

Statistics and Trends Assignment

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Applied Data Science 1

GitHub - <https://github.com/sriharimohan/sriharimohan>

Introduction

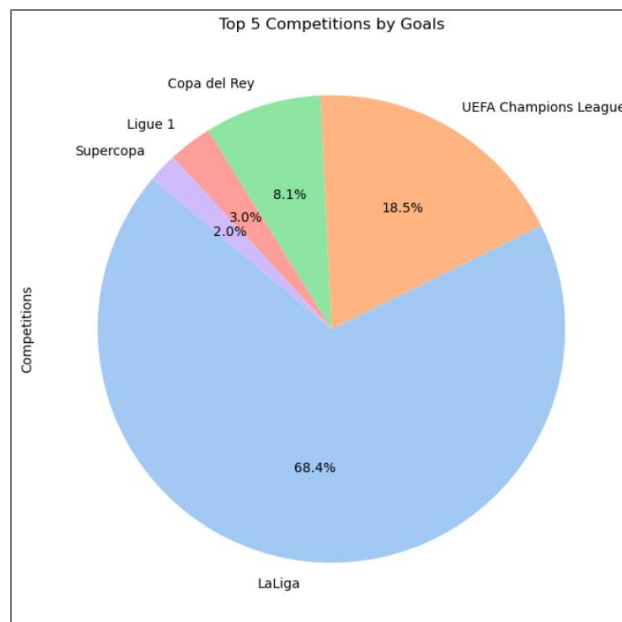
This report provides an in-depth analysis of Lionel Messi's goal-scoring data in his career, focusing on his performance across different competitions, his goal-scoring trends over seasons, his goal types, etc. By examining these aspects through three visualizations, a pie chart, a line chart, and a boxplot, we can gain insights into Messi's performance consistency, adaptability, and contributions across various competitions throughout his legendary career.

Statistical Methods

The descriptive statistics obtained from the describe() function offer a broad summary of Messi's goal distribution, revealing central tendencies such as the mean and median, as well as the range of his goal timings. Additionally, the kurtosis and skewness values provide insights into the shape of the distribution. Here, the skewness value indicates that Messi scores early goals more frequently, while kurtosis value gives an indication of the goals do not have heavier tails which, means the goals are consistent across the time.

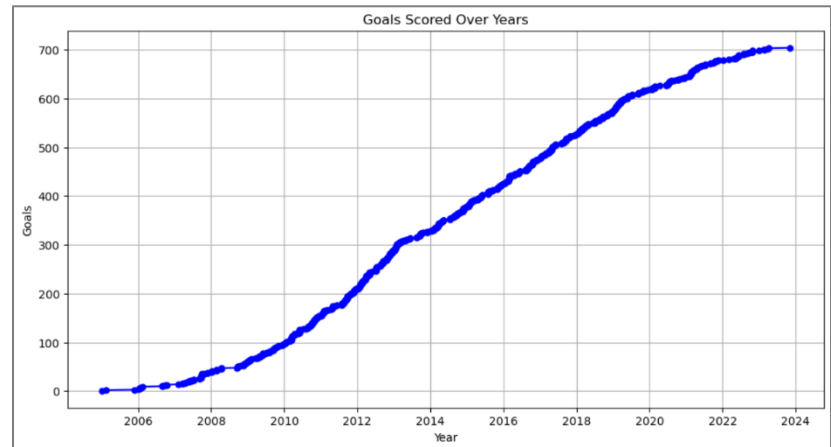
Plot 1: Pie Chart of Goals by Competition

The first plot is a pie chart displaying the distribution of Messi's goals across different competitions. This chart categorizes Messi's goals into his league and european competitions, allowing us to identify where he has been most successful. The pie chart's indicates that Messi has been highly effective in la liga during his time in FC Barcelona which has been considered as his prime time. This distribution not only highlights his skill as a consistent league performer but also showcases his adaptability, as he has successfully scored across various types of competitions, each with unique pressures and levels of competition.



Plot 2: Line Chart of Cumulative Goals Over Years

The second visualization, a line chart, plots Messi's cumulative goals over the years. This line chart helps track Messi's goal scoring streak over seasons, revealing patterns of growth, peak performance, and consistency. The chart begins with his early years and gradually climbs as Messi's career progresses, showing steady increases during peak seasons. This cumulative trend line underscores his reliability as a goal scorer and his ability to maintain performance over multiple seasons. The steady upward trajectory overall reflects Messi's career-long consistency and growth, attributes that have set him apart as a player.



Plot 3: Boxplot of Top 10 Assisted Players and Minute

This visualization provides insights into Messi's goal-scoring tendencies in relation to specific players who frequently assisted him. The boxplot's quartiles allow us to see the spread of goal timings for each assister, highlighting any patterns in when these goals typically occurred during matches. This plot reveals that Iniesta, Pedro, Neymar and Rakitic were more associated with early-game goals, while others tended to set up goals later in the game. Players like Xavi, Pedro, Jordi alba and Suarez have not just assisted in a specific game period but are spread across both halves. This pattern is valuable in understanding how Messi's play was influenced by his relationship with key teammates, as certain partnerships resulted in goals at specific times.

