Barclays FA WSL 2019-20: Chelsea FCW Analysis
Calm Under Pressure: Analysis of Player Tendencies Under Opponent Pressure & Its Relation to Goal Scoring

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Introduction

The 2019-20 Women's Super League season was atypical due to the COVID-19 pandemic cutting the season short, completing only 17 out of 22 match days. Although Chelsea FC Women had one less point (39) than Manchester City Women (40) in the league table at the time of season cancellation, Chelsea was crowned champions due to an FA board decision. It was decided that the outcome of the season would be decided under a points-per-game system. In other words, Chelsea's title relied on their ability to win matches, as the league awards a team three points for a win and 1 point for a draw. Because of this, the following analysis will focus on Chelsea's success in goal scoring when attacking and the tactical play when under opponent pressure.

In order to further understand how Chelsea was able to achieve a large number of points in the table having played one fewer game than Manchester City, it is important to look into several key contributing factors. The analysis will first examine Chelsea's ability to maintain composure and execute plays under opponent pressure, specifically focusing on their tendencies to either pass or carry the ball in pressured situations. By categorizing players by position (defenders, midfielders, and forwards), the analysis will assess how each group contributes to ball progression and the creation of goal-scoring opportunities.The examination of Chelsea's tactical approach aims to uncover the relationship between their play under pressure and goal-scoring success, ultimately providing insights into how Chelsea maintained such a dominant performance during the season.

Related Work

Player actions under pressure has been an area of interest in soccer since the introduction of analytics to the game. One study found in Football Observatory looked at the most instances of high-intensity pressure per match and compared the successful passes, dribbles, and their lengths. Unlike much of the previous work, the following analysis will create Gini inequality indices for position groups for passing and carrying the ball when under pressure and not under pressure. The Gini index is a measure of inequality within a distribution, derived from the Lorenz curve, often used in economics to understand and weigh wealth inequality. The index is on a scale of 0 to 1, with 0 representing perfect equality and 1 represents perfect inequality. Similar to the information found on the website, Medium, the different Gini values for each position group should be interpreted differently based on the needs and demands of each

position. Additionally, this information will be combined with player specific Gini values, plots of passes into the box, and expected goals. Expected goals (xG) is one of the most popular metrics known among soccer fans and pundits that measures the quality of a shot by “calculating the likelihood that it will be scored by using information on similar shots in the past” (Whitmore). Expected goals is still a prevalent statistic in analysts’ repertoire and is commonly incorporated into player and team stat pages.

Methods

The data used in the following analysis was sourced from the free StatsBombR package. The original dataset contains all WSL games for the 2019-20 season; however, these data has been subset to only contain Chelsea FCW’s matches. Contained in the data is a record of each event (shot, pass, carry, dribble, etc) that takes place in a match. For each event there are ball location coordinates, time stamp, player acting in the event, player position, touch location (right foot, left foot, head, etc), event outcome, and several other key pieces of information.

To begin the analysis, a series of exploratory data analysis (EDA) visualizations were made in order to gain a more complete understanding of the components included in the dataset. These EDA visualizations evaluated the general scope of Chelsea FCW’s attack and defense. On the defensive side, a mapping of passes and clearances out of the box by their right center back, Millie Bright, was plotted. From this mapping, it was seen that Millie Bright passed to her fullbacks or wingers on the right side of the field quite frequently. Her passes were also very routine and systematic, a trait of a dependable center back.

Next, a mapping of passes into the attacking box by forward Sam Kerr was created. This visualization displayed the creative nature of Sam Kerr from her varied pass locations in the box, another trait that is consistent with solid attacking players. The final EDA visualization was a series of heatmaps of the defensive positioning for each team in the WSL (Figure 1). For top tier teams like Chelsea and Arsenal, their defensive half had less defensive actions than their attacking half. This indicates that these teams attempt to win the ball back on their opponents defensive half and are high pressure teams.

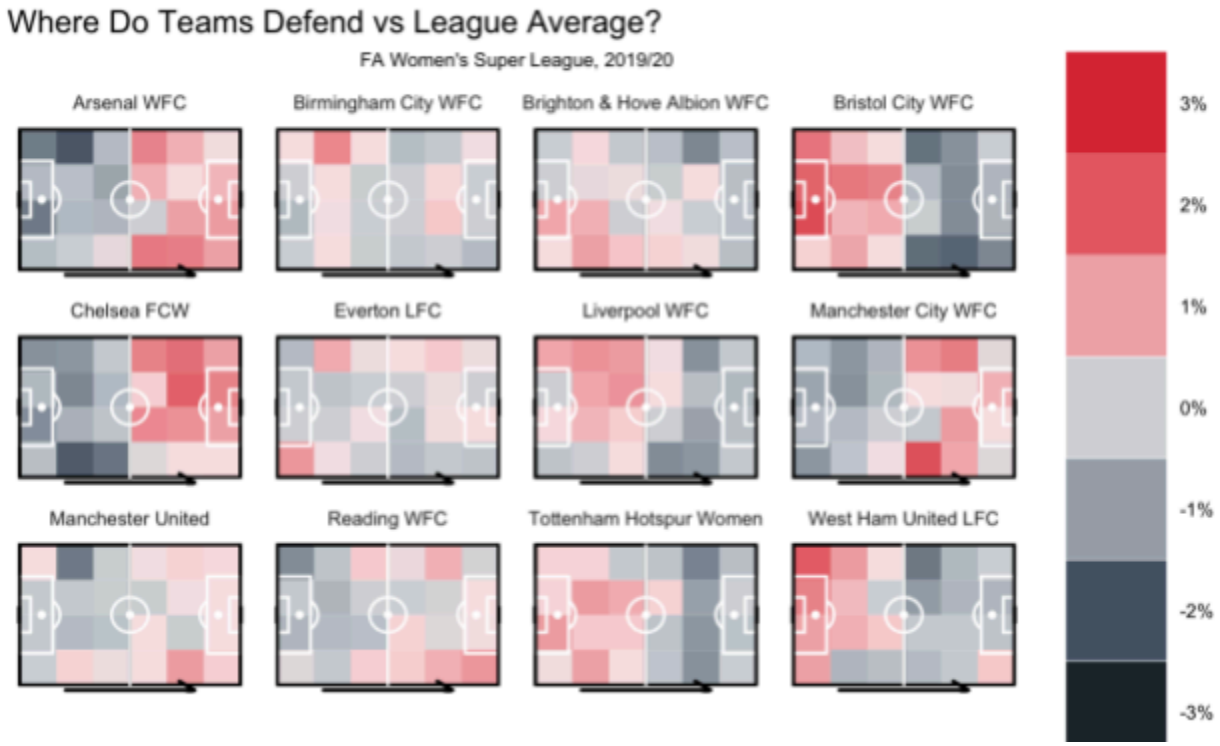

Figure 1. Team Defensive Action Compared with League Average

After gathering basic information from the EDA, analysis of how Chelsea FCW handled the ball under pressure was conducted. For this analysis, a Gini index was created to compare how evenly the defense, midfield, and forward players perform specific actions (carry or pass) under opponent pressure. This was done for Chelsea FCW, as well as an average for all other teams in the league. To expand upon the Gini inequality index for position groups, a handful of individual players were selected from the attack in an attempt to find a relationship between these tendencies and goal scoring. These players were forwards Bethany England and Sam Kerr, along with midfielders Guro Reiten and So-Yun Ji. Expected goals (xG) for these individual players was also evaluated to add more information to the ability of Chelsea to score large amounts of goals and win a high volume of matches.

Discussion

The Gini index for passing and carrying under opponent pressure helps explain the following three attributes in relation to goal scoring: predictability, creativity, and the role of pressure. In terms of predictability, lower Gini indices under pressure could indicate more predictable tendencies. In contrast, higher Gini index values under pressure could indicate a strong and creative position group/player. In general, the analysis values forwards and midfielders with high Gini indices indicating more diverse attacking strategies and creativity, and defenders with lower Gini indices suggesting

more predictable, yet reliable actions. Comparing the differences between pressure and no pressure scenarios reveals how much players adapt their tendencies in high-stakes situations, which can directly impact scoring probabilities.

The following details the results from the position-specific Gini analysis for Chelsea FCW. As seen in the visulization below (Figure 2), it was found that defenders had low Gini values across all categories, which aligns with their role of maintaining possession and making reliable passes and carries, rather than making riskier decisions. The forwards had slightly higher Gini values than the defenders, but seemed to be lacking the creative spark that is attributed with scoring goals and creating goal scoring opportunities for teammates. The highest Gini values were associated with the midfielders, suggesting that there is greater variability and creativity in their decision making both under pressure and not under pressure. This supports their role as facilitator of attacking play which is a crucial piece of having a successful team on the field.

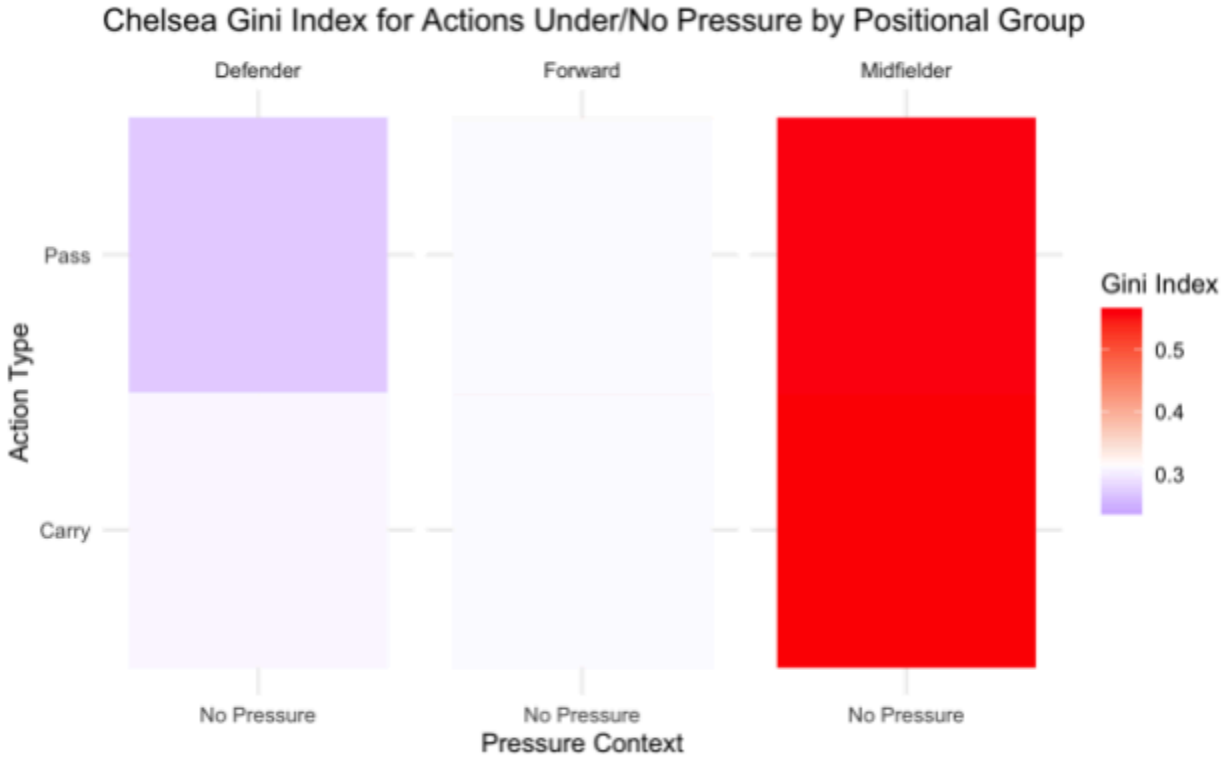

Figure 2. Heatmap of Chelsea's Gini Indices for Actions Under and Not Under Pressure

When compared to the average Gini values for the rest of the league, it was found that Chelsea's forwards had lower values overall. This is something that may seem contradictory to the results that Chelsea produced in the 2019-20 season. Additionally, Chelsea's defense had lower Gini values than the rest of the league,

though this was something that is desirable for a consistent defensive line. Vastly outperforming the league average was Chelsea's midfield, with high Gini values all around. This indicates that Chelsea's midfield was a driving factor in their success as a team, leading to the league title. Figure 3 reflects these values in the color displayed in the heatmap, with darker shades representing a greater inequality or unpredictability.

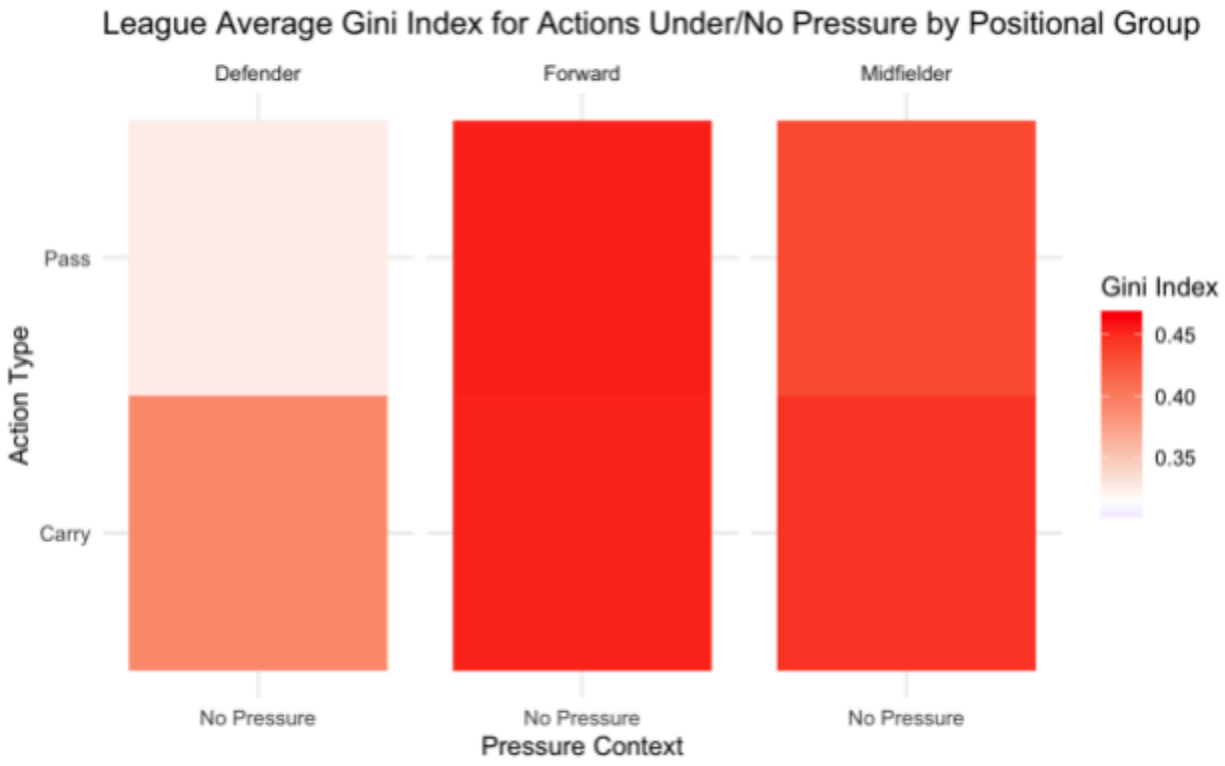

Figure 3. Heatmap of League Average Gini Indices for Actions Under and Not Under Pressure

Further analysis examines how key players performed overall in the season. Beginning with Bethany England, a forward and key contributor in Chelsea's season, who showcased her skills as both a goal scorer and playmaker. She tallied 73 shots and scored 14 goals, closely aligning with her xG of approximately 13. This alone demonstrates her power in front on the goal. Additionally, her Gini coefficients highlight her tendencies in various game scenarios. Under pressure, her passing Gini value was 0.32, compared to 0.13 in non-pressure situations, while her carrying Gini value was 0.27 under pressure and 0.17 without pressure. These metrics, combined with her mapped passes into the box (Figure 4), reveal her ability to create balanced and effective goal-scoring opportunities for teammates positioned around the penalty area. Bethany England thrives in controlled scenarios, where she excels as a playmaker by utilizing her balanced passing and carrying abilities to build possession and facilitate

attacking play. Her adaptability and composure under varying levels of pressure make her a crucial asset to team success.

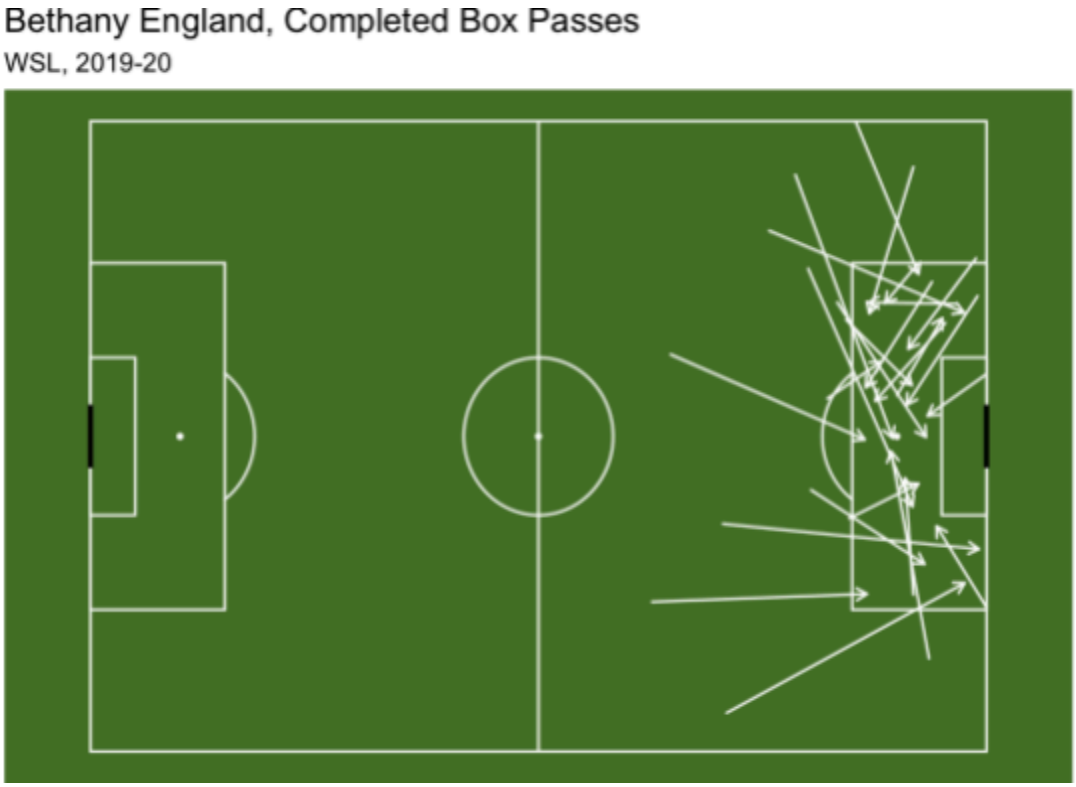

Figure 4. Bethany England's Passes Into the Box Throughout 2019-20 Season

Although Sam Kerr's xG indicated she would score around three goals during the 2019-20 season, she finished with just one goal. This may be a function of her late arrival to Chelsea during the season and her limited play with the team overall. Despite this, her Gini value for passing under pressure is 0.29, compared to 0.09 in unpressured situations, while her carrying Gini value remains consistent at 0.17 in both scenarios. These metrics, combined with an analysis of her passes into the box (Figure 5), highlight her strong composure in high-pressure situations. Kerr's ability to maintain balance and consistency across pressured and unpressured scenarios showcases her reliability in transitions and her significant role in creating goal-scoring opportunities. Her skill in navigating challenging situations allows her to exploit defensive vulnerabilities, contributing to the team's attacking momentum even when not directly scoring. This adaptability underscores her value as a player who can influence the game in critical moments.

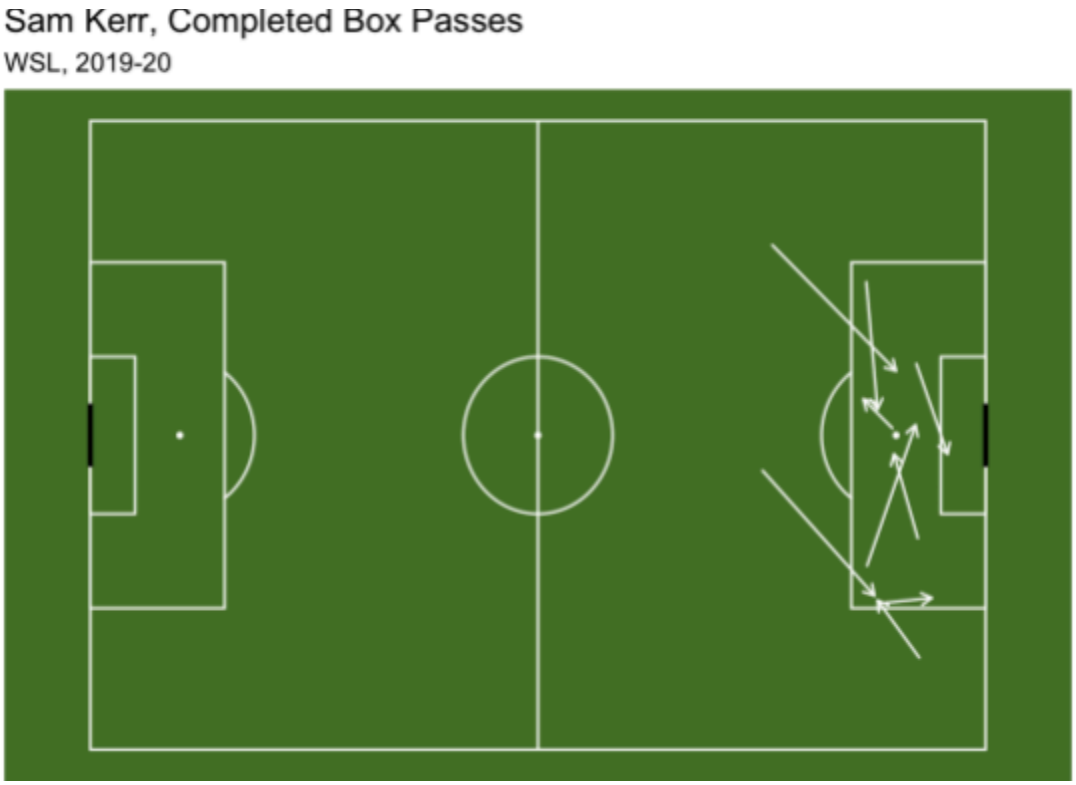

Figure 5. Sam Kerr's Passes Into the Box Throughout 2019-20 Season

Guro Reiten's performance under pressure stands out for its balance and effectiveness. Her Gini value for passing under pressure is 0.24, slightly higher than 0.18 when not under pressure, indicating her ability to maintain distribution under tight conditions. For carrying, her Gini value is 0.17 under pressure and 0.23 without pressure, reflecting her adaptability in different scenarios. Across the season, she recorded 29 shots, scored 5 goals, and had an xG of 3, demonstrating her ability to finish well beyond expectations. Reiten's skill in handling pressure, combined with her consistent creativity and balanced tendencies in play, makes her a vital contributor to her team. She not only supports goal-scoring through her assists and pre-assist actions but also showcases remarkable composure in both pressured and unpressured situations, as seen in her passes into the box in Figure 6. Her versatility and reliability in varied game conditions cement her role as a key playmaker in regular play.

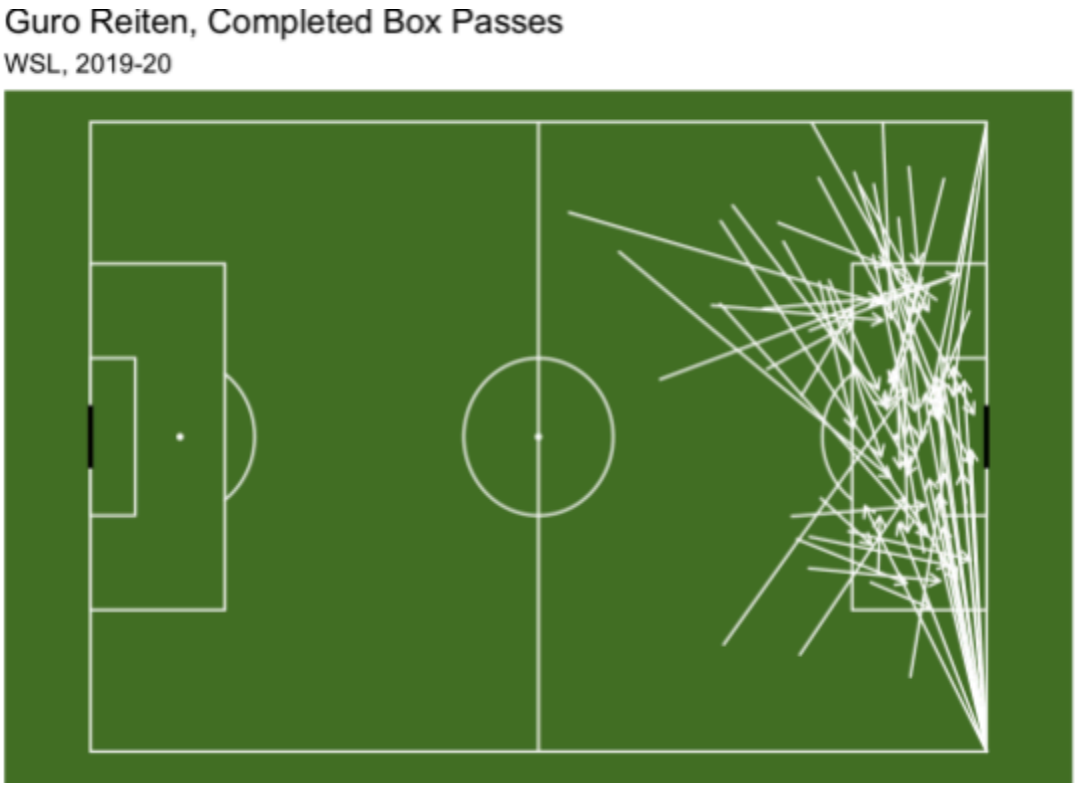

Figure 6. Guro Reiten's Passes Into the Box Throughout 2019-20 Season

So-Yun Ji was Chelsea FCW's standout performer in exceeding xG expectations. With 40 shots and 6 goals, she far surpassed her expected goals of 2. As a skilled midfielder, Ji demonstrates a composed and calculated approach under pressure, coupled with a strong ability to adapt to varying levels of opposition intensity. Her Gini values reveal her balanced playstyle: 0.25 for passing under pressure and 0.19 without pressure, while her carrying values are 0.27 under pressure and 0.21 without. These coefficients, along with her pass map into the box (Figure 7), highlight her ability to exploit unpressured situations and involve multiple teammates to advance play effectively. Her versatility is further underscored by her unpredictability, as she does not rely on specific zones, making her a crucial creator of goal-scoring opportunities for Chelsea.

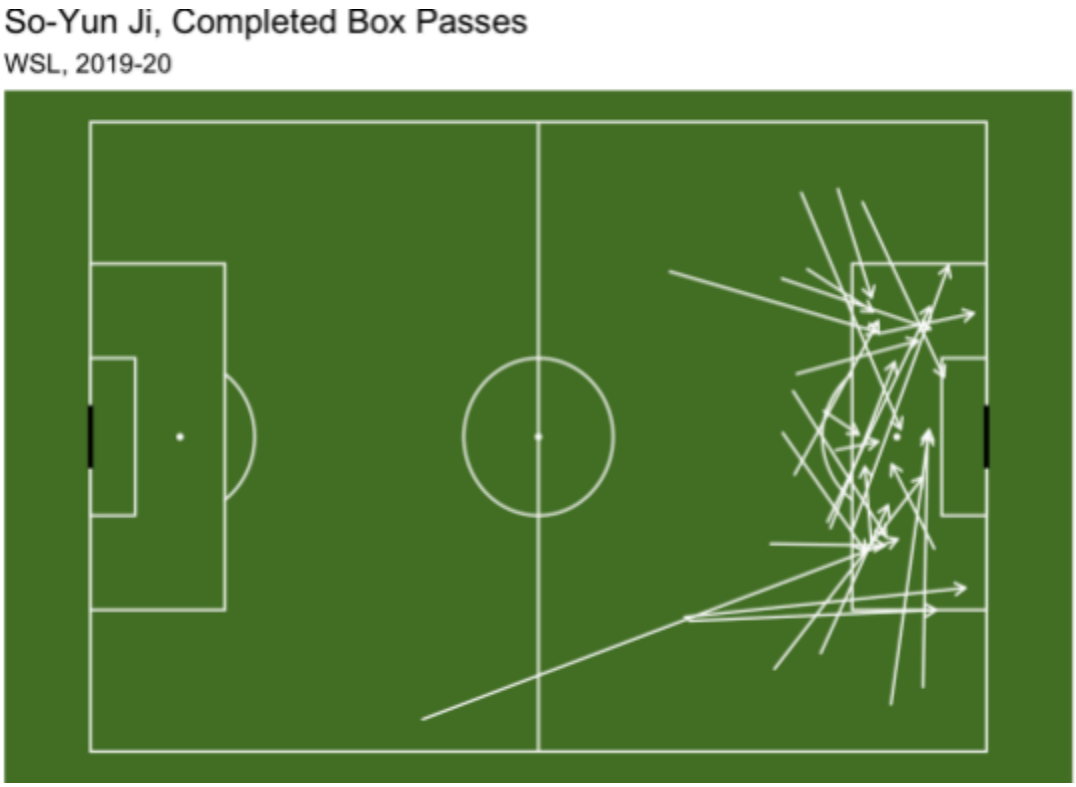

Figure 7. So-Yun Ji's Passes Into the Box Throughout 2019-20 Season

Conclusion

The evaluation of Chelsea FCW's attacking tendencies through analysis of Gini indices and xG highlights the team's reliance on key players to create and capitalize on goal-scoring opportunities under pressure. The forwards, particularly star players like Bethany England, dominated crucial attacking actions, reflecting a concentrated offensive strategy. Midfielders played a pivotal supporting role by facilitating transitions and supplying decisive passes, while creative playmakers stood out in advancing the attack. This tactical structure underscores Chelsea FCW's emphasis on using individual creativity and dynamic play to generate scoring chances, making them a strong attacking force in the league during the 2019-20 WSL season. This ultimately set the team apart from others, allowing them to claim the title at the termination of the season.

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