University of Calgary
Course Number: DATA 604

UEFA Champions League: Player Analysis

Team Members	
Name	**Student Number**
Osama Bilgrami	30213085
Graeme Ko	30235563
Muhammad Umair Qureshi	30214382
Soyebal Saad Adnan	30216885
Ray Alsaidi	00271729

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Abstract

This research paper delves into the intricacies of football dynamics within the UEFA Champions League (UCL), UEFA's premier club competition that has evolved from the European Cup into a global spectacle. With the 2021-22 season featuring a record 78 clubs vying for glory, the UCL stands as the pinnacle of club competitions. This study explores critical performance metrics, examining their impact on individual player contributions and overall team success.

The analysis commences with an exploration of offensive strategies, emphasizing the vital collaboration between prolific strikers and precise assist providers. The study underscores the importance of this synergy in capitalizing on goal-scoring opportunities and achieving a well-rounded offensive strategy.

Beyond the traditional focus on goalkeepers, the paper acknowledges that success in football transcends solely relying on elite goalkeeping. Teams' triumphs are diverse, with some excelling through potent offense or solid defense, showcasing the versatility of strategies employed in the sport.

Pass accuracy, a commonly lauded metric, is scrutinized in its broader context. While acknowledging its benefits, the study cautions against overstating its significance, highlighting instances where teams with lower pass accuracy have achieved significant milestones.

The role of defense, often overlooked in offensive-centric statistics, emerges as a cornerstone of team success. Defensive contributions, though not always reflected in goals and assists, significantly influence a team's overall performance, enabling them to withstand opposition attacks and secure positive outcomes.

Finally, the concept of expected goals is explored, revealing a positive correlation between anticipated and actual player performance. Notably, standout overachievers in the season, such as Benzema, played pivotal roles in high-pressure situations, emphasizing the utility of expected goals as a metric for assessing individual player performance and its broader impact on team success.

This research contributes a nuanced understanding of football dynamics in the UCL, offering insights that extend beyond traditional statistics and enrich the discourse on the game at its highest level.

Introduction

The UEFA Champions League (UCL) represents UEFA's premier club competition, featuring leading clubs from across the continent of Europe fighting for the prestigious title of champions. Originally known as the European Cup, this tournament commenced in the 1955/56 season with the participation of 16 teams. In 1992/93, it underwent a transformation and evolved into the Champions League. Over the years, the competition has grown significantly, and in the 2021/22 season, it featured a total of 78 clubs into the fight for glory[1]. The UCL is a topic of immense relevance and importance in the world of football, as it serves as the pinnacle of club competitions. The 2021-2022 season of the UCL witnessed thrilling matches, incredible goals, and intense competition, captivating the hearts and minds of millions of football fans around the globe. According to official viewership reports published by UEFA's annual report, the 2020-2021 season of the Champions League reached an all-time high in terms of global viewership, with over 3.5 billion cumulative viewers throughout the tournament[2]. This staggering figure underlines the immense significance of the tournament not only in Europe but on a truly global scale.

Datasets

We have 8 datasets, each containing 81 columns and approximately 500 rows. Each dataset represents an aspect of player performance, such as attacking, defending, goal attempts, goal keeping, etc., for all the players in the UCL. Furthermore, all the columns in each data set provide player statistics regarding the respective aspect of player performance. The datasets pertaining to our analysis are for the 2021-2022 season. The chosen datasets have a wealth of information that enables us to conduct a wide range of analysis and visualizations.
The raw datasets are each contained within a separate csv file, made available for public use for educational purposes on Kaggle. We have the right to use and manipulate the dataset provided we give proper citation, as seen in the references section of this proposal.

Data Cleaning

The data is clean, requiring minimal preprocessing before importing it into the SQL database. However, since some players have names containing characters beyond typical English language conventions, like Luka Modrić, we opted for the 'utf8mb4' character encoding set. This choice is more suitable for accommodating a diverse range of characters, extending beyond the Basic Multilingual Plane (BMP). The character breakdown for "Luka Modrić" in utf8mb4 is akin to UTF-8, but utf8mb4 is explicitly engineered to handle an even broader spectrum of characters, including emojis and those within the Supplementary Multilingual Plane (SMP).

Objectives

Our investigation of the Champions League examines various aspects of team and player performance. We explore the relationship between individual player statistics and team success, with a focus on goal-scoring proficiency, defensive contributions, and goalkeeping performance. We also analyze the impact of factors like possession statistics and pass accuracy on team progress. Additionally, we assess the alignment between expected goals (xG) and assists (xA) and actual performance, highlighting players and teams consistently exceeding expectations, especially in high-pressure situations like knockout stages or finals. Our aim is to provide valuable insights for academics, coaches, teams, and football enthusiasts looking to understand the unique dynamics of the competition.

Data Analysis and Discussion of Guiding Questions

1st Guiding Question

Our first guiding question aims to assess whether there is a connection between a player's goal-scoring proficiency, including goals from right foot, left foot, headers, and penalties, and their position in the UCL, and how it relates to the number of minutes played and assists provided?

There can be a connection between a player's goal-scoring proficiency, position, and overall performance in the UEFA Champions League (UCL). However, it's important to note that individual player statistics can vary widely, and there are exceptions to any general trends. Here are some factors to consider:

Forwards and Strikers: Typically, forwards and strikers are expected to score more goals than defenders or midfielders. They often have more goal-scoring opportunities and are positioned closer to the opponent's goal. This can be observed when analyzing Benzema’s player performance radar chart in figure 1. His statistics are heavily skewed towards minutes played and attempts on target.

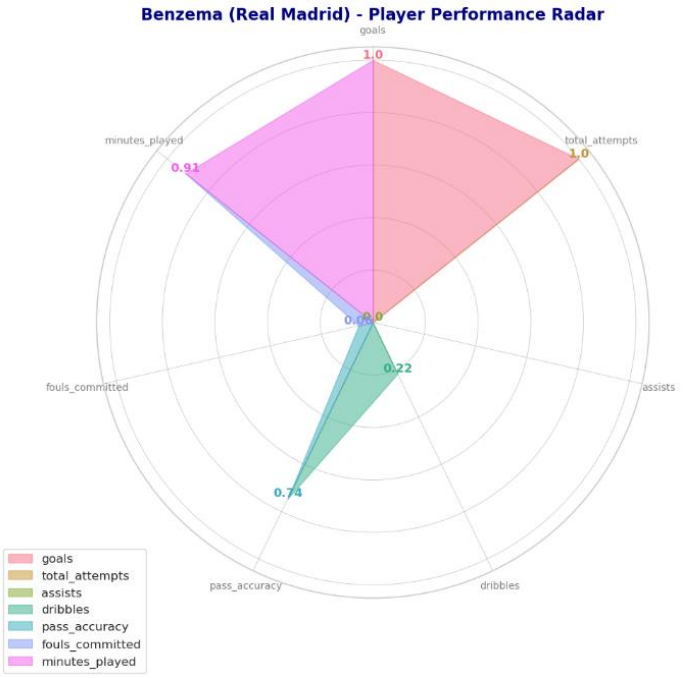

Figure 1 - Benzema's Performance Radar

Midfielders and wingers, while not scoring as frequently as forwards, are often recognized for their goal-scoring ability. Creative and fast players in these positions contribute both in goals and assists. Vinícius Junior exemplifies this, excelling in goals, dribbling, and assists, as shown in Figure 2.

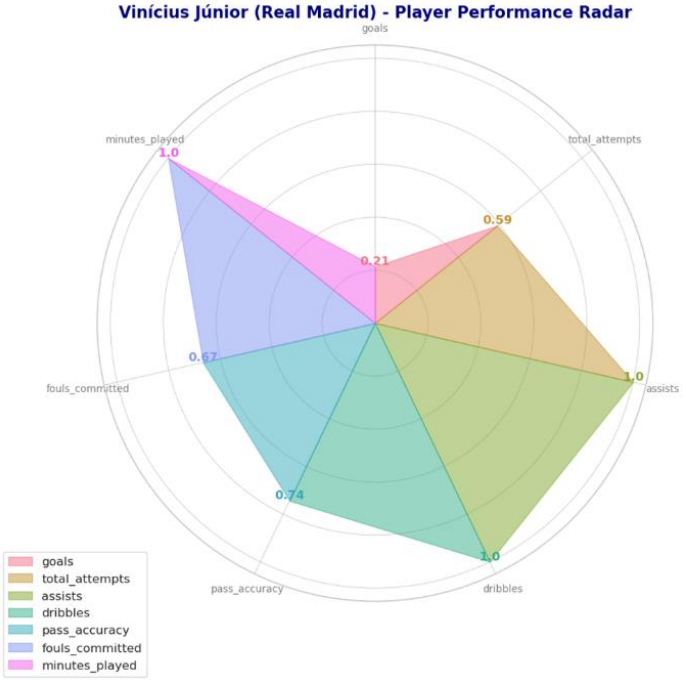

Figure 2 - Vincius Jr. Performance Radar

A player's capacity to score using both feet enhances their versatility and unpredictability, posing a challenge for defenders. While some players are renowned for their skill with a particular foot, others exhibit proficiency with both. Height can also play a role in goal-scoring, particularly for taller forwards and central defenders, as exemplified by Haller from Ajax, who stands at 6 ft 3, often excelling in scoring goals through headers. This tendency is frequently influenced by their positioning during set-piece situations. Moreover, certain players, such as Benzema, are designated as penalty takers for their teams, significantly impacting their goal-scoring statistics. This responsibility is typically assigned to individuals who demonstrate accuracy and composure in penalty situations.

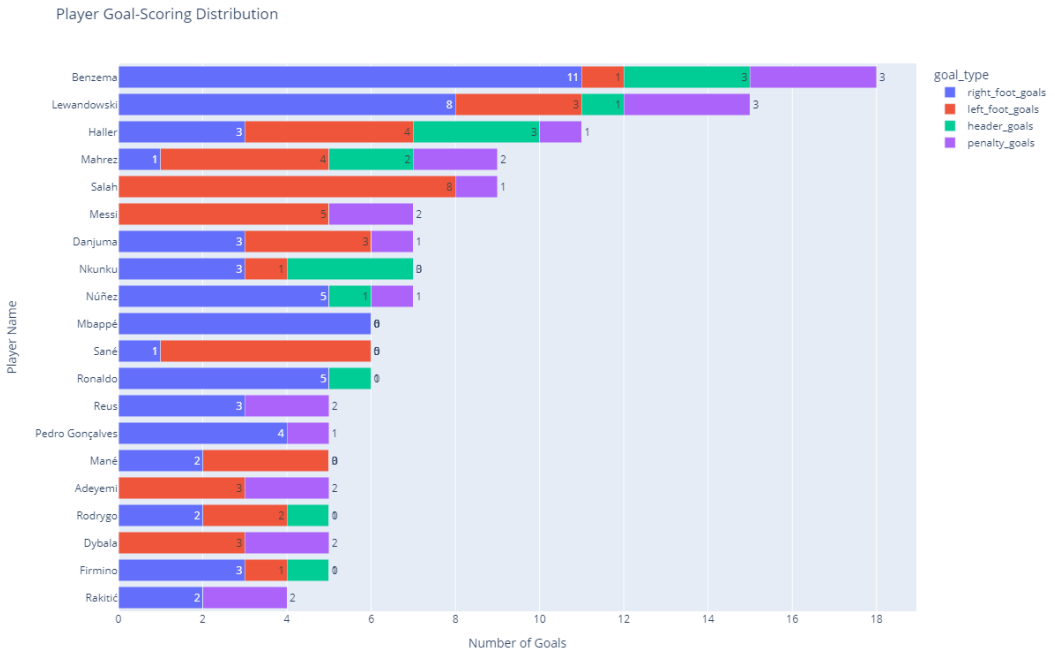

Figure 3 - Top 20 Player Scoring Distribution

The goal-scoring performance of a player is often influenced by the duration of their playing time. A player who consistently plays the full 90 minutes is likely to encounter more goal-scoring opportunities compared to a player who is frequently substituted. This trend is visually depicted in Figure 4, where Benzema is represented by the prominent yellow circle at the bottom, while Vinícius Jr., denoted by the smaller purple circle, stands out with the most playtime and assists. This graphical representation reinforces the conclusion that both players, Benzema and Vinícius Jr., played crucial roles in the success of Real Madrid.

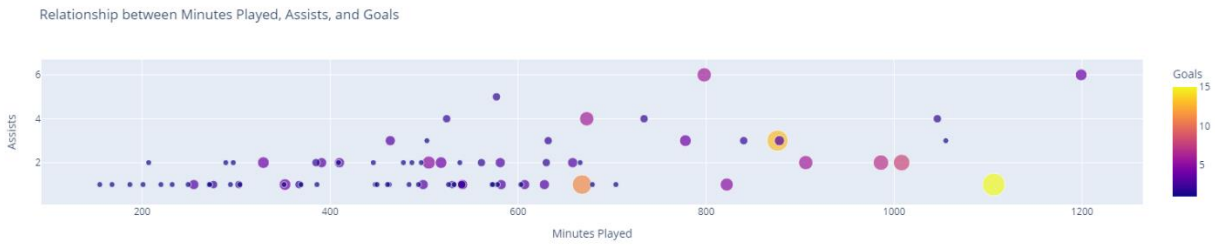

Figure 4 Relationship Between Minutes Played vs Assists vs Goals

2nd Guiding Question

For the second guiding question we want to observe whether players who contribute defensively, in terms of tackles, ball recoveries, and clearance attempts, also have a significant impact on offensive statistics like goals and assists in the UEFA Champions League?

The exploration of whether defensive contributions, such as tackles, ball recoveries, and clearance attempts, correlate with offensive statistics like goals and assists in the UEFA Champions League is pivotal for our project aimed at comprehensively understanding the multifaceted nature of football player performance. This investigation holds the potential to unveil the interconnected dynamics between defensive and offensive aspects of the game, shedding light on the holistic impact players can have on a match. If a positive correlation is found, it could challenge traditional player evaluations that often prioritize offensive prowess, emphasizing the significance of defensive contributions in influencing overall team success. Such insights would not only contribute to refining player assessment metrics but also provide valuable strategic considerations for coaches and analysts aiming to optimize team performance in high-stakes competitions like the UEFA Champions League.

Defensive Contribution by Field Position

For the first visualization we can see a 3D Scatterplot which presents how players in different field positions perform in different defense aspects such as ‘Balls Recovered’, Tackles, and ‘Clearances’.

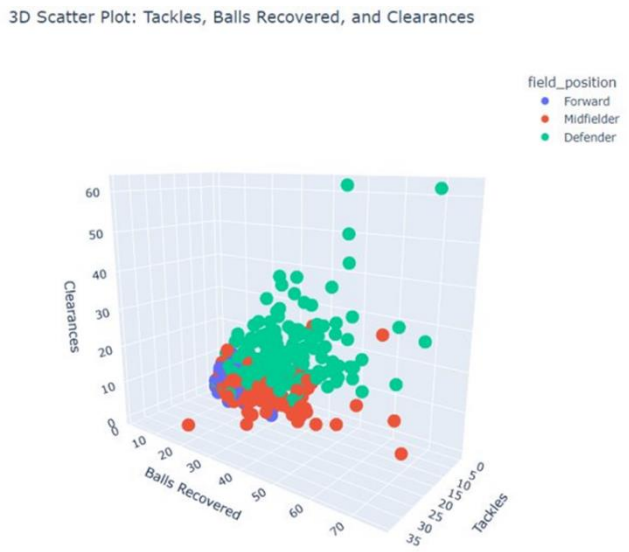

Figure 5 - 3D Scatter Plot

The above 3D Scatter plot is an interactive visual and can be moved to see different angles (please refer to the Jupiter notebook to interact with the visual).

In this visual each data point represents a player and the different colors present different field positions. From viewing the visual it can be observed that defenders are the group of players that contribute the most in all defensive aspects followed by the mid-fielders who are quite prominent in balls recovered and tackles. Forward players are the ones who seem to have contributed the least in all three defense aspects.

To make this visual we used SQL to join the key_stats.csv and defending.csv datasets. The Join was made on player name as it was the common variable for both tables. Once the data was joined, PLOTLY library was used to make the visual.

Contribution of Goals and Assists by Field Position

In the next visual there is a stacked bar chart that shows offensive contribution for players in different field positions.

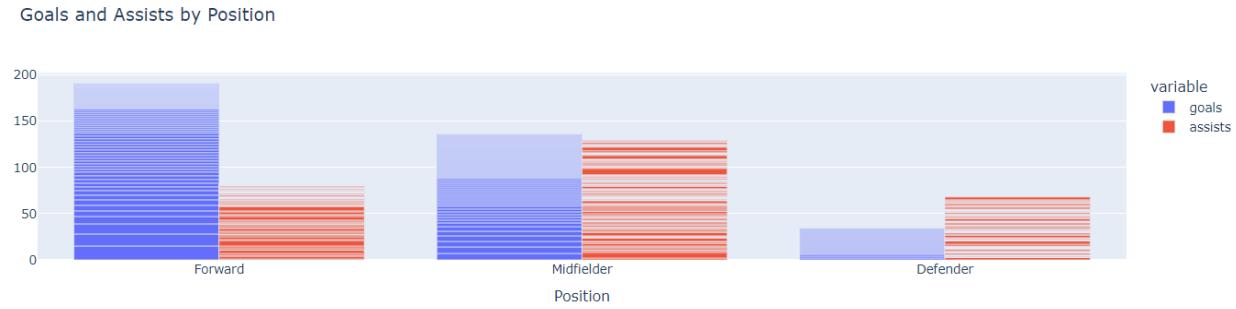

Figure 6 - Goals and Assists By Position

We can see that most goals gave been made by forward players followed by Midfielders and then defenders. Midfielders have the lead in the most assists. Through this visual the offensive contributions of players in different field positions are observed.

Defense against Offense

In the next two visuals, the offense variables (Goals and Assists) and Defense Variables (Balls Recovered, Tackles, and Clearances) are combined in the same scatter plot.

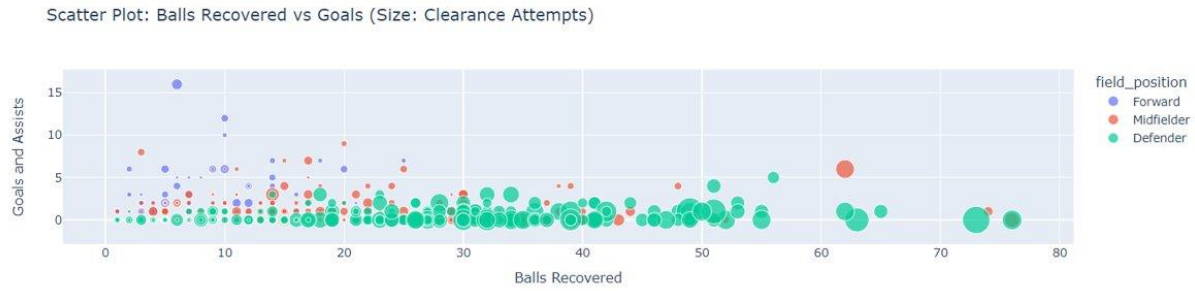

Figure 7 - Scatter Plot of Balls Recovered Vs Goals

In the first visual the total goals and assists are plotted against balls recovered for all players in different field positions where the size of the circle indicates the number of clearances by the player.

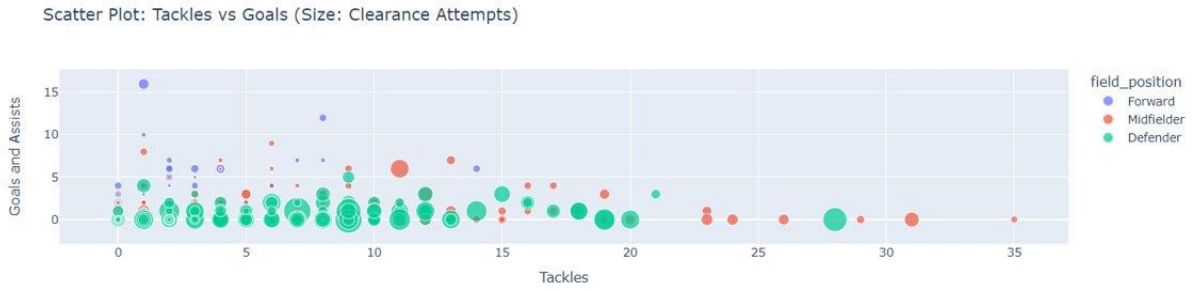

Figure 8 Scatter Plot of Tackles vs Goals

The second visual is similar but instead of balls recovered the goals and assists are plotted against tackles. It is quite evident that defenders make the highest contribution in clearances as indicated by the large sizes of green circles. Moreover, defenders and midfielders are the ones that contribute more prominently to tackles and ball recovery but when it comes to total goals and assists, forward positioned players are clearly taking the lead as one would expect.

Impact of Defense Contribution on Team Success

In the following visual the total offense (total goals and assists) and total offense (total ball recoveries, total tackles, and total clearances) are compared.

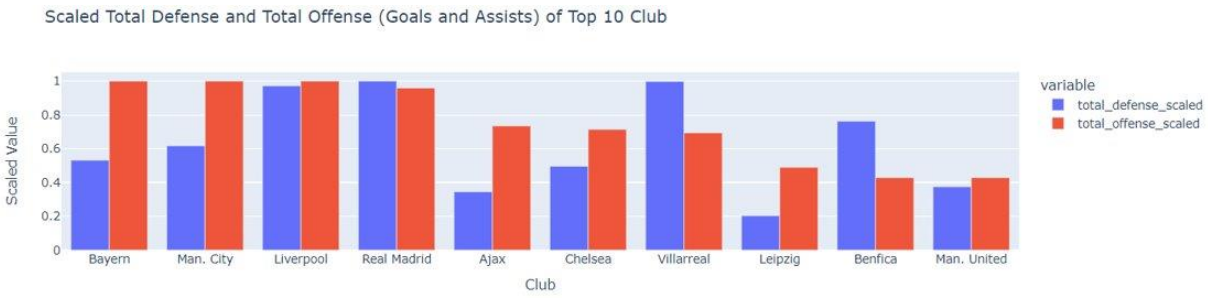

Figure 9 Scaled Total Defense and Total Offense

Both quantities were scaled between 0 and 1 to make them comparable. For this visual only the top 10 teams were considered based on the total number of goals and assists made throughout the tournament. This was done to make the visual less cluttered.

Although there is no consistent trend identified when comparing total offense with total defense, it is interesting to notice that the two teams that made it to the finals of the tournament, which were Liverpool and Real Madrid, had a high and balanced offense and defense. We can infer from this that having a high and balanced offense and defense does in fact lead to team success.

3rd Guiding Question

How does a goalkeeper's performance influence their team's success in the UCL, and are there correlations between these goalkeeping statistics and the performance of outfield players?

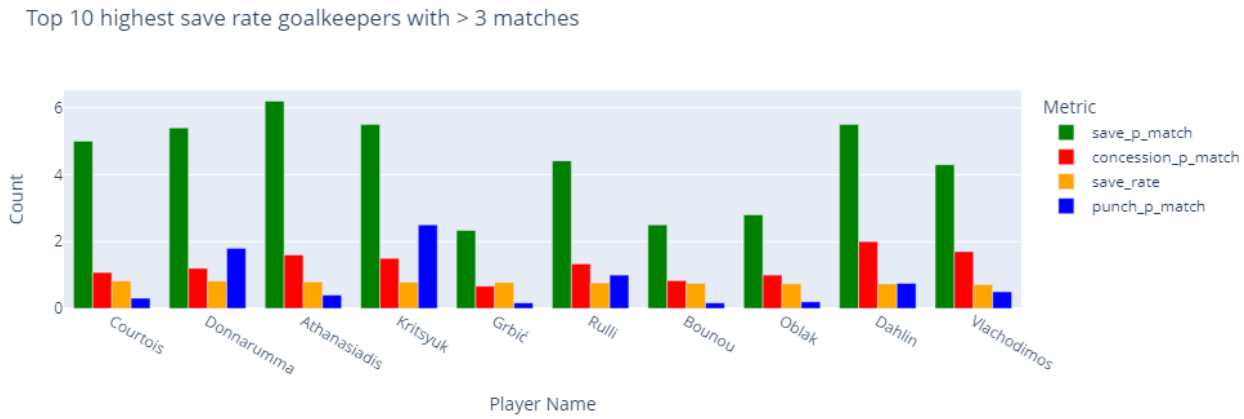

Figure 1100 - Top 10 Goalkeepers

Figure 1111 - Worst 10 Goalkeepers

The metric we used to determine the best and worst goalkeepers seen in Figures 10 and 11 is the save rate of each goalkeeper, which is the total amount of saves the goalkeeper has made in the season divided by the total attempted saves. In green and red we have the average goalkeeper saves and concessions or goals they've let in respectively. In blue we have the average amount of punches per match. We can see that the overall best goalkeeper is Courtois playing for Madrid, with the worst goalkeeper being Gluasci who on average lets in more goals than he saves. The goalkeeper with the most punches is Kritsyuk .

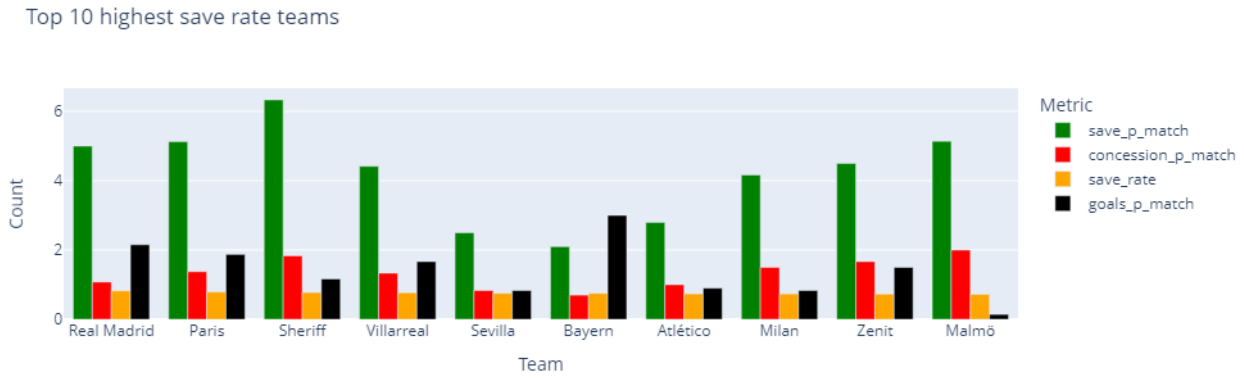

Figure 1122 - Top 10 Teams by Goalkeeping

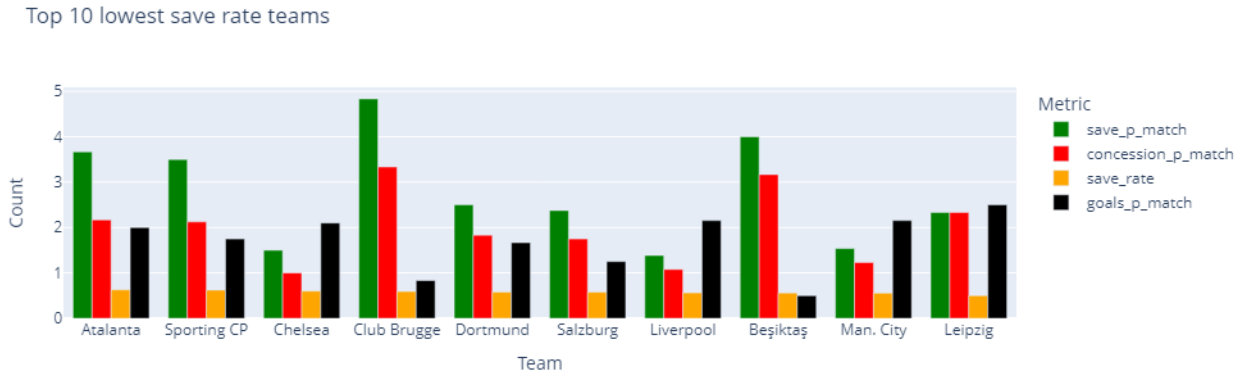

Figure 13 - Worst 10 Teams by Goalkeeping

The metric we used to determine the best and worst teams seen in Figures 12 and 13 is the average save rate, which is the total amount of saves the goalkeepers have made in the season divided by the total attempted saves. In green and red we have the average goalkeeper saves and concessions (goals they've let in respectively each match). The average amount of goals per match of each team is in black Notably, many of the best teams in the league such as Madrid have great goalkeepers. However, some of the teams with poor goalkeeping such as Liverpool also did well, perhaps making up for it with the rest of the team's skills and ability to score or keep the ball away from their goal area. Therefore, we can conclude that while having a good goalkeeper is associated with success in the league for some teams, it is not the only performance metric when considering the offensive capabilities and other capabilities of the team, as we see some teams with bad goalkeeping make it far in the league anyways.

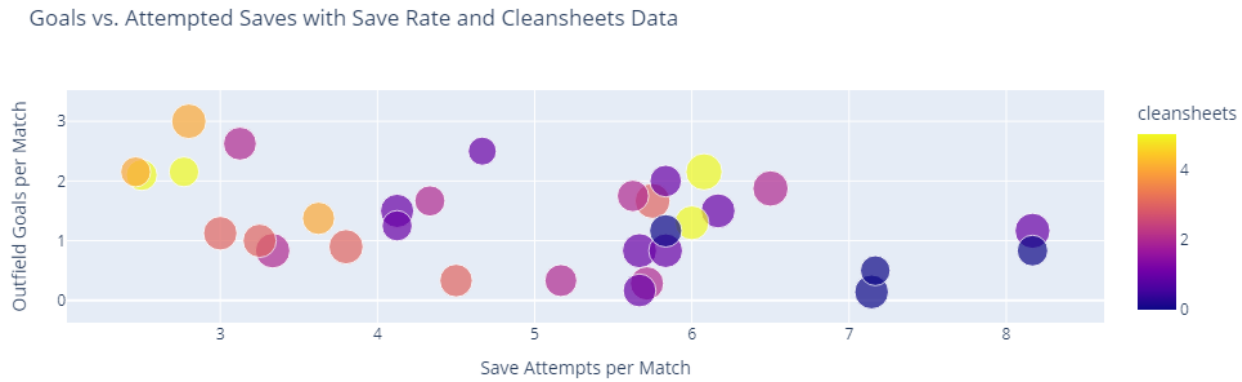

Figure 1134 – Team Outfield Goals Vs. Shots Received on own Goal

The displayed scatterplot in Figure 14 is of each team's average goals vs. Average number of attempted saves that team's goalkeeper has had to make per match. The size of each data point is larger with a higher save rate, while the colour is the quantity of cleansheets (matches where the goalkeeper did not let any goals in) that the team has had in a season. Each data point represents a different team. We can see a small pattern of the teams that have a lower amount of save attempts with the average amount of goals the team scores in a match, highlighting a slight positive correlation between the scoring success of a team and a lack of saves that the goalkeepers must make. Perhaps this indicates that the teams that are better at keeping the ball away from their net are also better at scoring. Please refer to the attached Jupyter notebook of our code for the interactive graph if desired, which would allow the team names to display by hovering over each point.

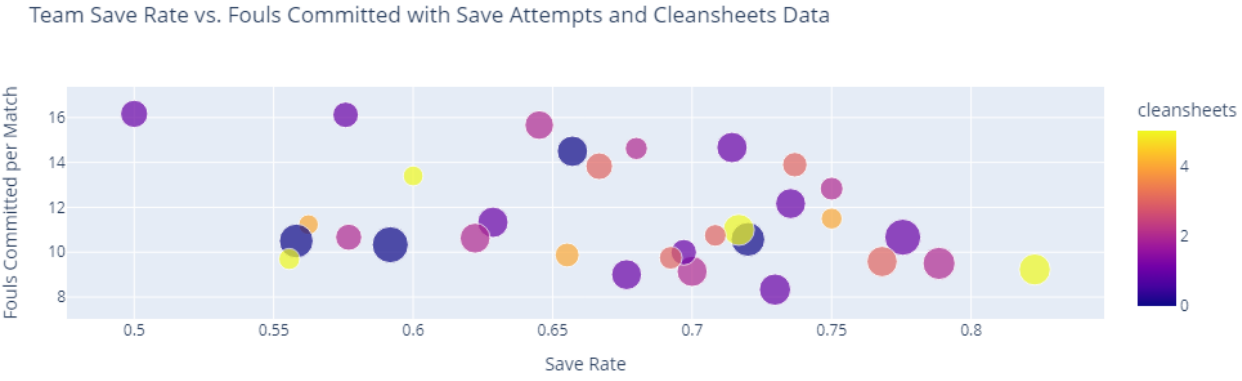

Figure 1145 – Team Outfield Fouls Vs. Goalkeeper Success

Displayed in Figure 15 is the fouls committed vs. save rate data for each team, with the size of each datapoint corresponding to the average amount of save attempts, and the color being the total cleansheets the team has had in a season. Each data point represents a different team. In

the graph, we can maybe see a slight correlation between a lower save rate and a higher amount of fouls committed. Perhaps teams whose goalkeepers lose more points commit more fouls out of frustration or desperation.

4th Guiding Question

How do factors like possession statistics and pass accuracy influence a team's progress in the tournament?

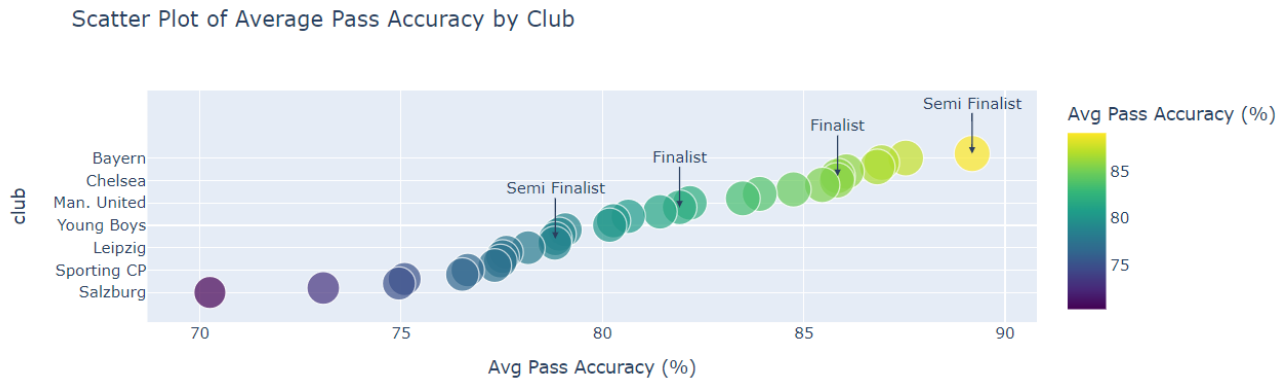

Figure 16 - Scatter Plot of Average Pass Accuracy

Figure 16 of this project provides a glimpse into the average pass accuracy of all the clubs that participated in the UEFA 2021/2022 season. The scatterplot shows all the well-known teams of the tournament having an average pass accuracy of more than 80%. The finalists that season were Real Madrid and Liverpool, while the semi-finalists were Villareal and Manchester City. The scatterplot of club against Average Pass Accuracy shows that while teams with higher pass accuracy do better in football. It is not the most important thing as teams with lower pass accuracy do not lag against clubs with higher pass accuracy. The best example of this is Villareal in the 2021/2022 season as can be seen from the graph above. Villareal made it to the semi-finals in that season despite having less pass accuracy compared to other well-known teams.

Figure 17 - Scatter Plot of Total Pass to Goal Ratio

Football is a game whose winning condition is to score more goals than the other team. Therefore, to see if the pass accuracy makes a difference in a team winning the game, we should see how teams perform with respect to their goal scoring ability and their passing ability. To achieve this task, we decided to compare the Total pass made by each team to the number of goals they scored throughout the whole tournament. Figure 17 in this project illustrates the diverse clubs and their respective total pass-to-goal ratios. The plot distinctly portrays a positive correlation, indicating that teams with a higher pass-to-goal ratio outperform their counterparts. The visual insight strongly suggests that there exists a notable correlation between a team's proficiency in making successful passes and their overall success in the tournament. The ability to maintain a favorable pass-to-goal ratio emerges as a key factor influencing a team's effectiveness in winning matches.

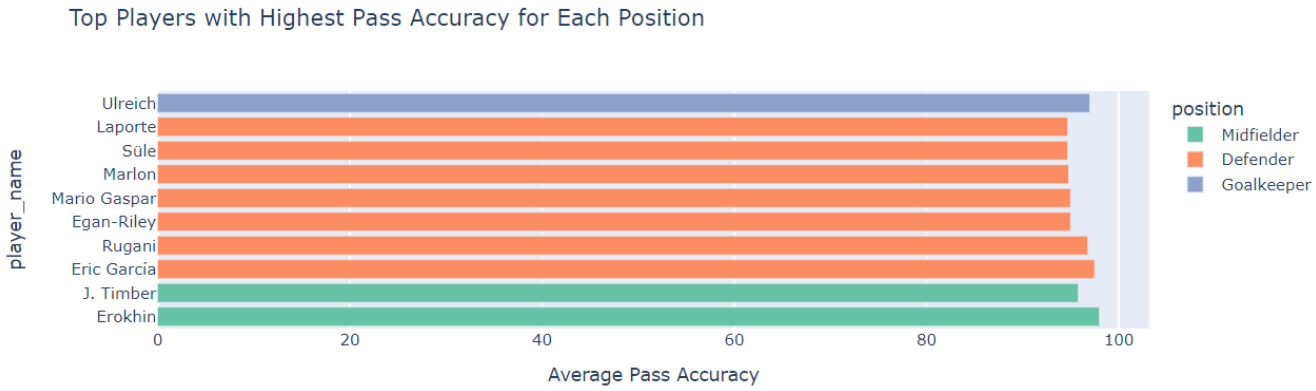

Figure 1158 Top Player with highest Pass Accuracy By Position

To make a more precise inference for the pass statistics in our project, we decided to look at the roles of players and how it affects the game of football. Figure 18visualizes the top player and their position ranked according to their average pass accuracy. We noticed an interesting pattern here, the top players with better than average pass accuracy were mostly defenders and midfielders. While midfielders are an obvious find here, the fact that forwards are not at all on the list is intriguing. We investigated this matter further and plotted a graph of player position and the average pass accuracy of that position, Figure 19. The results showed that defender boasts the highest pass accuracy among all roles, midfielders is a close second. However, the forward position has the least pass accuracy among all, falling behind even the goalkeepers.

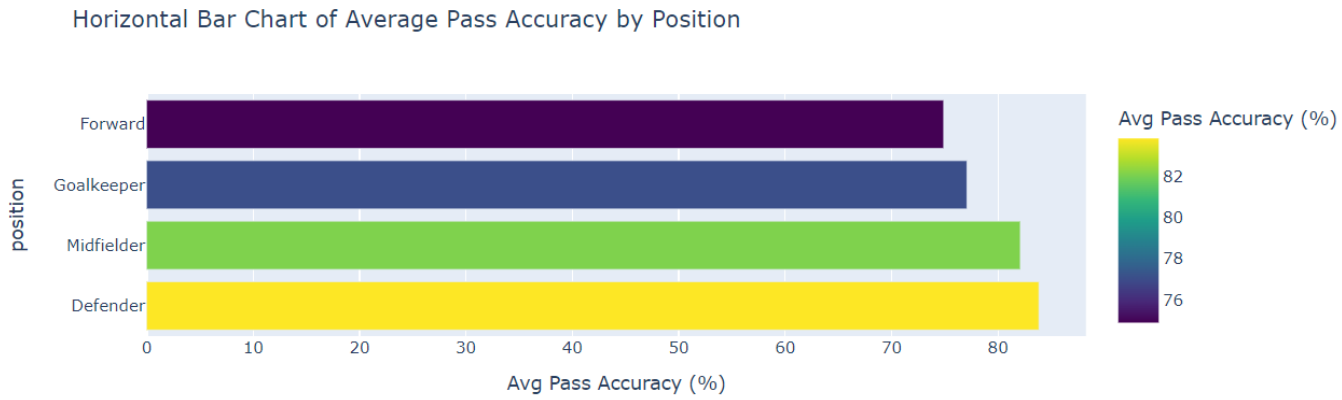

Figure 19 Horizontal Bar Chart of Average Pass Accuracy By Position

A few reasons for this could be that It is important for defenders to pass with accuracy because losing control close to their penalty box could have negative repercussions for the team. Because of their defensive responsibilities, defenders must pass with precision in order to prevent giving up the ball in dangerous situations. On the other hand, forwards deal with different kinds of difficulties. Forwards frequently have space constraints when playing close to the opponent's penalty box, which limits their options for passing. This spatial restriction may have an impact on the correlation that has been seen since forwards may find it challenging to make accurate passes in these high-stress scenarios. As a result, the pass-to-goal ratio reflects a team's ability to handle difficult situations and seize scoring opportunities in addition to serving as a measure of passing accuracy.

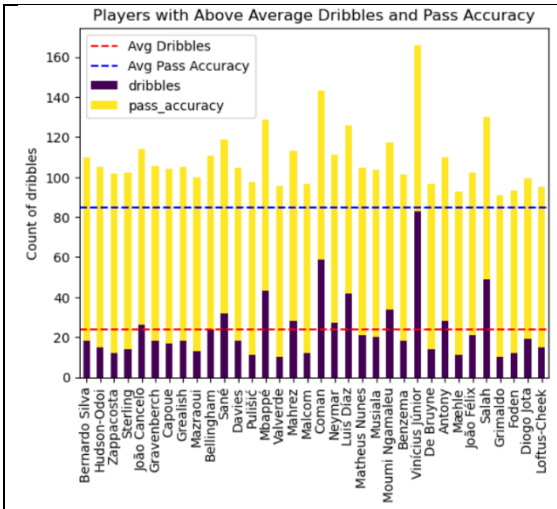

Figure 16 Average Dribbles and Pass Accuracy

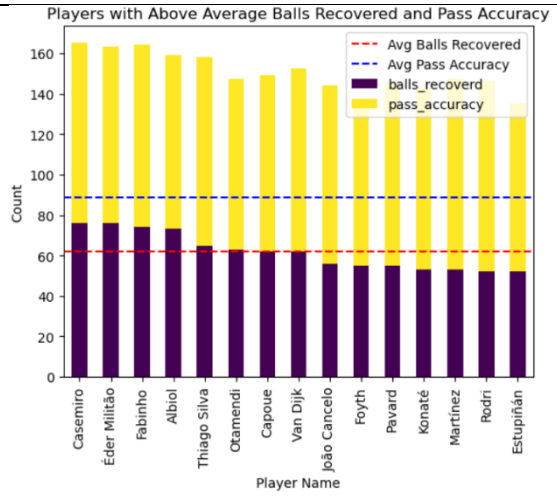

Figure 17 Average Balls Recovered and Pass Accuracy

Insights obtained from pass rates are utilized to inform player position recommendations in Figures 20 and 21. A defender that possesses both above-average ball recovery and a respectable pass rate would be a great addition to the defense, especially considering how crucial safe ball distribution and defensive ability are to this position. On the other hand, a midfielder who possesses both exceptional dribbling and pass accuracy is the epitome of perfection. After examining the numbers, it is clear that Vinícius Junior is the best option for the midfielder role because of his excellent dribbling abilities and accurate passing. Coman comes in third, highlighting their appropriateness for the dynamic needs of the midfield, and Salah is a close second.

Regarding defenders, the data indicates that Casemiro, Fabinho, and Eder Militao are the best options. Their ability to protect the team's goal and their proven ability to sustain a high pass rate make them strong contenders for the critical position of goal defense.

Overall, Figures 20 and 21 offer helpful advice on how to position players optimally while taking into account the specific skill sets needed for each position on the field.

5th Guiding Question

As we delve into the culminating exploration of our analytical journey, our final guiding question becomes the focal point of scrutiny: Do expected goals (xG) align with actual performance in the competition? Within the intricate fabric of the UEFA Champions League, we seek to unravel the correlation between statistical expectations and on-field reality. As the stage intensifies, particularly in high-pressure scenarios like the knockout stages and finals, our inquiry extends further to discern whether certain players and teams exhibit a consistent ability to surpass expectations.

Exploring the correlation between expected goals (xG) and actual performance in the UEFA Champions League unveils a captivating panorama of football dynamics and individual brilliance. In this premier club competition, where margins are razor-thin, the assessment of whether statistical expectations align with on-field reality becomes a pivotal aspect of strategic analysis. Expected goals serve as a quantitative lens, offering a meticulous measurement of a player or team's offensive prowess. However, the true litmus test lies in their ability to deliver when confronted with the highest stakes. The knockout stages and finals of the UEFA Champions League, akin to pressure cookers, meticulously separate the exceptional from the ordinary. Scrutinizing whether specific players and teams consistently transcend their xG values in these high-pressure scenarios unveils the genuine mettle of footballing prowess. Certain athletes thrive under the spotlight, perpetually surpassing expectations and reshaping the narrative of their teams' campaigns in the relentless pursuit of European glory. The SQL query employed to address this guiding question utilizes a sophisticated combination of statistical measures, centering on the concept of expected goals (xG) to meticulously evaluate the offensive proficiency of players. By seamlessly integrating key statistics such as player name, club, position, goals, and match-played data, alongside a subquery computing xG based on on-target attempts, the query produces a comprehensive table facilitating a direct comparison between a player's on-field accomplishments (actual performance) and the performance forecasted by xG values (expected performance). Of particular significance is the "expected_performance" column, playing a pivotal role in evaluating whether certain players consistently surpass or fall short of statistical expectations. This detailed analysis offers valuable insights into their capacity to deliver in high-pressure situations, such as the knockout stages or finals of the UEFA Champions League.

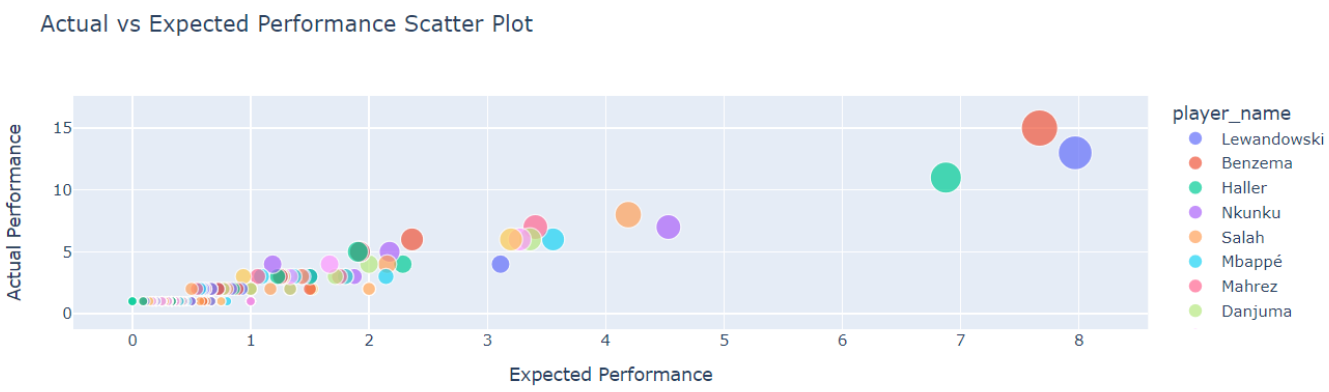

Figure 18 Actual Vs Expected Performance Scatter Plot

Figure 22 offers a nuanced exploration of all players, providing a comprehensive comparison between their actual and expected goal performances. This analysis delves into the intricate relationship between statistical projections and on-field achievements, unveiling a discernible positive correlation that emphasizes the alignment between anticipated and realized goal-scoring outcomes across the entire dataset. Particularly noteworthy are the players Lewandowski, Benzema, and Haller, who emerge as conspicuous outliers, showcasing a remarkable lead over their peers in the competitive landscape. The visual representation vividly captures the extraordinary goal-scoring prowess exhibited by these individuals.

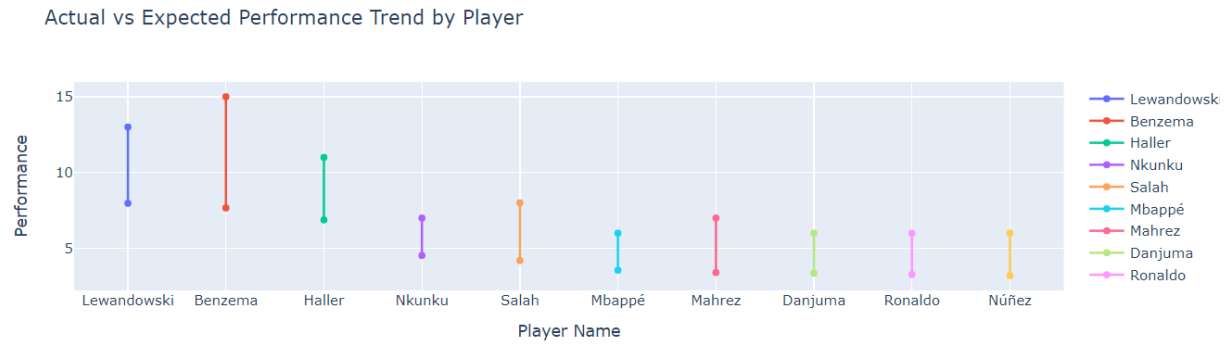

Figure 19 Actual vs Expected Performance Trend

In Figure 23, which meticulously zooms in on the top 10 players, a more detailed examination unveils the intricate subtleties that define individual performances within the context of the UEFA Champions League. Amidst this elite group, the spotlight falls on Karim Benzema, whose exceptional performance exceeds statistical expectations. Through a closer scrutiny of the data, it becomes evident that Benzema's goal tally surpassed anticipated levels, exhibiting a remarkable achievement of twice the expected output. This statistical overachievement, however, merely scratches the surface of Benzema's impact on the tournament. Beyond securing the coveted position of the competition's top scorer, Benzema

played a pivotal role in steering Real Madrid to the prestigious title of Champions of Europe in the season under consideration. These remarkable findings not only underscore the extraordinary nature of certain players but also shed light on the nuanced intricacies of their ability to consistently exceed expected goals. Beyond the statistical realm, these insights contribute to a more profound understanding of the impactful roles played by such exceptional individuals in the grand narrative of the UEFA Champions League.

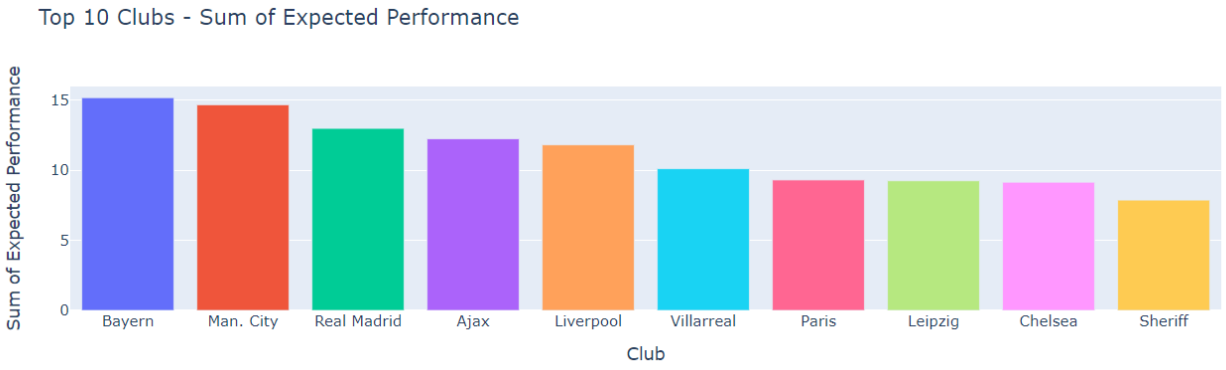

Figure 20 Sum of Expected Performance

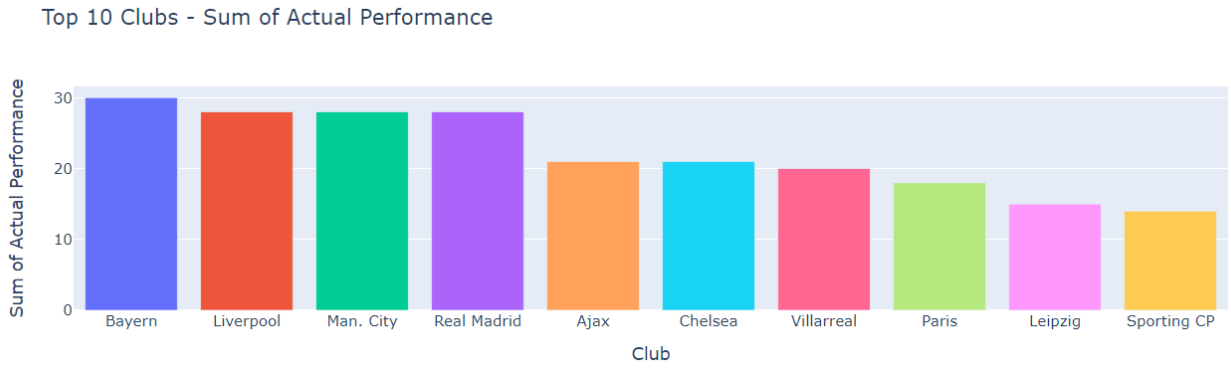

Figure 21 Sum of Actual Performance

Subsequently, our analysis delved into a comprehensive evaluation of the anticipated and realized performances of the top 10 football clubs. To gauge their overall team prowess, we aggregated the total goals scored by each club, providing a comprehensive assessment of both their expected and actual performances. Figures 24 and 25 illuminate Bayern as the standout performer, leading the pack with the highest expected and actual goals. The consistent presence of Bayern, Liverpool, Real Madrid, Manchester City, and Ajax among the top 5 clubs in both figures underscores their sustained excellence throughout the tournament. Despite their statistical

dominance, Bayern faced an unexpected exit in the semi-finals at the hands of Villareal CF, mirroring the fate of Manchester City. Conversely, Real Madrid and Liverpool progressed to the pinnacle, clashing in the final showdown. Motivated by these intriguing developments, we embarked on a deeper exploration, scrutinizing the disparities between actual and expected performances. This meticulous examination aimed to discern whether teams exceeding their expected performance advanced further in the tournament, offering a nuanced perspective on the correlation between statistical expectations and on-field success.

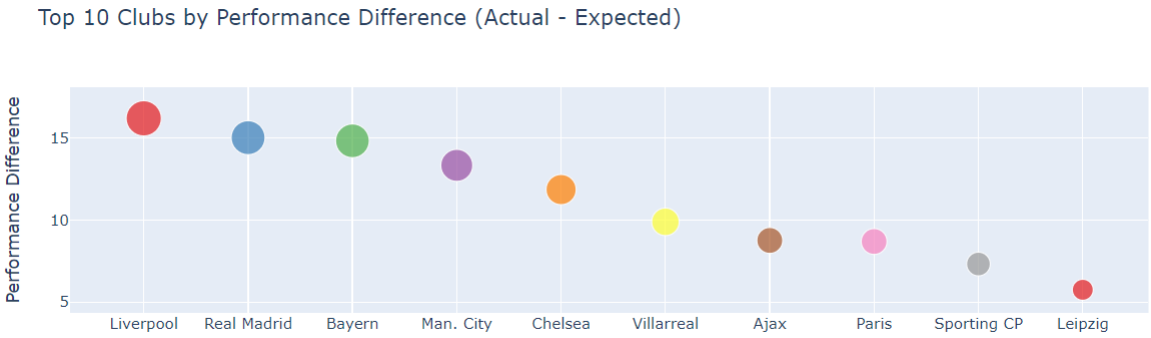

Figure 22 Performance Difference

In a comprehensive examination of team performances, Figure 26 meticulously portrays the top 10 teams that not only met but surpassed their anticipated standards. Notably, finalists Liverpool and Real Madrid emerge as distinct standouts, boasting the most substantial disparities between their actual and expected achievements. The impressive differentials, notably 16.18 for Liverpool and 15.01 for Real Madrid, underscore the extraordinary nature of their overachievement in the tournament. This statistical prowess finds tangible expression in the final outcome, where Real Madrid emerged as triumphant victors, emphasizing the pivotal role played by their ability to surpass expectations in securing the coveted title.

Equally compelling is the revelation that the top 6 teams, identified by significant disparities in actual and expected performance, not only excelled in the initial stages but also progressed to the Quarter Finals and beyond. This fascinating correlation emphasizes the profound impact of surpassing statistical expectations on the trajectory of a team's success, providing a compelling narrative on how exceptional performances at this level transcend mere statistical analyses and manifest as tangible triumphs on the grand stage of the tournament.

Conclusion

Attack:

In football, the effectiveness of even the most prolific strikers hinges on well-timed and accurate assists. The collaboration between strikers and those providing assists is crucial for capitalizing on goal-scoring opportunities and contributing substantially to a team's success. Achieving a well-rounded and successful offensive strategy requires seamless synergy between these integral components of the team.

Goalkeepers:

The success of top football teams is not solely dependent on having the best goalkeepers. Some teams excel through potent offense or solid defense, showcasing the diverse strategies employed in the sport. Success in football is multifaceted, and the effectiveness of a team extends beyond the capabilities of its goalkeepers.

Pass Accuracy:

While high pass accuracy undoubtedly benefits a team, it's important not to overstate its significance. Teams with lower pass accuracy have still managed to reach the semifinals and championship games, emphasizing the presence of additional factors that contribute to football success. Pass accuracy, though valuable, is just one element within the broader context of a team's performance.

Defense:

Defensive contributions might not be reflected in offensive statistics like goals and assists, but they wield a significant influence on overall team success. The solidity of a team's defense is a cornerstone of its performance, contributing to its ability to withstand opposition attacks and secure positive outcomes.

Expected Goals:

Our exploration of the UEFA Champions League unveiled compelling findings regarding the relationship between expected goals (xG) and actual performances. Notably, standout players such as Lewandowski, Benzema, and Haller demonstrated an ability to surpass statistical expectations, showcasing remarkable goal-scoring prowess in high-pressure situations. Turning to team dynamics, the sustained excellence of Bayern, Liverpool, Real Madrid, Manchester City, and Ajax was evident throughout the tournament. However, unexpected exits of statistical powerhouses like Bayern and Manchester City in the semi-finals highlighted the unpredictability of the competition. In contrast, the top 6 teams with significant differences in actual and expected performance not only excelled in the early stages but also progressed to the Quarter Finals and beyond, showcasing the influence of surpassing statistical expectations on overall success. The findings suggest that exceptional performances, both at the individual and team levels, play a pivotal role in shaping success in the UEFA Champions League, emphasizing the nuanced nature of football dynamics beyond statistical analyses.

Appendix A: Glossary

Advantage law
A clause in the law that directs the referee to refrain from stopping play for a foul if a stoppage would benefit the team that committed the violation.

Attacker
Any player on the team that has possession of the ball. 2. All players on the team are attackers / attacker.

Beat
To get the ball through or around an opponent by dribbling or shooting.

Blind side
The opposite side of a defender to the ball.

Break
When a team quickly advances the ball down the field in an attempt to get its players near the opponent's goal before the defendershave a chance to retreat.

Carrying the ball
A foul called on a goalkeeper when he takes more than 7 seconds while holding or bouncing the ball.

Center circle
A circular marking with a 10-yard radius in the center of the field from which kickoffs are taken to start or restart the game.

Center spot
A small circular mark inside the center circle that denotes the center of the field from which kickoffs are taken to start or restart the game.

Checking
Making a movement in one direction, stopping, and then moving off in the opposite direction.

Clearing
The act of moving the ball out from within scoring range. A defensive measure.

Control, cushion
Control of the ball by withdrawing the surface in contact with the ball on impact, e.g. the thigh.

Corner arc
A quarter-circle with a radius of 1 yard located at each of the 4 corners of the field.

Corner flag
The flag located at each of the 4 corners of the field.

Corner kick
A direct free kick taken by the attacking team from the one yard arc at the corner of field.

Counter attack:
An attack launched by a defending team soon after it regains possession of the ball.

Cross, flank (wing)
A pass made from near to a touch-line, in the attacking third of the field, to an area near to the goal.

Dangerous play
When a player attempts a play that the referee considers dangerous to that player or others, such as trying to kick the ball out of the goalie's hands, even if no contact is made.

Defending team
The team that does not have possession of the ball.

Defense
A team's function of preventing the opposition from scoring.

Defensive pressure
When one or more defenders closely mark a ball carrier to harass him into losing the ball.

Deflection

The ricochet of a ball after it hits a player.

Direct free kick

A restart situation that can be scored directly by the shooter.

Dive header;

Acrobatic skill used to score goals off low crosses in the goal area.

Draw

A game that ends with a tied score.

Dribble

Applied to an attacker taking the ball past an opponent.

Dribbler

A player who advances the ball while controlling it with his feet.

Drop ball

A method of restarting a game where the referee drops the ball. The ball must hit the ground.

Feints

Body movements designed to unbalance an opponent, or a deceptive movement which can be applied with or without the ball, e.g. feinting to kick the ball, or feinting to move in one direction.

Field

The rectangular area where football/soccer matches are played.

FIFA

Federation Internationale de Football Association - the official governing body of international football since 1904 which established the World Cup tournament; helps set and revise laws of the game.

Foul

A violation of the laws for which an official assesses a free kick.

Free kick

A kick awarded to a players team for a foul committed by the opposition; the player kicks a stationary ball without any opposing players within 10 yards of the ball.

Goal area

The rectangular area 20 yards wide by 6 yards deep in front of each goal.

Goal kick

A type of restart where the ball is kicked from inside the goal area; awarded to the defending team when a ball that crossed the goal line was last touched by a player on the attacking team.

Goal line

The field boundary running along its width at each end; also called the end line; runs right across the front of the goal.

Goal

When the ball passes completely over the goal line and under cross bar, one point is scored per goal.

Halftime

The intermission between the 2 periods or halves of a game.

Hand ball

A foul where a player touches the ball with his hand or arm; the opposing team is awarded a direct free kick.

Hat trick

3 or more goals scored in a game by a single player.

Header

The striking of a ball in the air by a player's head.

Indirect free kick

A restart situation which will not score a goal unless touched or played by one other player before going into the goal.

Injury time
Time added to the end of any period according to the referee's judgment of time lost due to player injuries or intentional stalling by a team.
Kickoff
The method of starting a game or restarting it after each goal.
Mark
Adopt a position, in relation to an opponent, which enables a player either to prevent the opponent from receiving the ball or, at least, to challenge for the ball.
Match
A soccer/football game.
Midfielder
A player who links the defenders with the attackers and contributes to both attack and defense.
Near post
The goal post closer to the ball position.
Official game clock
The clock that the referee carries with him on the field so he can signal when each half is over; does not stop during the game, even when play does.
Officials
The referee and 2 assistant referees who work together to make sure the game is played according to the laws of game; responsible for stopping and restarting play, keeping track of the score and the time remaining and citing violations of the laws, called fouls; they wear uniforms that distinguish them from the players on both teams.
Off-side
A situation in which an attacker positioned in the opponents' half of the field does not have two opponents between him or herself and the goal at the moment the ball is played to him or her.
Passing
When a player kicks the ball to his teammate.
Penalty area
At each end of the soccer field two lines are drawn at right angles to the goal line, 18 yards from each goal post. Lines also extend into the field of play for a distance of 18 yards and are joined by a line drawn parallel with the goal post.
Penalty spot
The small circular spot located 12 yards in front of the center of the goal line from which all penalty kicks are taken; positioned at the center of the penalty arc.
Pitch
Soccer games are played on the pitch (field).
Possession
Player or team having/in control of the ball.
Red card
A playing card-sized card that a referee holds up to signal a player's removal from the game; the player's team must play the rest of the game shorthanded; presented for violent behavior or multiple law infractions (two yellow cards = one red card).
Referee
The chief official makes all final decisions, acts as timekeeper, calls all fouls and starts and stops play.
Save
The act of a goalkeeper in blocking or stopping a shot that would have gone into the goal without his intervention.
Score

To put the ball into the net for a goal; also, the tally of goals for each team playing in a game.

Shot

A ball kicked or headed by a player at the opponent's net in an attempt to score a goal.

Shoulder charge

Minimal shoulder-to-shoulder contact by a defender against a ball carrier; the only contact allowed by the law unless a defender touches the ball first.

Side tackle

An attempt by a defender to redirect the ball slightly with his foot away from a ball carrier running in the same direction.

Sliding tackle

An attempt by a defender to take the ball away from a ball carrier by sliding on the ground feet-first into the ball.

Soccer games are won by taking advantage of space

Before a team can take advantage of space, it must first create the space. Space is created either by a single player or by coordinated team plays. Space can be given away by mistakes of the defending team. Attacker must always plan on the basis that the defender will give away nothing.

Steal

When a player takes the ball away from an opposing player.

Substitution

Replacement of one player on the field with another player not on the field.

Support, wide-angled

Support at a sufficiently wide angle to give the greatest possibility for passing the ball forward.

Sweeper

The "free" player in defense who covers the marking defenders.

Swerve, in-swerve

A ball curling in towards the target, e.g. an in-swerve corner swerving towards the goal.

Swerve, out-swerve

A ball curling away from the target, e.g. an out-swerve corner swerving away from the goal.

Tackle

A challenge using the feet, to win the ball from an opponent.

Tackling

Taking the ball from your opponent by using their feet.

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