win Positions provided insights into trading consistency and success rates. High total positions with proportional win positions reflected disciplined and effective trading strategies.
4. **Distribution Analysis:**
    - The histogram of Win Rates revealed the distribution patterns across accounts, helping identify clusters of underperforming or outperforming accounts for further investigation.
5. **Top Accounts:**
    - The identification of top 20 accounts based on profitability and other performance metrics provides a foundation for replicating successful strategies and focusing on high-value contributors.

Actionable Recommendations:

- Further analyze accounts with high Sharpe Ratios and ROI to extract insights for optimizing trading strategies.
- Investigate accounts with high MDD despite positive PnL to improve risk management.
- Develop tailored strategies for accounts with moderate Win Rates but consistent profitability to enhance overall returns.

This analysis serves as a valuable resource for improving decision-making in trading activities and refining strategies for sustainable profitability. Future analyses could incorporate additional metrics, such as trade duration or asset-specific performance, to gain deeper insights into trading behavior.