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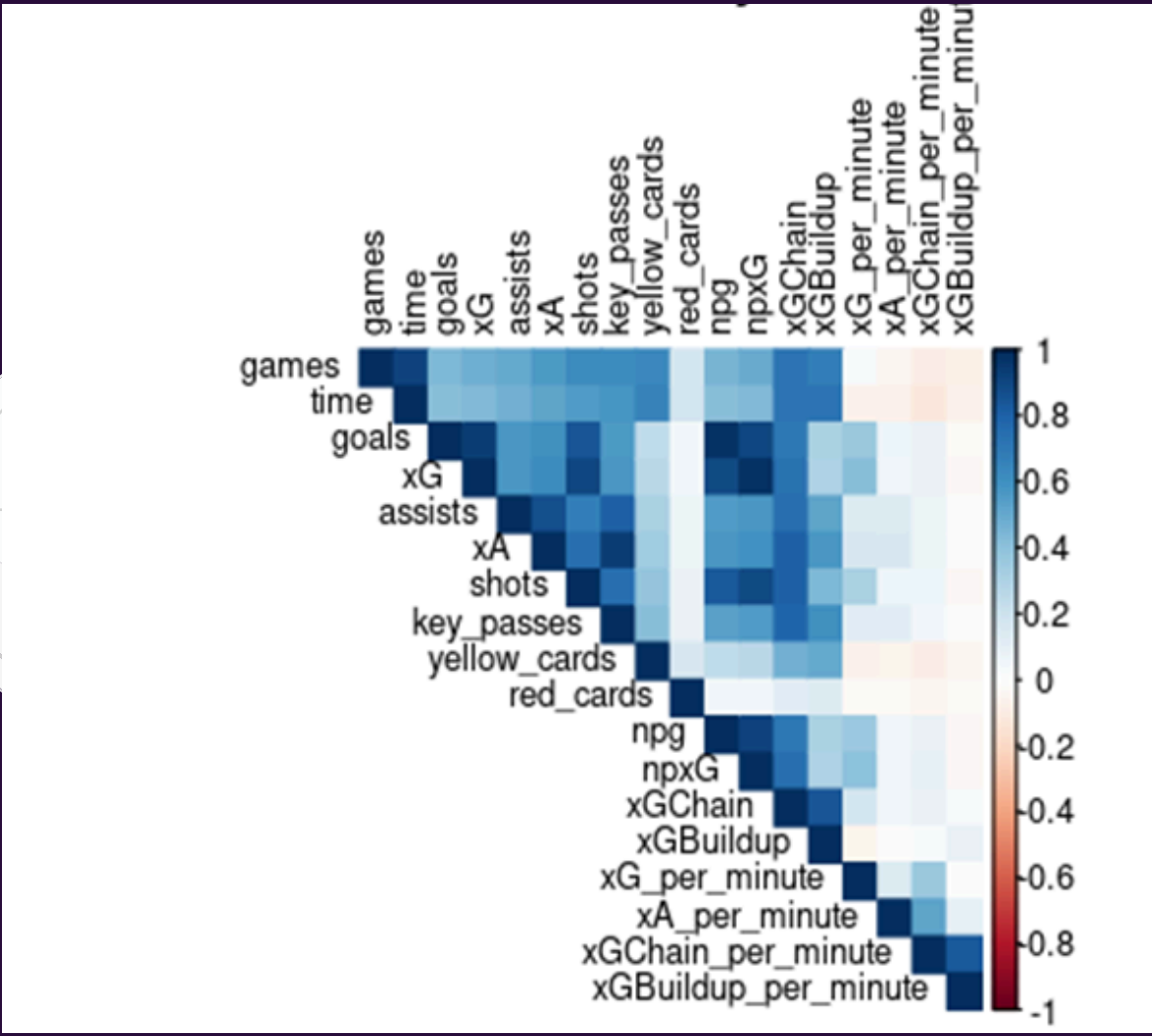ESKİŞEHİR TEKNİK ÜNİVERSİTESİ
ESKISEHIR TECHNICAL UNIVERSITY

Football Analytics: VİSUALIZING LEAGUE AND PLAYER PERFORMANCES

Correlogram of taken shots data

In the extended Correlation Matrix, we observe a high correlation between key_passes and xGChain and xGBuildup. This strong relationship suggests that a player who is actively involved in delivering key passes — passes that lead to goal-scoring opportunities — is also likely to have a significant role in the xGChain.

xG stands for Expected Goals, which is a statistical metric that measures the quality of goal-scoring opportunities a player has during a match. It is based on various factors, such as shot location, angle, type of assist, and more. Rather than simply counting goals, xG gives an estimate of the probability that a shot will result in a goal, based on historical data.
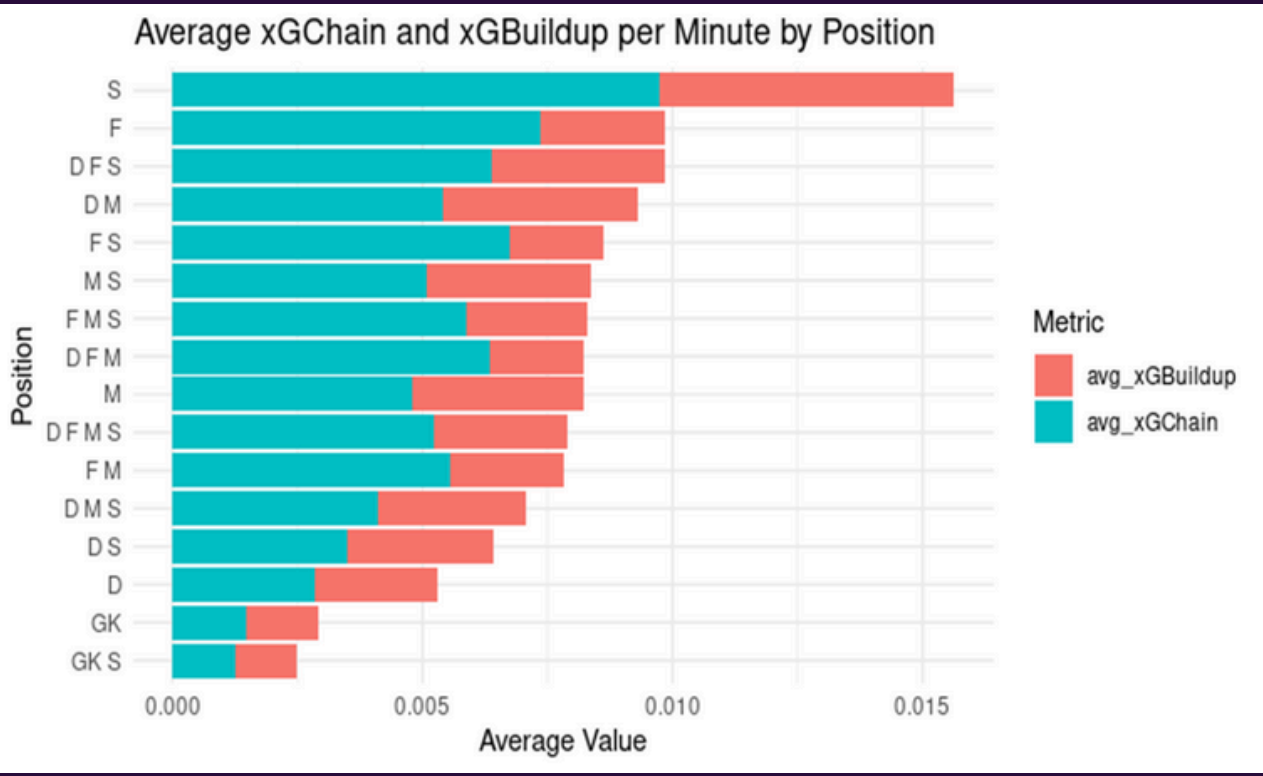
xGChain

xGChain is a metric that quantifies a player's involvement in the entire buildup of a goal, from their first contribution to the eventual shot or assist. It includes all passes, dribbles, or actions leading to a shot attempt, regardless of whether the player directly takes the shot or gets credited with the assist.

How it is calculated: xGChain is the sum of the xG values for all events that occurred during a goal-scoring sequence in which the player was involved

xGBuildup

xGBuildup measures a player's involvement in the buildup phase leading to a goal, excluding the final pass or shot. It focuses on the player's contributions that help move the ball forward and create goal-scoring chances, without directly leading to a shot or assist.

How it is calculated: xGBuildup is similar to xGChain but excludes the player's direct contribution to the final shot or assist.

### Average xGChain and xGBuildup per Minute by Position

This bar plot showcases the average xGChain and xGBuildup values for different positions across the Top 5 European leagues. The analysis reveals some interesting patterns:

Strikers (Forwards) produce the highest average xGChain values, which aligns with expectations. As primary goal-scorers, strikers are naturally more involved in the sequences leading directly to goals.

Additionally, Strikers also generate the highest average xGBuildup values, which may seem surprising at first glance. This indicates that forwards in the top leagues often contribute significantly to the build-up phase as well, possibly through link-up play or holding up the ball in attacking positions.

While strikers naturally dominate xGChain due to their role, their significant involvement in xGBuildup suggests a broader impact on team dynamics beyond just scoring goals.

Mean xG by Situation and Result
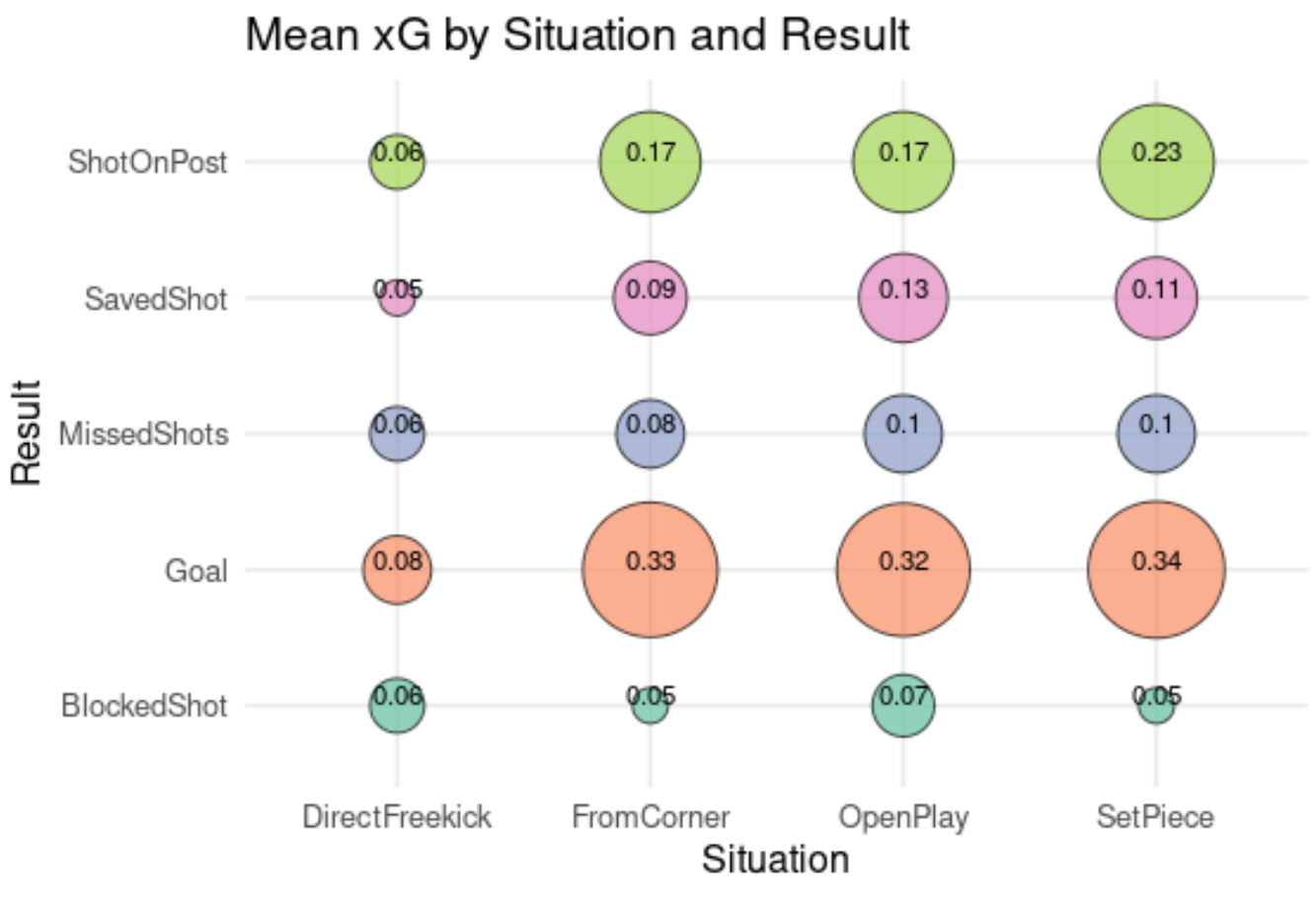
The bubble chart displays the mean xG (expected goals) for various shot situations (x-axis) and results (y-axis). The size of the bubbles reflects the mean xG value, while the colors represent different shot results.

Overall, the chart highlights the xG of shots hitting the post during set pieces, and the generally lower xG values for indirect scenarios such as direct free kicks and corner plays.

The histogram visualization illustrates the frequency distribution of points across five football leagues (EPL, Ligue 1, Serie A, Bundesliga, and Süper Lig) over four seasons.

The results reveal that both EPL and Ligue 1 exhibit distributions closely aligned with a uniform distribution, indicating a relatively balanced competition among teams.

Serie A, while not entirely uniform, shows a near-uniform pattern, suggesting moderate competitive balance.

In contrast, the Süper Lig displays the least uniform distribution, reflecting a significant disparity in points, which may indicate a less competitive league structure.

This visualization underscores the varying degrees of competitive balance across the leagues.

Distribution of points across the leagues
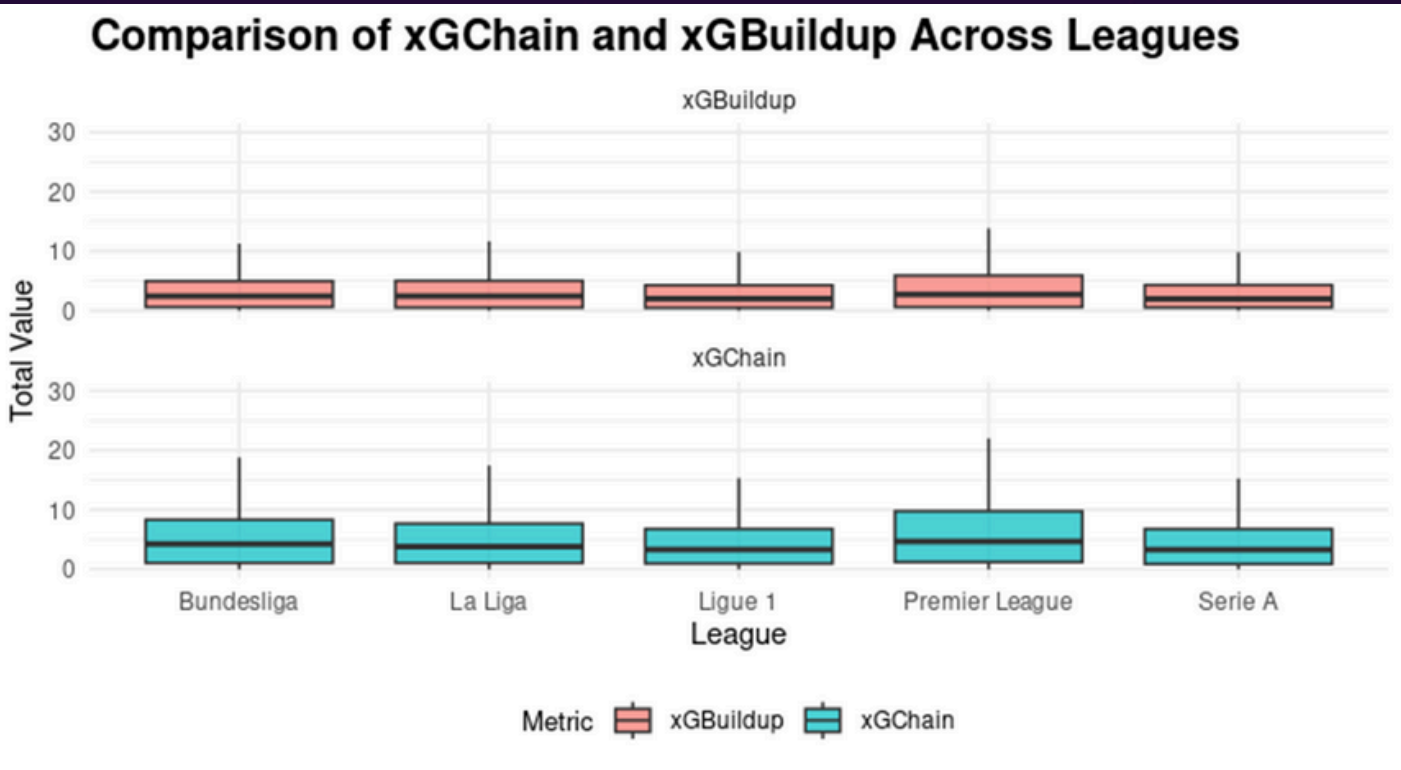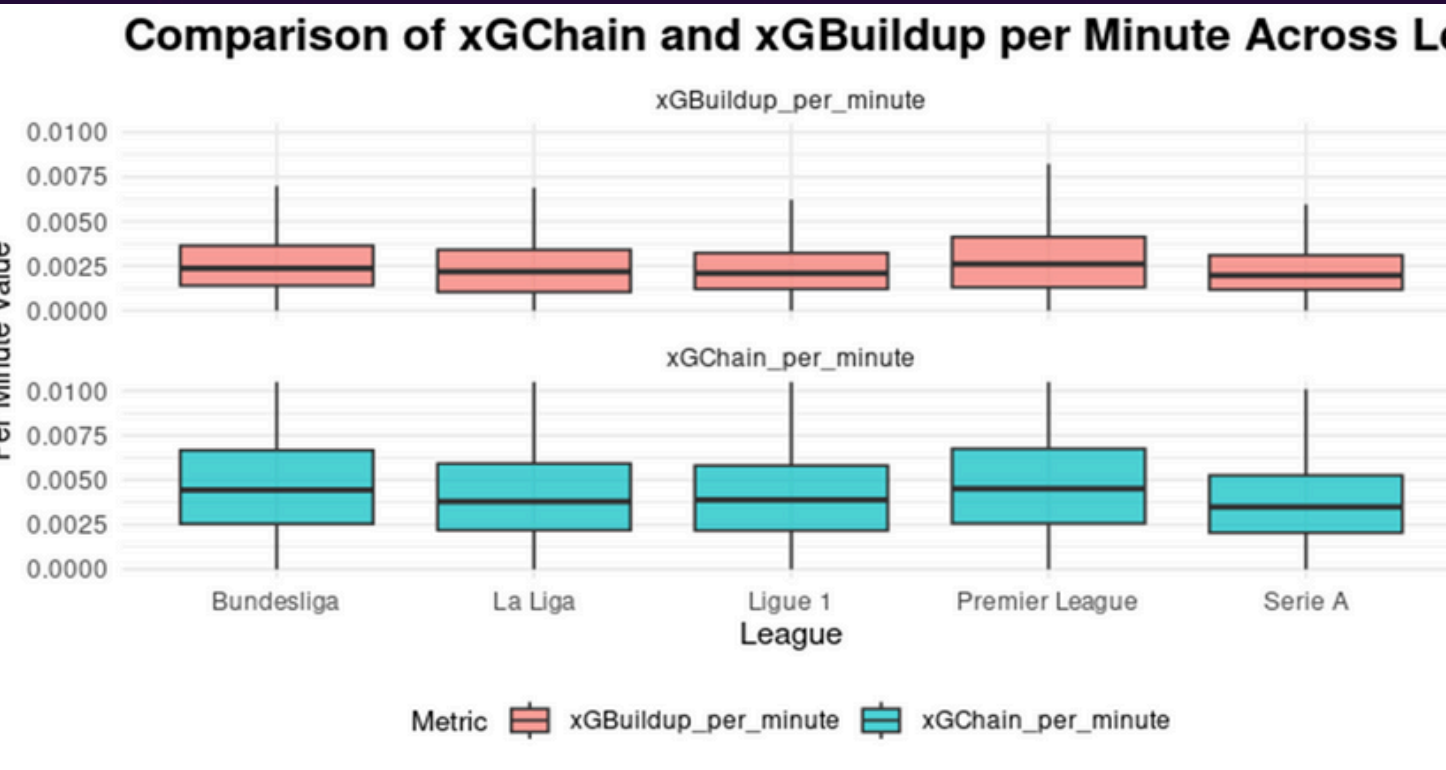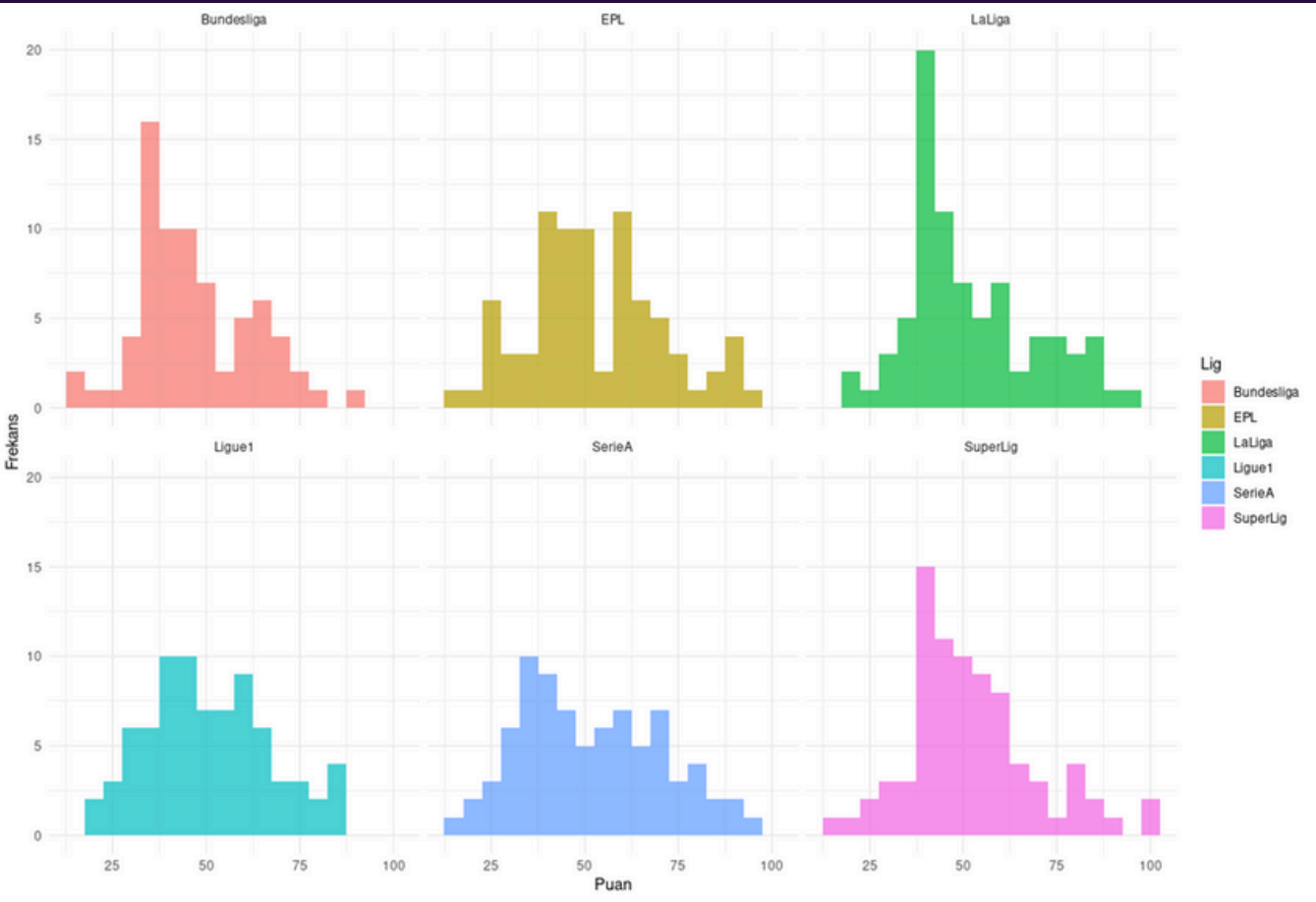
Premier League (EPL) stands out as the league with the highest overall averages for both xGChain and xGBuildup, as shown in the barplot. This suggests that players in the EPL generally have higher involvement in attacking and build-up plays compared to other leagues, reflecting a more dynamic and offensive playing style.

Serie A, on the other hand, has the lowest average values in both metrics, which can be seen both in the barplot and the boxplot. This suggests that Serie A players, as a group, may be less involved in build-up play or goal-scoring opportunities than players in other leagues. It could indicate a more defensive or slower-paced style of play in Serie A.

This comparison highlights the trade-off between total contribution and efficiency in cumulative metrics like xGChain. Players like Leroy Sané exemplify consistency and high involvement over extended playing periods, whereas

Notably, Arda Güler appears in the top 10 for both xGChain and xGBuildup, showcasing his dual importance in attack organization and play-building. This highlights his versatility and value as a player who can contribute both to the build-up and final phases of attacking plays.