

M5 MOBILE LEGENDS

DATA SCIENCE ANALYSIS

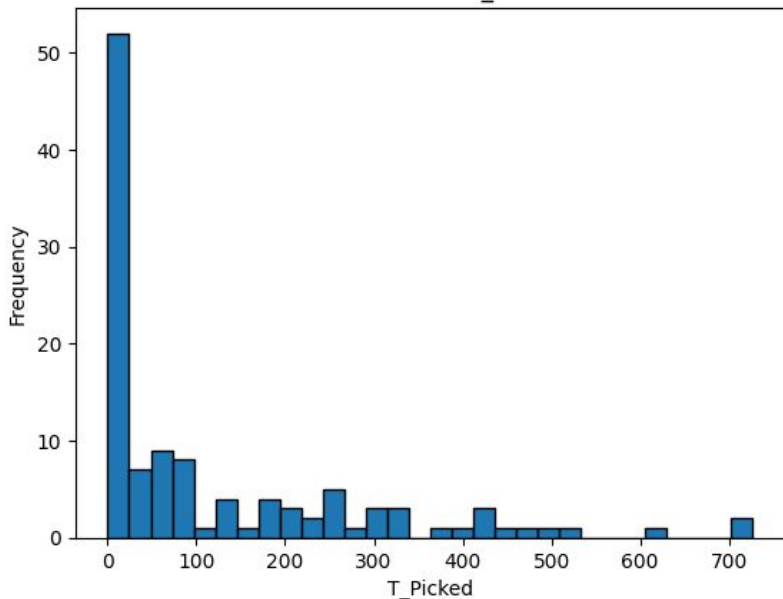
MUHAMMAD FADHIL ABIDIN





Distribution of Total Heroes Picked

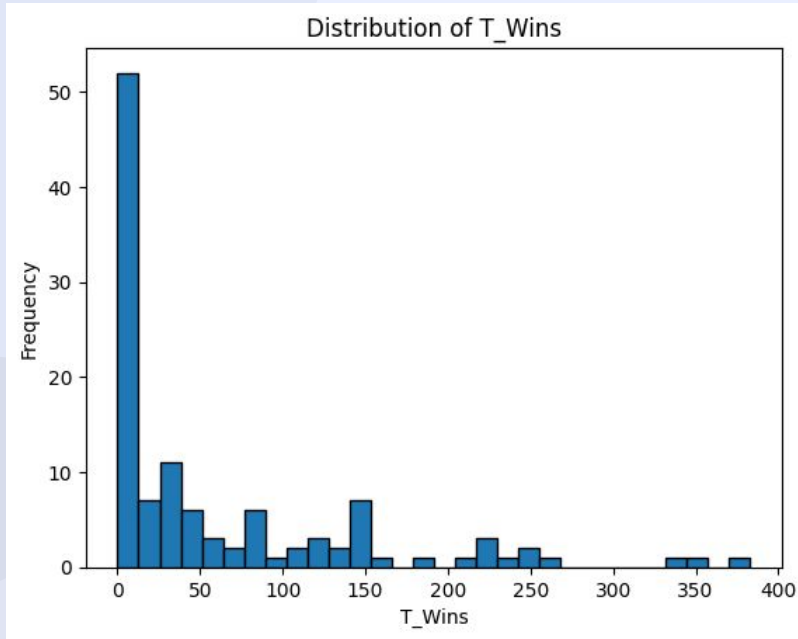
Distribution of T_Picked



The majority of heroes (over 50) are not used at all, indicating that only a small percentage of heroes are the first choice. Interestingly, there are 3 heroes who are very dominant with more than 700 votes, and only 25 heroes are chosen less than 100 times, signaling a strong dependence on a few specific heroes.

Overall, this data reflects a centralized hero selection pattern of the 115 existing heroes, which may be due to their strength or popularity in the current meta. This dependence can lead to more predictable game patterns, but it also emphasizes the importance of these heroes in winning matches.

Distribution of Total Heroes Wins



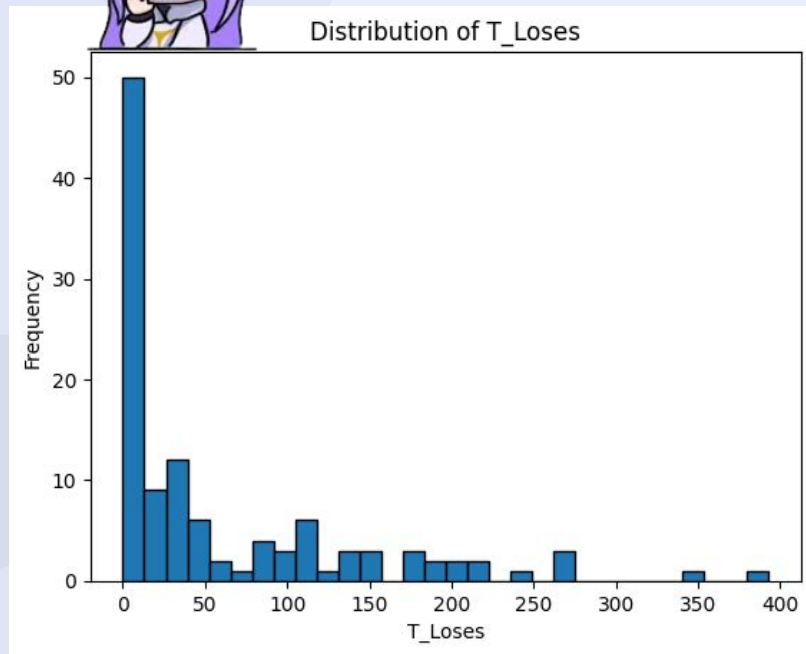
There are some heroes that have a far above average win amount, while most other heroes have a lower win amount. This indicates that there are some heroes who are very dominant and often used in matches, while others are less popular or less effective in the meta at the time.

The meta in Mobile Legends is very dynamic and constantly changing. Heroes who are popular/strong in one tournament will not necessarily remain the same in the next. This makes the match more interesting and unpredictable, as players have to constantly adapt to the new meta.





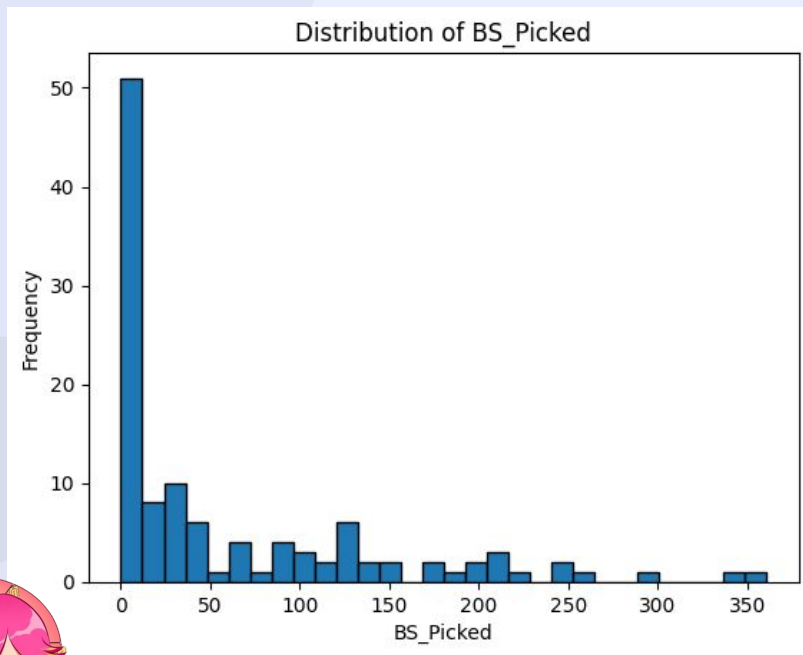
Distribution of Total Heroes loses



There are some heroes who suffer losses that are far above average, while most other heroes have a lower number of defeats. This indicates that there are some heroes who are less effective or less popular in the meta at that time.

Heroes with a high number of losses may have certain weaknesses, lack flexibility, or have poor synergy with other heroes in the meta at the time. By combining information from the distribution of wins and losses, we can identify heroes who have a balanced rate of wins and losses. These heroes may have great potential but need the right game strategy to be able to win.

Distribution of Total Heroes Picked by Blue Side

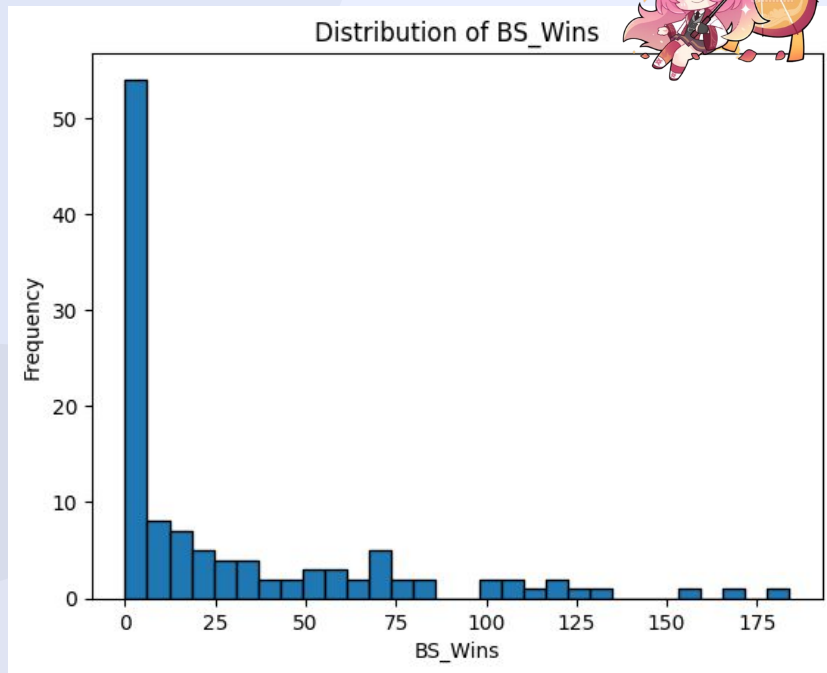


There are some heroes that are chosen very often by blue teams, while most other heroes have a much lower number of votes. This indicates that there are several heroes that are very popular or considered effective when playing on the blue side, so they are the main choice for many teams.

Heroes who are often chosen by the Blue team may have very strong abilities in the early game, the ability to control areas, or have good synergy with other popular heroes. The fact that some heroes are rarely chosen by the blue team can be caused by several factors, such as the weakness of the hero when playing on the blue side, or because the meta at that time is more favorable to other heroes.



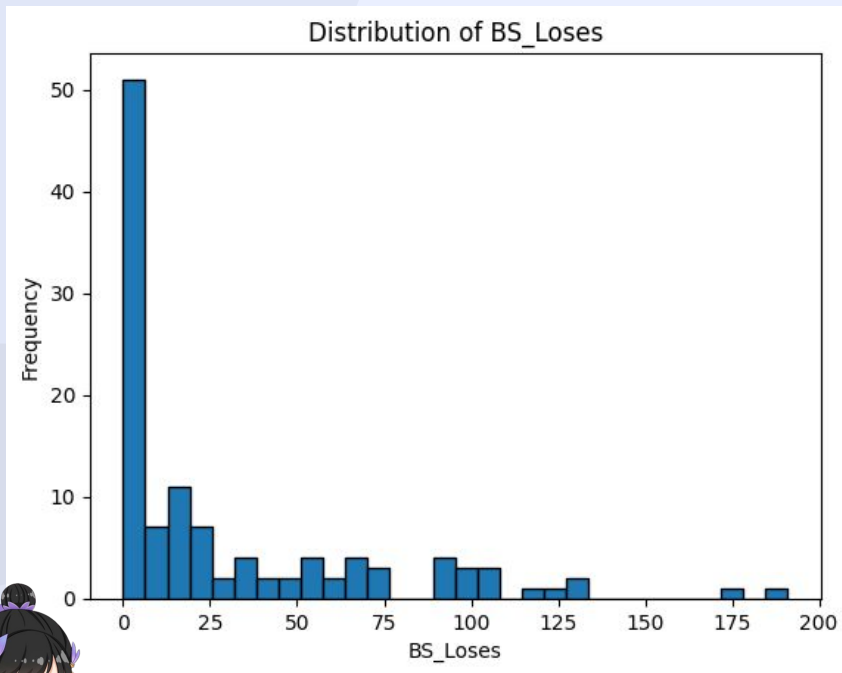
Distribution of Total Heroes Wins by Blue Side



There are some heroes who win much more often while on the blue team, while most other heroes have a lower number of wins. This indicates that there are several heroes who have better advantages or synergies when playing on the blue side, so they often win matches while on the team.

Heroes who often win matches while on the blue team are likely to have very strong abilities in the early game, the ability to control areas, or have good synergy with other heroes who are popular on the blue side. The fact that some heroes rarely win matches while on the blue team can be caused by several factors, such as the weakness of the hero when playing on the blue side, or because the current meta is more favorable to the other heroes on the red side.

Distribution of Total Heroes Loses by Blue Side



There are some heroes who lose much more often when on the blue team, while most other heroes have a lower number of defeats. This indicates that there are several heroes who have weaknesses or are not suitable when playing on the blue side, so they often lose when they are on the team.

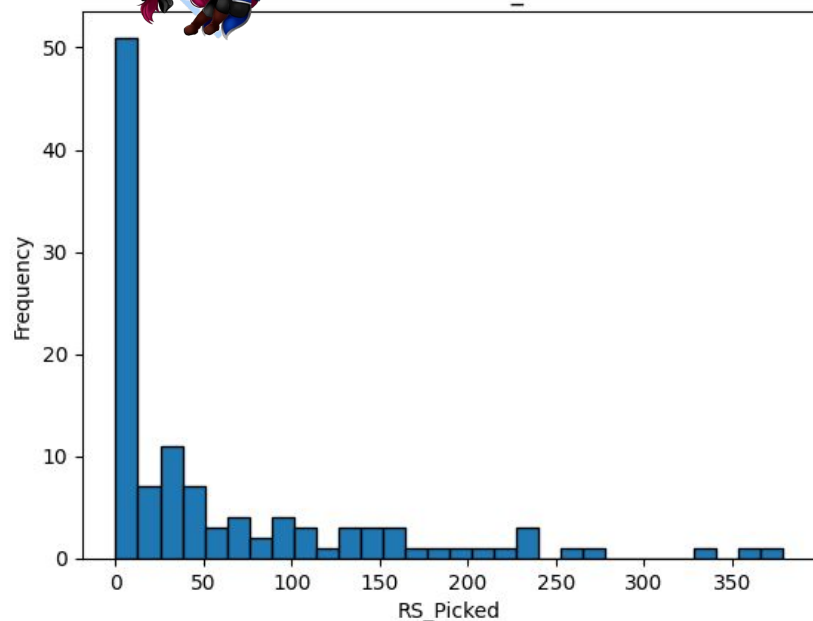
Heroes who often lose on the blue team may have weaknesses in the early game, difficulty controlling the area, or have poor synergy with other heroes who are popular on the blue side. The fact that some heroes rarely lose while on the blue team can be caused by several factors, such as the strength of the hero when playing on the blue side, or because the current meta is more favorable to the heroes on the blue side.



Distribution of Total Heroes Picked by Red Side



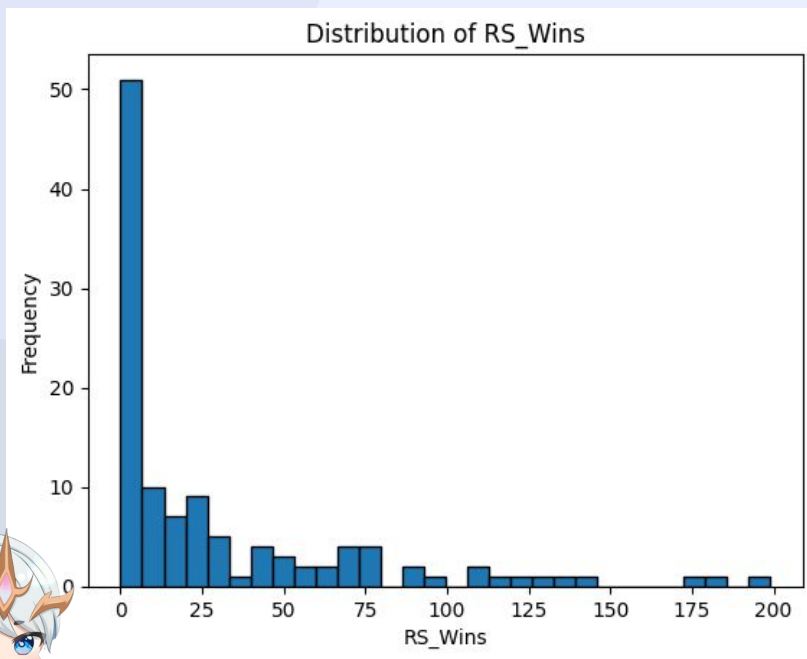
Distribution of RS_Picked



There are some heroes that are chosen very often by the red team, while most other heroes have a much lower number of picks. This indicates that there are several heroes that are very popular or considered effective when playing on the red side, so they are the first choice for many teams.

Heroes who are often chosen by the red team may have very strong abilities in the late game, the ability to initiate, or have good synergy with other heroes who are popular on the red side. The fact that some heroes are rarely chosen by the red team can be caused by several factors, such as the weakness of the hero when playing on the red side, or because the current meta is more favorable to other heroes on the blue side.

Distribution of Total Heroes Wins by Red Side

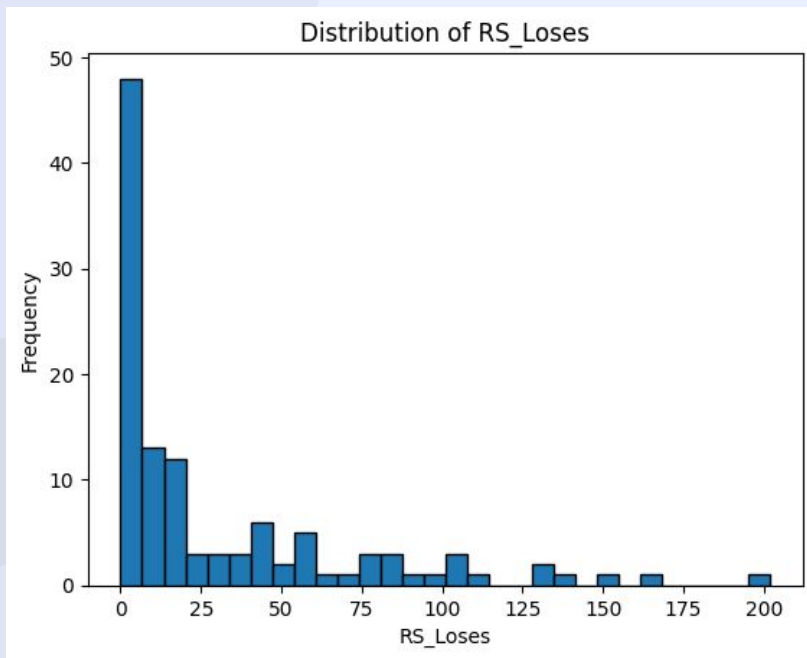


There are some heroes who win much more often while on the red team, while most other heroes have a lower number of wins. This indicates that there are several heroes who have better advantages or synergy when playing on the red side, so they often win matches while on the team.

Heroes who often win matches while on the red team may have very strong abilities in the late game, the ability to initiate, or have good synergy with other heroes who are popular on the red side. The fact that some heroes rarely win matches while on the red team can be caused by several factors, such as the weakness of the hero when playing on the red side, or because the current meta is more favorable to other heroes on the blue side.



Distribution of Total Heroes Loses by Red Side

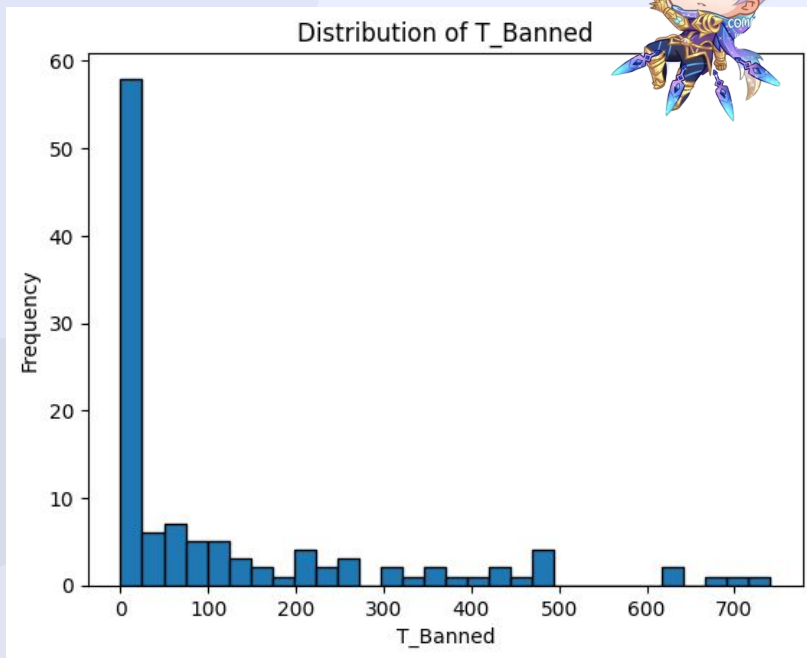


There are some heroes who lose much more often than others when they are on the red team. This indicates that there are several heroes who have weaknesses or are not suitable when playing on the red side, so they often lose when they are on the team.

Heroes who often lose on the red team may have weaknesses in the early game, difficulty controlling the area, or have poor synergy with other heroes who are popular on the red side. The fact that some heroes rarely lose while on the red team can be caused by several factors, such as the strength of the hero when playing on the red side, or because the meta at that time was more favorable to those heroes on the red side.



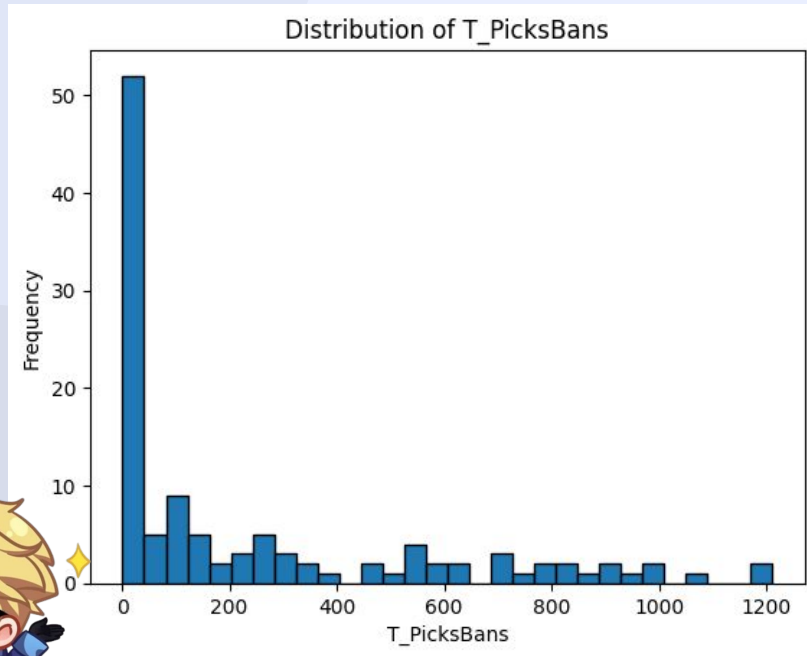
Distribution of Total Heroes Banned



There are some heroes that are banned very often, while most other heroes have a much lower number of bans. This indicates that there are some heroes who are very strong or considered too OP (overpowered) so that they need to be banned to make the game more balanced.

Heroes who are often banned may have very strong abilities in the early game, late game, or have very flexible abilities that make them difficult to counter. The fact that some heroes are rarely banned can be due to several factors, such as the hero's weakness in the meta at the time, or because the hero has a very effective counter.

Distribution of Total Hero was either picked or banned



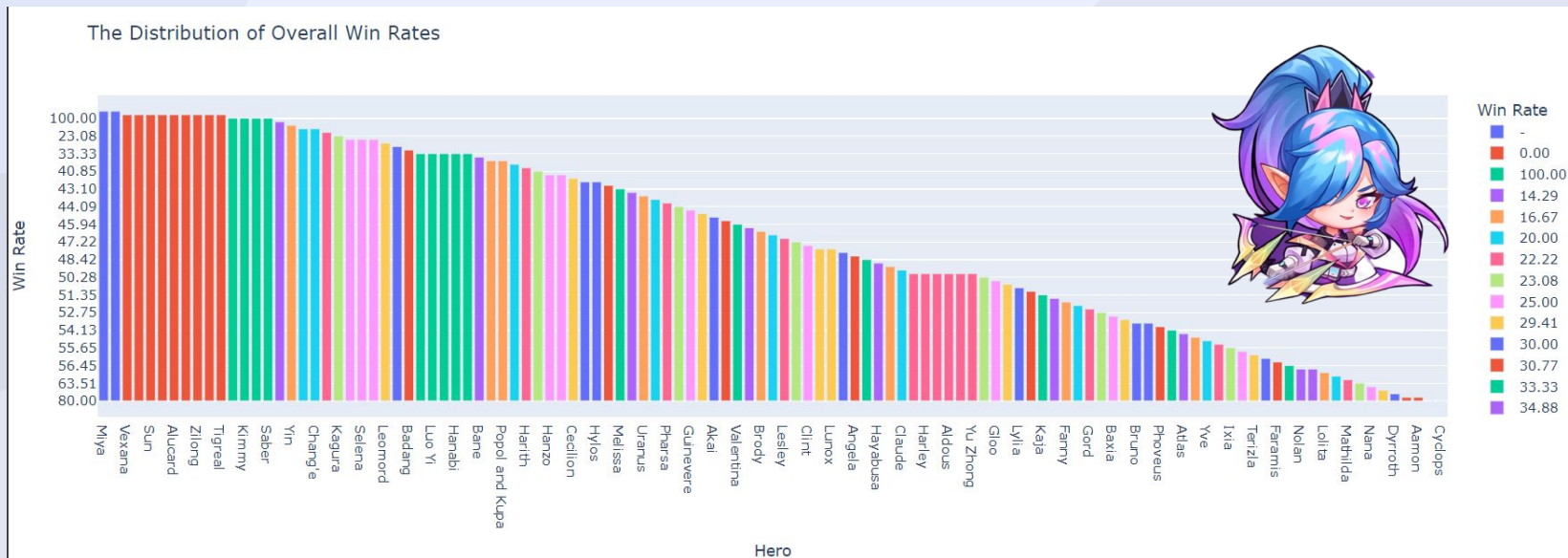
There are some heroes that are picked or banned very often, while most other heroes have a much lower number of picks or bans. This indicates that there are some heroes who are very popular or considered very strong so that they are always a concern in every match, whether to be chosen or banned.

Heroes who are frequently selected or banned may have very powerful abilities, are flexible, or have a very important role in the game's meta at the time. The fact that some heroes are rarely picked or banned can be caused by several factors, such as the hero's weakness in the meta at the time, or because the hero has a very effective counter.



Distribution of Overall Win Rates

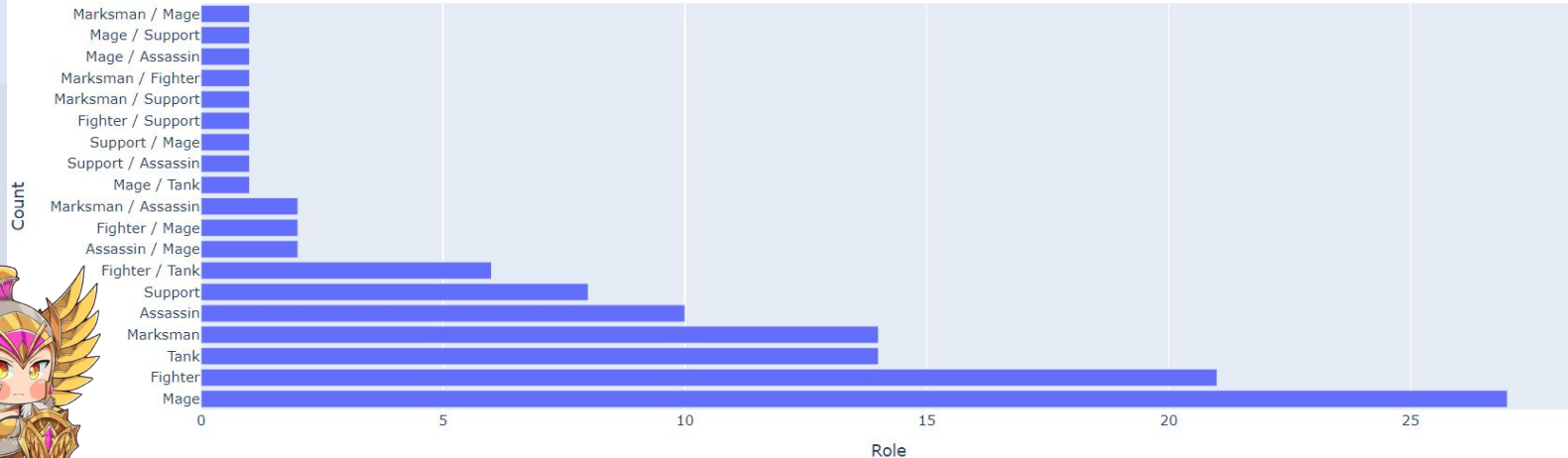
There is a significant difference in the win rate of each hero. Some heroes have a very high win rate, while others have a much lower win rate. This shows that there were some heroes that were very effective and dominant in the game's meta at the time, while others were less effective or difficult to use to their full potential.



Distribution of Hero Roles

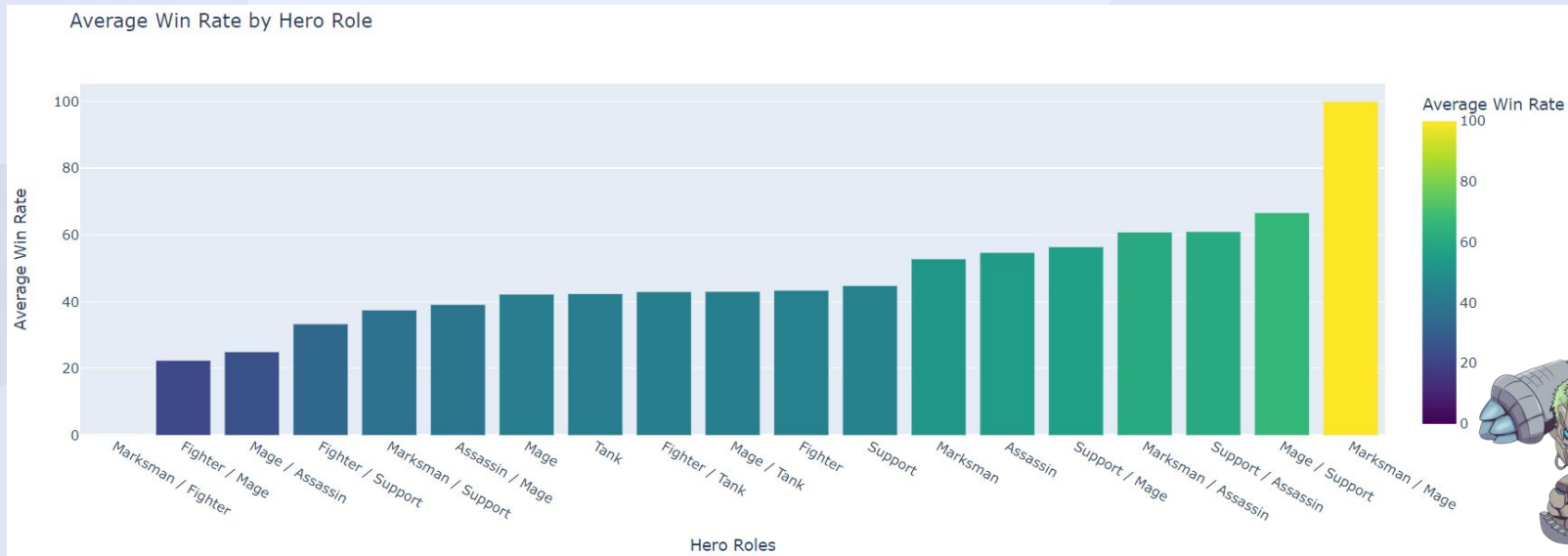
Fighter and Marksman are the most frequently chosen roles, followed by the Mage and Support roles. Role combinations such as Fighter/Tank and Marksman/Fighter are also quite popular. This indicates that in M5 tournaments, teams are more likely to choose a team composition that prioritizes physical damage and durability.

Distribution of Hero Roles in the Dataset



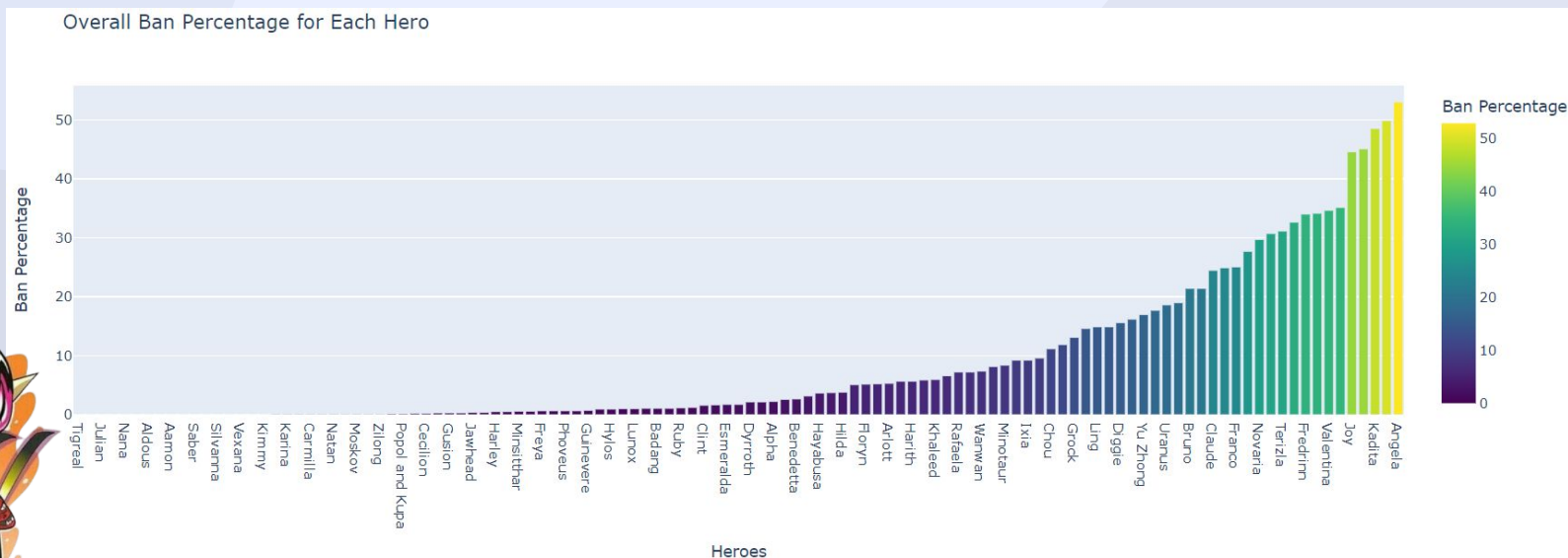
Distribution of Win Rate by Hero Role

The combination of roles with the highest win rate likely has excellent synergy, the ability to make up for each other's shortcomings, or is very effective in dealing with the meta of the game at the time. Role combinations with the lowest win rate may have significant drawbacks, are difficult to use effectively, or are less popular in the game's meta at the time.



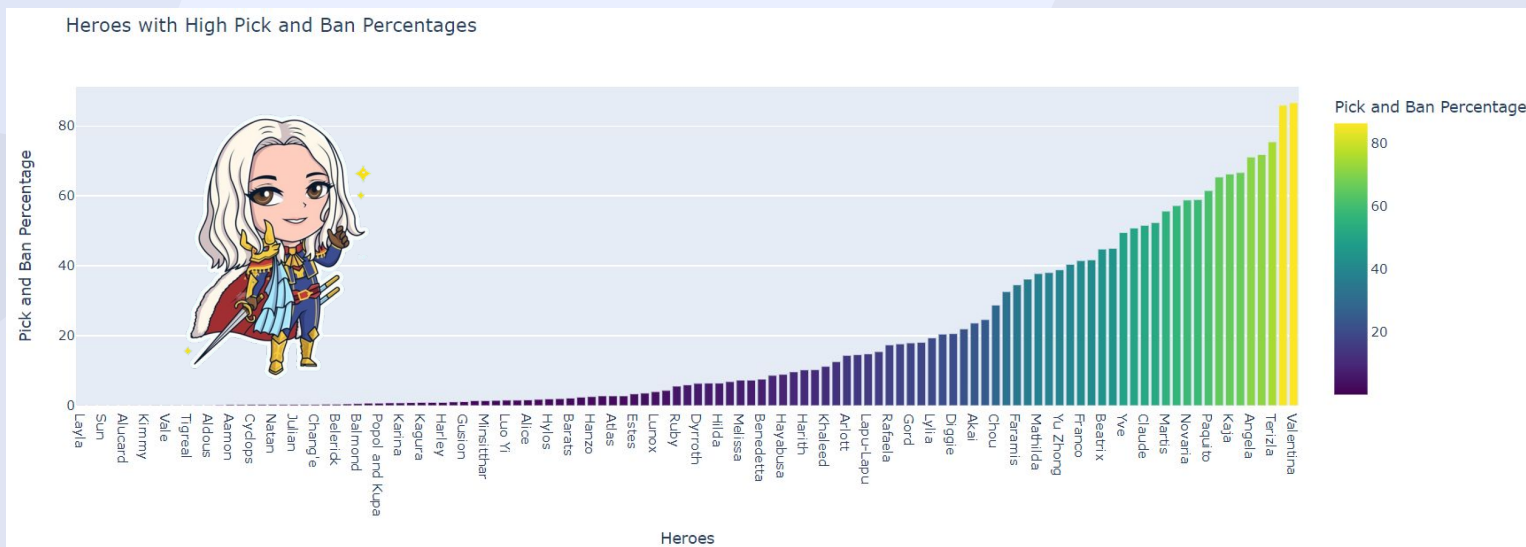
Distribution of Overall Ban Percentage for Each Hero

The heroes with the highest tire percentage are likely to have very strong abilities, are flexible, or have a very important role in the game's meta at the time. They are often a big threat to the opposing team if left in the game. The heroes with the lowest tire percentage may have significant weaknesses, are difficult to use effectively, or are less popular in the game's meta at the time.



Distribution of Heroes with High Pick & Ban Percentages

The heroes with the highest selection and blocking percentages are likely to have very powerful abilities, be flexible, or have a very important role in the game's meta at the time. They are often the center of attention in every match. Heroes with a low percentage may have significant weaknesses, be difficult to use effectively, or be less popular in the game's meta at the time.



Insight & Story Based Query

Based on the query results, the Hero with the Most Picks and the Highest Win Rate is Valentina 727x in the pick with a 45.94% win rate and the Hero with the Most in the Tire is Angela 741x in the tire.

Valentina is a very popular and effective hero in the M5 tournament. With a very high number of picks and a fairly good win rate, it can be concluded that Valentina has a very useful ability in the meta at that time, perhaps in terms of initiation or disruption. Second, Angela is the hero who is banned the most, showing that this support hero is considered very annoying and difficult for the opposing team to face.

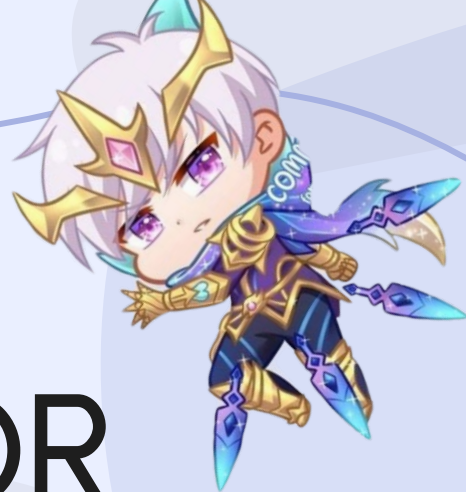
Valentina's popularity and Angela's high block rate indicate that the meta game at that time prioritized heroes who had the ability to control the game and had a big impact on team fights. Teams tend to pick Valentina to surprise and mess up the opponent's formation, while Angela is often blocked to prevent the opposing team from having a strong healer and is difficult to kill.



Machine Learning Model

The machine learning model built using XGBoost Regressor showed excellent performance, with an accuracy of 85.91% and an R-squared (R^2) of 0.86, indicating that the model was able to account for 86% of the variability in the data regarding the likelihood of victory based on the chosen hero combination. Low Mean Squared Error (MSE) and Root Mean Squared Error (RMSE) values, 0.034 and 0.186, respectively, also indicate that the model's predictions are very close to the actual values, with minimal errors. This insight indicates that the combination of heroes in a team has a significant influence on the probability of victory, and this model can be relied on to predict the outcome of matches with high accuracy based on the data provided.





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