**Activity Description: League of Legends Module**

**Introduction:**

Welcome to the League of Legends Statistics Worksheet! League of Legends (LoL) is a 5 v. 5 multiplayer online battle arena (MOBA) game developed by Riot Games. In this game, players assume the role of a "champion" with unique abilities and engage in intense battles against a team of other players or computer-controlled champions. Riot Games continually collects data to evaluate the impact of each champion, adjusting and fine-tuning various aspects to ensure fair and competitive gameplay. With regular updates (patches) occurring every two weeks, champions can become either extremely efficient and strong or in need of adjustments to enhance their abilities. Maintaining overall game balance is crucial, and developers employ strategies known as "nerfing" and "buffing" to achieve this balance. "Nerfing" refers to reducing the power or effectiveness of a champion or item, while "buffing" involves increasing its power or effectiveness.

In this worksheet, we will analyze and describe histograms of Win Rates for different champions in LoL. The Win Rate, a key metric in the game, represents the percentage of games won by a champion out of the total games played. Understanding the distribution of Win Rates and identifying potential outliers can provide valuable insights into champion balance and performance, informing strategic decision-making in LoL gameplay.

**Learning Objectives:**

By the end of this activity, you will be able to:

1. Understand the concept of histograms and their relevance in statistical analysis.

2. Analyze and describe histograms to gain insights into the distribution of Win Rates in League of Legends.

3. Identify potential outliers among champions based on their Win Rates.

4. Interpret the implications of outliers in terms of champion balance and performance.

**Methods:**

Technology requirement: The activity handout provides histograms and summary statistics so that no statistical software is required. However, the activity could be modified to ask students to produce that information from the raw dataset.

1. Histograms: Familiarity with histograms as a graphical representation of the distribution of a continuous variable, such as Win Rates, is crucial. You should understand how to interpret histograms, including the concepts of bins, frequencies, and the shape of distributions.

2. Outliers: Knowledge of outliers, which are data points that deviate significantly from the overall pattern, is important. (1.5\*IQR Rule or Z-Score Method)

3. Familiarity with basic statistical analysis techniques, such as measures of central tendency (mean, median) and measures of dispersion (standard deviation, range), will aid in interpreting and analyzing the histograms. These techniques can provide insights into the overall characteristics and variability of the Win Rates.