**PROJECT BRIEF**

**Overview**

League of Legends is a multiplayer online battle arena (MOBA) game in which two teams, designated as blue and red, engage in a competition to destroy each other's Nexus. As of 2022, the game boasts an impressive player count of 180 million monthly active players. Notably, League of Legends extends beyond the realm of amateur players, evident in the substantial prize pool of 2.23 million U.S. dollars allocated for the 2023 League of Legends World Championships.

The significance of League of Legends as a business entity is underscored by the substantial number of viewers. The 2023 tournament attracted more than 6.4 million viewers, presenting a lucrative landscape for advertisers, sponsors, and streaming platforms. This substantial audience base not only reflects the game's widespread popularity but also signifies the immense business value it holds for stakeholders seeking to engage with a diverse and extensive demographic.

**Objective**

We want to demonstrate the value and applicability of predictive analytics in competitive Esports, leveraging a unique dataset to predict the outcome of a game within the first 10 minutes.

**Results and Implications**

We tried different algorithms to develop the classification model:

* Logistic Regression (73.3%)
* Decision Tree (71%)
* Random Forest (71.8%)
* LightGBM (72.2%)
* XGBoost (71.8%)
* Gradient Boosting Classifier (72.6%)

Among the predictive models employed, Logistic Regression demonstrated the highest accuracy, reaching 73.3%. This outcome stands as a positive signal for the application of predictive models in the realm of esports games.

Furthermore, our causal analysis revealed insightful findings. While a substantial gold difference positively influences the likelihood of winning a game, intriguingly, a high total gold amount can have a counterintuitive effect, potentially leading to a negative impact on victory. This discovery implies that adopting a defensive playing style may be more advantageous than an aggressive approach.

**Next Steps**

The utilization of predictive models and causal analysis not only showcases the potential for data-driven insights but also enhances strategic decision-making within the eSport domain. By leveraging statistical analysis and machine learning techniques, predictive models empower players, teams, and business stakeholders to make informed choices based on historical data patterns. For next steps, we can collect data from championship tournament to analyze the distinctive playing styles between amateur players and professional players. The analysis of tournament data will also provide insights for professional teams to gain competitive advantages over their rival teams. By understanding the factors contributing to the winning of a game, teams can refine their training regimens and strategic approaches, ultimately elevating their overall performance. Furthermore, we envision extending our predictive models beyond League of Legends to encompass a broader spectrum of esports games. This expansion will contribute to the ongoing advancement of predictive analytics in the esports domain, offering valuable tools and insights applicable to various gaming ecosystems.

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