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CAPSTONE REPORT

LEAGUE OF LEGENDS:
WINNING TEAM ANALYSIS AND GAME PREDICTION

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With an online community of 150 million registered players, League of Legends ("LoL") is one of the leading online multiplayer games in the world. Created by Riot Games in 2009, LoL continues to grow every year, and is a primary contributor to an approximate revenue of US$23.56bn in the year 2022 with respect to online multiplayer games.

Considering that LoL is such a remarkable platform with very specific characteristics and an impact over millions, its designers are constantly looking for new ways to improve the quality and experience of the game. This leads us to the question: What is the problem we are trying to address in our project?

Using a LoL data set of the last three years, we are concerned about the equality and balance within the game, with respect to each team; more specifically: can we predict the result of the game within the first 15 minutes based on the amount of gold and XP earned by the team? Does one of the teams (Blue or Red) have an intrinsic advantage over the other? How are the secondary objectives able to alter the dynamic of a game and change the potential game result?

Answering the above questions is substantial. The value of our analysis goes to the three different aspects: allows the game designer to improve its quality and the experience for players by re-designing aspects that support each team in a more balanced way and even open discussions for the creation of new challenges within the game in relation to the data studied; in addition this benefits the game by attracting more players, motivating current players to keep playing, and as a result, this benefits and contributes to the overall revenue growth in benefit of the online gaming community. Additionally, this helpw the in-game apps that provide information regarding each player's performance post-game, to highlight the aspects we focused on in our project, and as a result, assist them in strengthening their skills within the game.

Last but not least, this is key information for teams and organizations of professional LoL players, and non-professional players who are on track to become professional. In summary, because of the impact this game has, our project would benefit millions, from rookie gamers to professional LoL players, and as previously mentioned, this contributes to the growth of the online multiplayer community, both in the financial aspect and as a cultural statement.

It must be noted that LoL has been previously addressed by other data scientists, but the specific focus of our project, to our knowledge after due inquiry, has not been studied before. Moreover, our data was downloaded as a cvs format from oracleelixir.com for free.

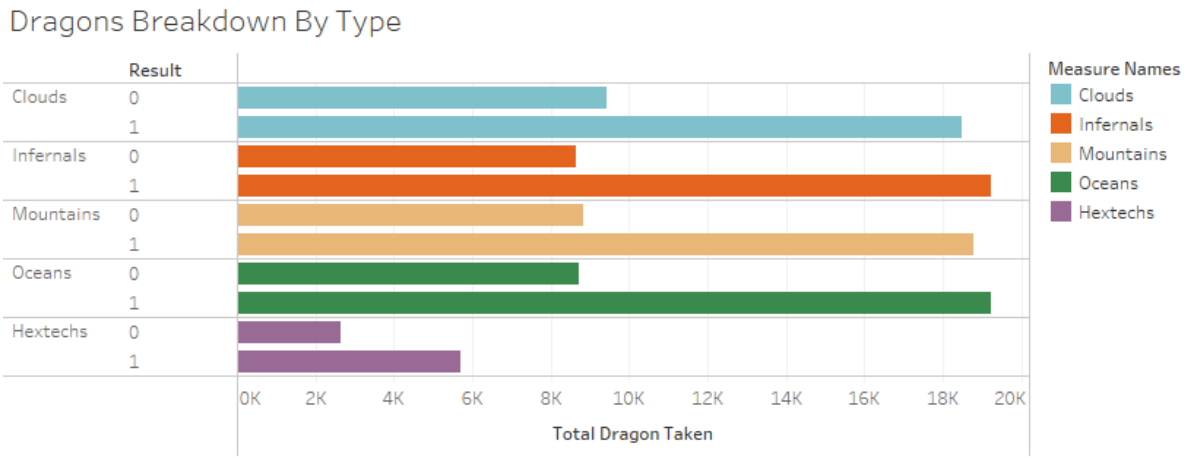
The result of our analysis provided us multiple insights of which we didn't have any knowledge beforehand. Realistically speaking, it demonstrated far beyond our initial hypothesis in relation to the Gold earned and the Secondary Objectives.

Lastly, some of the key conclusions we obtained are:

- Blue side is more prompt to win than the red side and has higher win percentage;
- Importance of dragons and the correlation they have towards winning; and
- Importance of assists and amount of gold it can bring to the teammates.

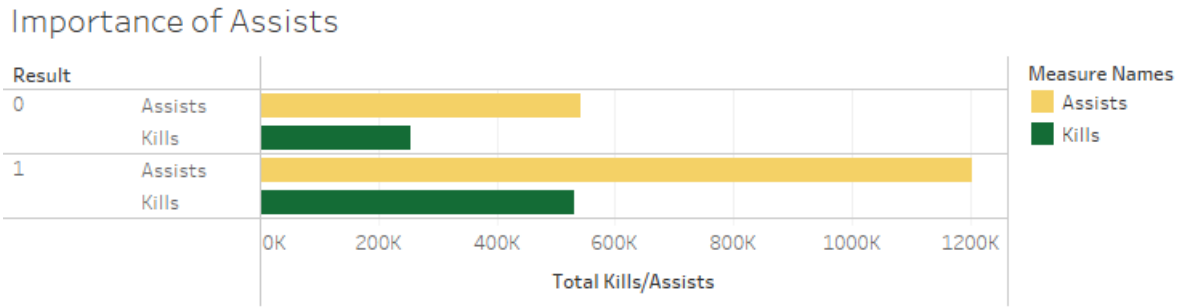
It being noted that these details contribute to answer our primary questions.

Dragons are one of the most important assets in the Secondary Objectives, as presented below.



Clouds, Infernals, Mountains, Oceans and Hextechs for each Result. Color shows details about Clouds, Infernals, Mountains, Oceans and Hextechs.

In addition, assists play an important role in the game and are correlated to the amount of goal earned.



Assists and Kills for each Result. Color shows details about Assists and Kills.