University of Zurich[UZH]

# An Open-Source Implementation of FIFA's Enhanced Football Intelligence

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**Master's Thesis in Informatics**


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# Abstract

This thesis addresses the implementation of concepts outlined in FIFA's Enhanced Football Intelligence (EFI) document through an open-source library, filling the gap with accessible implementations for these concepts. The EFI document provides descriptions for various metrics related to football performance analysis used in the FIFA World Cup 2022. Existing packages in football analytics do not fully incorporate the latest methodologies used in the FIFA World Cup 2022, essential for the creation of a source that aligns with FIFA's definitions. The implemented concepts cover possession control, phases of play, ball recovery time, line breaks, receptions behind midfield and defensive lines, defensive line height and team length, team shape, final third entries, pressure on the ball, forced turnovers, and expected goals (xG). Utilizing the explanations of these concepts, the thesis formulates a main approach and involves refinements. The level of stability varies, with methods that incorporate fewer heuristics tending to be more stable, while those that rely on a greater number of heuristics tend to be less stable. However, during implementation, limitations were encountered, including the lack of technical details and absence of FIFA's resources regarding the technology they have employed. Specifically, the lack of heuristics mentioned in the definitions of the concepts was a notable gap. Challenges were also observed, such as specific matches that are labeled as outliers due to their performance in distinct concepts. Despite these limitations and challenges, the implementation overall offers stable and accurate performance, aligned with FIFA's outcomes. In future work, these limitations can be addressed through a comprehensive approach. Firstly, revisiting the concepts with additional information regarding their descriptions will enhance the understanding of the underlying factors. Secondly, the expansion of datasets will not only provide a broader foundation for analysis but also improve the heuristics employed, leading to enhanced accuracy and stability of the outcomes. Additionally, the application of advanced technologies, similar to those employed by FIFA, can significantly contribute to improving the reliability and effectiveness of the results. By considering these avenues, future research can overcome the identified limitations. This thesis contributes to advancing football performance analysis by addressing these challenges and provides a valuable resource for researchers, analysts, and football enthusiasts seeking to reproduce FIFA's match reports and gain insights into football performance.

*Keywords:* Enhanced Football Intelligence, FIFA, open-source implementation, football performance analysis, sports analytics.

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# 1

# Introduction

**Enhanced Football Intelligence** In recent years, developments in technology and data-driven approaches have revolutionized the field of sports analytics, and one evident application is the development of Enhanced Football Intelligence (EFI) systems inspired by FIFA's innovations. FIFA has published a document named "Enhanced Football Intelligence" that includes football performance analysis and insights utilized in the FIFA World Cup 2022 [20]. The EFI document includes several metrics, which can be entitled as concepts. In this thesis, the open-source implementation of these concepts, named as the library, is provided.[1] [2]

**Problem statement** The document encompasses concepts related to football analysis, offering two distinct descriptions. Firstly, a verbal description is provided, which focuses on expressing the concepts in football-specific terms and avoids delving into the intricate details of calculations. Secondly, a technical description is presented, highlighting the approach employed in the implementation of the concepts and providing insights into the calculations involved. While the methodologies highlighted in the EFI document are detailed to some extent, it is important to note that they are not publicly available via FIFA, and the algorithms used are currently inaccessible for implementation. Although there are existing packages, such as "socceraction", "kloppy", and "mplsoccer", that offer data processing and visualization techniques, they do not incorporate the most recent methodologies used in the FIFA World Cup 2022 [2], [6], [25], [29]. Consequently, there is currently no source code available that directly inherits the definitions of the concepts illustrated in the EFI document. Considering FIFA's status as the largest authority in football worldwide, it is reasonable to expect that the algorithms they have developed for measuring significant metrics in football matches, given sufficient data, could be applicable to various levels of the game (i.e. national level, club level). In other words, such a feasible source is crucial to establish a common standard for statistics and performance analysis.

**Research question** The goal of the thesis is to provide an open-source implementation of the concepts presented in the EFI document and to validate them using FIFA

[1] https://github.com/doganparlak/EFI.git
[2] https://gitlab.uzh.ch/dogan.parlak/EFI.git

World Cup 2022 data. The aim is to make these concepts accessible for researchers, analysts, and enthusiasts to enable the reproduction of FIFA's match reports and gain valuable insights into football performance analysis. To achieve this objective, the concepts illustrated in the EFI document are assessed to determine whether they provide sufficient information for the generation of FIFA's match reports. Where necessary to resolve ambiguities, potential improvements are included. Specifically, the question to be addressed is: Are the concepts in the Enhanced Football Intelligence document sufficiently detailed to allow for the reproduction of FIFA's match reports?

**Limitations** The implementation of these concepts comes up with certain limitations that need to be addressed. Initially, the concepts provided in the document are solely defined in a textual manner, lacking explicit implementation details. This absence makes it challenging to precisely achieve the results as in FIFA's match reports. Moreover, the heuristics utilized to implement the concepts remain unknown, further complicating the reproducibility of FIFA's analyses. Lastly, it is crucial to recognize that FIFA's technology and resources for football intelligence are significantly comprehensive. FIFA employs many analysts who specialize in recording and synchronizing events for data processing, as well as implementing and verifying the algorithms using their advanced technological infrastructure [24]. Acknowledging this, it becomes apparent that reproducing the exact outcomes and achieving the same level of accuracy as FIFA's analyses can be challenging.

**Data** The concepts implemented in this research build upon the comprehensive dataset which was kindly made available by FIFA for the purpose of this research. The dataset contains three primary sections: match data, event data, and tracking data (Chapter 2). The match data contains general information about each game, including the lineups of the teams. The event data provides detailed records of events that occurred during the matches. Lastly, the tracking data, obtained through camera-based tracking using computer vision technology, provides spatio-temporal locations of the players and the ball [28].

**Concepts** The implemented concepts focus on various aspects of football performance analysis. These concepts include possession control, phases of play, ball recovery time, line breaks, receptions behind midfield and defensive lines, defensive line height and team length, team shape, final third entries, pressure on the ball, forced turnovers and expected goal (xG) [20]. This comprehensive set of concepts provides valuable insights into different angles of the game, contributing to a deeper understanding of football performance.

# 2

# Data

The dataset employed to implement the concepts outlined in the EFI document comprises the games from the FIFA World Cup 2022. Each game is associated with three separate datasets: "match data", "event data" and "tracking data". These datasets are sourced from FIFA for the purpose of this research.

## 2.1 Match Data

The match data is available in "JSON" format and includes fundamental details about the game and the participating teams. In terms of the game, the data encompasses the match ID, start and end times of each phase (e.g., first half, second half, and potential overtime periods). At the team level, the data provides the IDs and names of both teams. Furthermore, the lineups for each team are included, specifying the team ID, player ID, first and last name of each player, jersey number, and the frame interval during which they were involved in the game (Appendix A.1.1).

The provided information regarding the game can be matched with the details in the tracking data to be adapted in the implementation of the concepts.

## 2.2 Event Data

The event data is provided in "JSON" format and contains all the events that took place during a game. These incidents were meticulously recorded by teams of dedicated analysts, partly to facilitate the computation of the concepts. In each game, there are 25 analysts assigned, with one analyst assigned per player to cover and document the events involving or completed by that player. This comprehensive approach allows for a detailed examination of each player's actions, both on and off the ball. By engaging multiple analysts, it becomes possible to observe the actions surrounding the ball as well as those occurring away from it [14]. The compilation of these events from each analyst results in the event data, which presents a chronological sequence of incidents that took place throughout the game [24].

There are various events that could potentially occur in a game. Depending on the type of event, the provided features may vary. In general, information about the events

includes the time and location of occurrence, ID of the player(s) involved in the action, and the outcome (Appendix A.1.2).

A fundamental aspect to highlight is the coordinate system deployed in the event data. Unlike the tracking data (Section 2.3), the event data coordinates are reported within the range [0,1] for both x and y dimensions, with the center at (0.5, 0.5) (Figure 2.1).

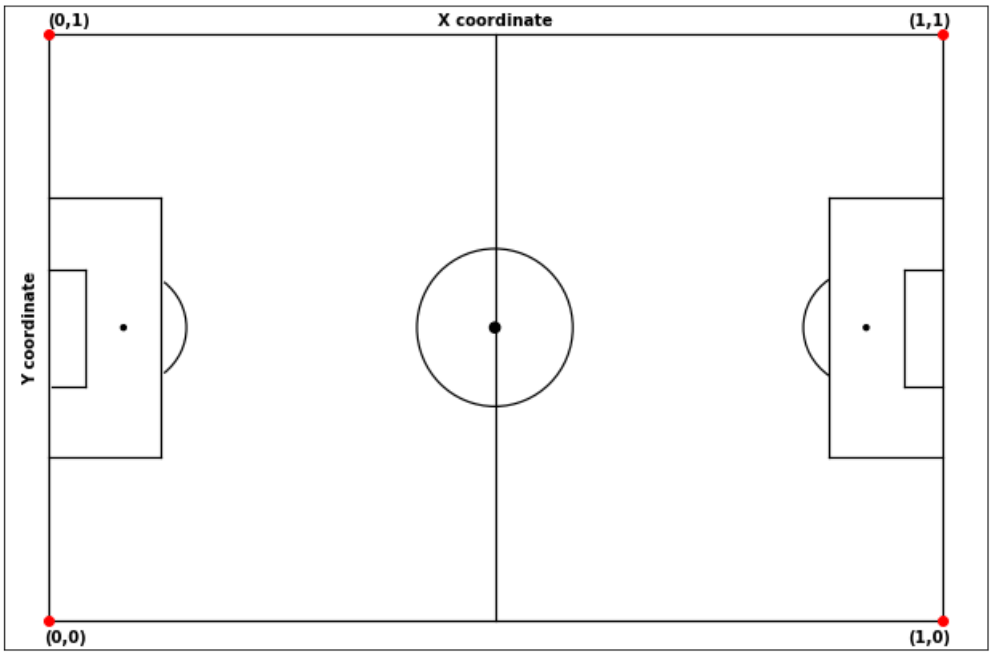



Figure 2.1: Event data coordinate system.

## 2.3 Tracking Data

The tracking data acquired from FIFA originates from "ChyronHego's TRACAB system" [28]. This data is primarily used to monitor the movements of players and the ball during matches, and it is provided in the "DAT" format. Each line in the file corresponds to a frame, which represents an observation at a specific moment in the game. The data has a sampling rate of 25 frames per second, meaning that 25 snapshots are recorded in one second. Within each frame, various information is available, including the frame number, team ID, player jersey numbers, player speeds, player coordinates on the pitch, ball coordinates (including the z-coordinate for height), ball speed, ball state (indicating whether the ball is in play or not), and the team in-possession (Appendix A.1.3). It is worth noting that details such as the frame number and player jersey numbers can be matched with the corresponding information in the match data when needed (Section 2.1).

A significant feature to mention is the coordinate data. In contrast to the event data

(Section 2.2), the tracking data coordinates are reported within the range of [-5250, 5250] for the x-coordinate and [-3400, 3400] for the y-coordinate. In order to represent the pitch in a vertical format, reflecting the visuals provided by FIFA reports, a scaling method is applied. This conversion enables the interpretation of coordinates in meters. As a result, the final range for the x-coordinate becomes [-34, 34], while the y-coordinate is transformed into the range of [-52.5, 52.5] (Figure A.2.1). This scaling ensures that the pitch is accurately represented and aligns with standard football field dimensions (Figure 5.2).

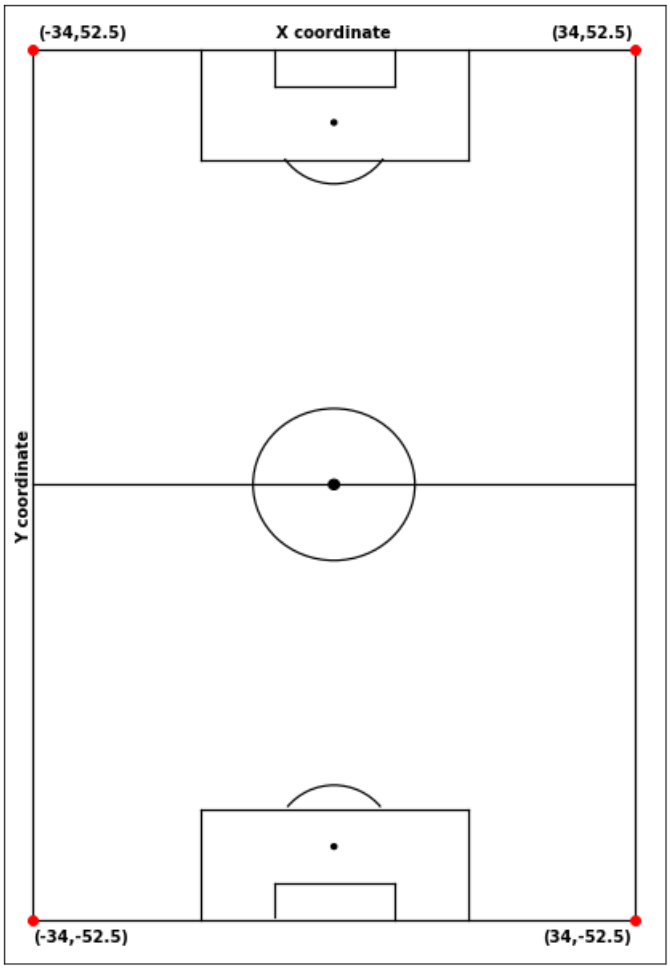



Figure 2.2: Tracking data coordinate system.

## 2.4 Synchronization of Event Data and Tracking Data

Several concepts included in the EFI document require the application of both tracking data and event data in a compatible manner. Considering that the concepts heavily rely

on tracking data to complete the analysis, whereas the event data serves as a provider of specific noted events (e.g., pass, cross, ball progression, and reception events), facilitating computations for the analysis process, the conversions are done from match run time and event data coordinate system to frame-level and tracking data coordinate system.

**Time conversion** Match run time, denoted as $t_{\text{match}}$, represents the elapsed time in milliseconds since the start of the match. With a sampling rate of 25 frames per second, each frame corresponds to a duration of 40 milliseconds. To convert the match run time into a frame-level representation, it is divided by 40 milliseconds:

$$\text{frame-level time} = \frac{t_{\text{match}}}{40} \tag{2.1}$$

The start and end frames of the phases obtained from the match data provide valuable information. By subtracting the frames corresponding to halftime intervals, denoted as $f_{\text{halftime}}$, the approximate start frame of the events can be determined:

$$\text{start frame of events} = \text{frame-level time} - f_{\text{halftime}} \tag{2.2}$$

This calculation allows for an accurate estimation of the events' start time, taking into account any halftime break(s) that occur during the match.

**Coordinate system conversion** The event data and tracking data coordinate systems differ from each other in several aspects. They have distinct centers, dimensions defined within different intervals, and varying alignments. Given the provided geometrical features of these coordinate systems, the following equations are formulated to convert the event data coordinate system to the tracking data coordinate system (Figure 2.1, Figure 2.2):

$$x_{\text{tracking}} = (y_{\text{event}} - 0.5) \times 68 \tag{2.3}$$

$$y_{\text{tracking}} = -(x_{\text{event}} - 0.5) \times 105 \tag{2.4}$$

# 3

# FIFA's Enhanced Football Intelligence Document

FIFA's EFI document is the main source that is utilized to implement the concepts used in FIFA World Cup 2022. [20]. These concepts include eleven football analysis aspects, each accompanied by a football description and a calculation description. The former one expresses the concept with a clear and accessible manner, avoiding implementation details. The latter one includes technical details, basic descriptions and hints regarding the implementation of the concept. Below, the concepts are highlighted, emphasizing the football and calculation descriptions that are crucial for implementation purpose.

## 3.1 Possession Control

The concept focuses on illustrating the distribution of ball possession throughout the duration of a game. The metric "possession state" calculates the distribution of ball possession between teams and also tracks the percentage of time spent in a state of contest, indicating the periods during the match when neither team has controlled possession of the ball. Any output generates three possession values: Team A (%), In-Contest (%), Team B (%). This metric takes into account the ball-in-play time intervals to provide accurate measurements [20].

## 3.2 Phases of Play

The metric known as "phases of play" gathers the percentage of ball-in-play time and provides insights into the strategies and tactical behaviors employed by teams throughout a match. For each team, the phases of play are separated into in-possession and out-of-possession segments [20].

This concept distinguishes between nine out-of-possession phases (high press/block; mid-press/block; low press/block; counter-press; recovery; defensive transition), seven in-possession phases (build up opposed/unopposed; progression; long ball; final third; counter-attack; attacking transition) and set-piece phases (corner; free kick; throw-in; penalty) [20].

The out-of-possession phases are described as follows:

- High press: Defensive pressure applied in the final third of the pitch (Figure 5.8) [20].
- Mid-press: Defensive pressure applied in the middle third of the pitch (Figure 5.8) [20].
- Low press: Defensive pressure applied in the first third of the pitch (Figure 5.8) [20].
- High block: An organized defensive shape formed in the final third of the pitch (Figure 5.8) [20].
- Mid-block: An organized defensive shape formed in the middle third of the pitch (Figure 5.8) [20].
- Low block: An organized defensive shape formed in the first third of the pitch (Figure 5.8) [20].
- Counter-press: Following loss of the ball, an aggressive attempt to regain the ball [20].
- Recovery: Following loss of the ball, the defensive team quickly runs towards their own goal to quickly to defend their goal [20].
- Defensive Transition: The defending team must get back into the defensive shape as quickly as possible to form a compact block and restrict space for the opponents [19].

The in-possession phases are explained as follows:

- Build up opposed/unopposed: How teams initiate their attacking play. Typically, build up is associated with playing out from the back. "Opposed" indicates that the opponents applying pressure to the players on the ball. "Unopposed" indicates that the in-possession team were allowed to begin their attack under minimal pressure [20].
- Progression: The aim of this attacking phase is to advance the ball into the final third (Figure 5.8) [20].
- Final third: When teams are in-possession of the ball in the final third of the pitch (Figure 5.8) [20].
- Counter-attack: When a team regains possession and immediately attacks the opposition with speed and intensity, their focus lies on maintaining a direct and aggressive style of play [20].
- Attacking transition: Players should always be aiming to look forward, play forward, run forward and play quickly [18].

The methodology operates tracking data to calculate in-possession and out-of-possession phases. It detects these phases on a frame-level by analyzing spatial and physical features such as player and ball locations, distances, movement speeds, and directions. By identifying the same phase over consecutive frames, temporal sequences are formed and classified accordingly. These sequences are then aggregated and transformed into sections representing the duration of in-possession or out-of-possession time [20].

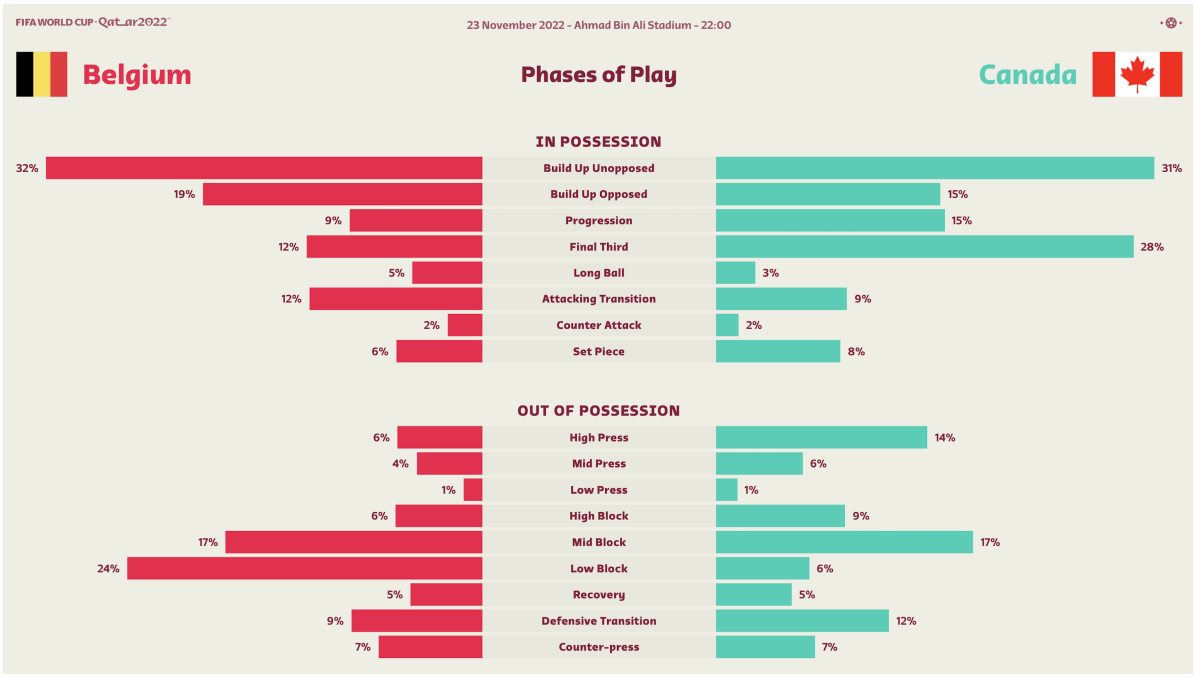



Figure 3.1: An example of phases of play analysis [20].

## 3.3 Ball Recovery Time

Ball recovery time metric displays the average amount of time it takes for a team to regain possession of the ball after losing it. It is the time difference between the last ball control of a team in-possession and the first ball control event in the following possession. In between these possession sequences, the opponent team can be in-possession or the ball can be in-contest state [20].

## 3.4 Line Breaks

An opposition line is considered broken when the attacking team successfully plays the ball beyond the deepest player in that line. The metric provides information on the methods used to bypass a unit (i.e. defensive unit, midfield unit, attacking unit),

including passes, crosses, or ball progressions. It also provides the direction in which the distribution occurred, whether it went through, around, or over the unit (Figure 3.2) [20].

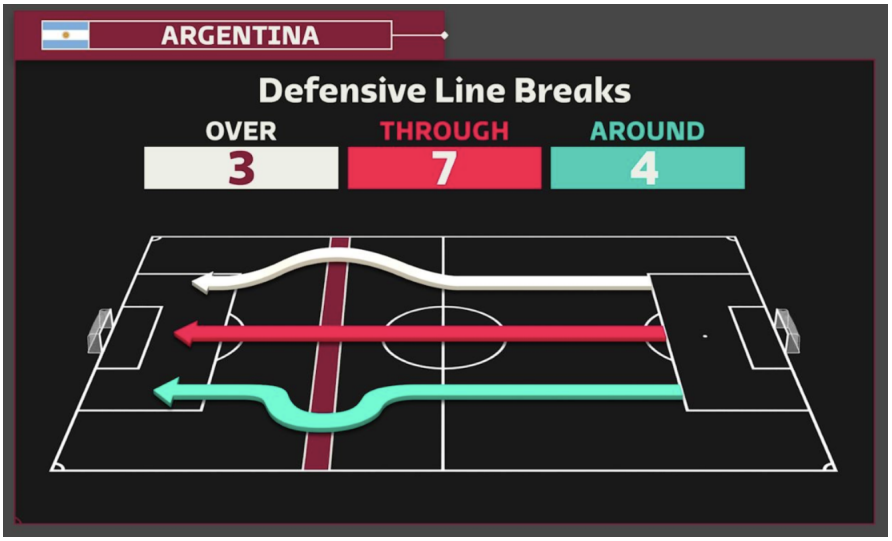



Figure 3.2: An example of line breaks analysis [20].

- Defensive unit: Players who are participating in the defensive section of the team (Figure 3.3, Figure 3.5) [20]. Responsible for protecting their own goal and preventing the opponent from scoring.

- Midfield unit: Players who are participating in the midfield section of the team (Figure 3.3, Figure 3.5) [20]. They are typically responsible for controlling the flow of the game, distributing the ball, and connecting the defense and the attack.

- Attacking unit: Players who are participating in the attacking section of the team (Figure 3.3, Figure 3.5) [20]. Their aim is to create scoring opportunities and penetrate the opponent's defense.

- Line: The player within a unit who is closest to their own goal in terms of vertical positioning, commonly referred to as the deepest player, represents the unit as a whole (Figure 3.3).

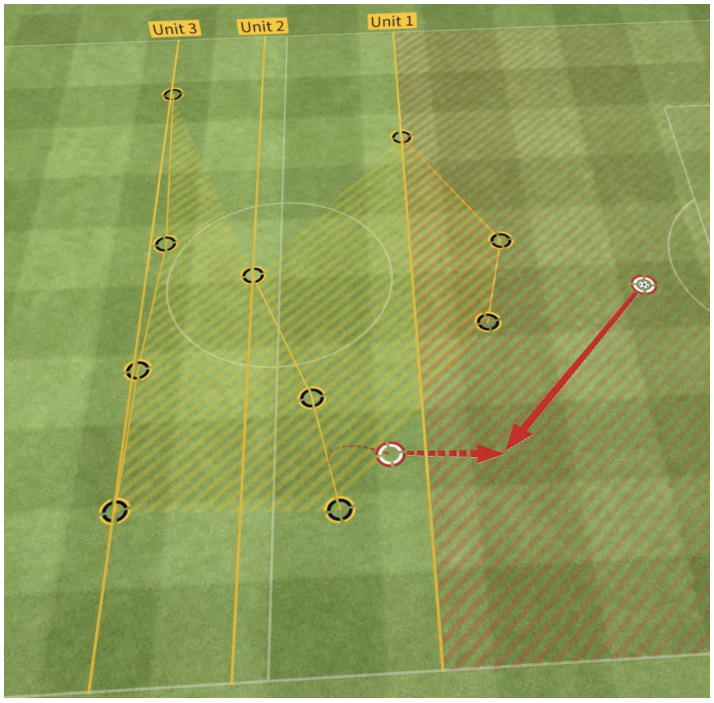



Figure 3.3: An example of team units [17].

## 3.5 Receptions Behind Midfield and Defensive Lines

The concept outputs the count of receptions made by each team between the midfield and defensive unit, as well as receptions made behind the defensive unit (Figure 3.3, Figure 3.4). The frequency of ball receptions are irrespective of whether they take place within or outside the configuration of the opponents' team shape (Section 3.7) [20].

## 3.6 Defensive Line Height and Team Length

Defensive line height is a metric that averages the height of the deepest line during in-possession and out-of-possession phases. The distance is measured from the deepest defensive player to their own goal line. On the other hand, team length is the distance between a team's deepest and highest players, excluding the goalkeeper [20].

The obtained defensive line heights and team lengths are combined over the match, and these results are reported based on various cases. These cases depend on whether the team is in-possession or not, as well as the area that the ball has been in [20].

- Deepest line/player: The player typically positioned closest to their own goal within the defensive unit in terms of vertical positioning.

- Highest player: The player typically positioned farthest from their own goal within the attacking unit in terms of vertical positioning.

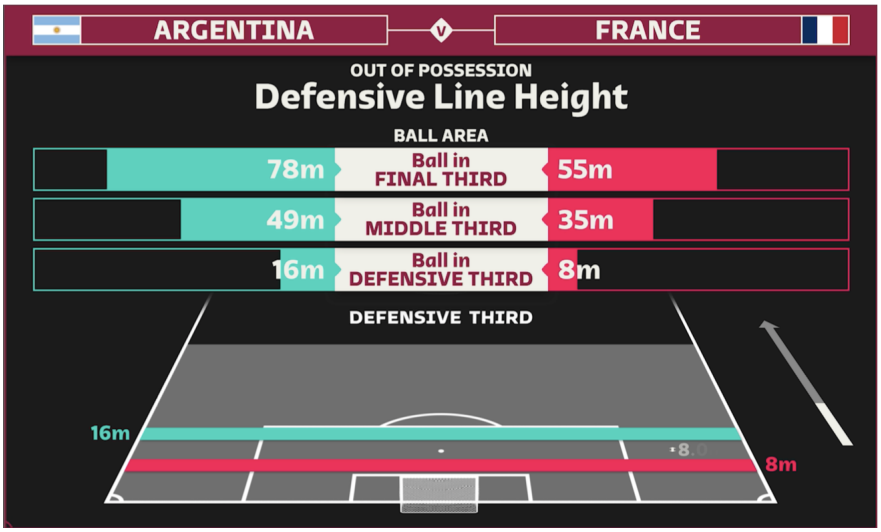



Figure 3.4: An example of defensive line height analysis [20].

## 3.7 Team Shape

In this concept, each player is assigned to a specific unit based on their positioning in relation to their teammates (Section 3.4, Figure 3.3, Figure 3.5). When the number of players in each unit is aggregated throughout the match, it forms the overall team shape. These aggregations are done using the players' locations over the match. This metric provides the shape of the team, both in and out-of-possession cases, as well as the combination of those (i.e., without distinction of ball possession) [20].

The player roles represented with the red nodes (i.e., LF, LCF, CF, RCF, RF) pertain to the attacking unit, the ones depicted by the blue nodes pertain to the defensive unit (i.e., LB, LCB, CB, RCB, RB), and the rest are associated with the midfield unit (Figure 3.5).

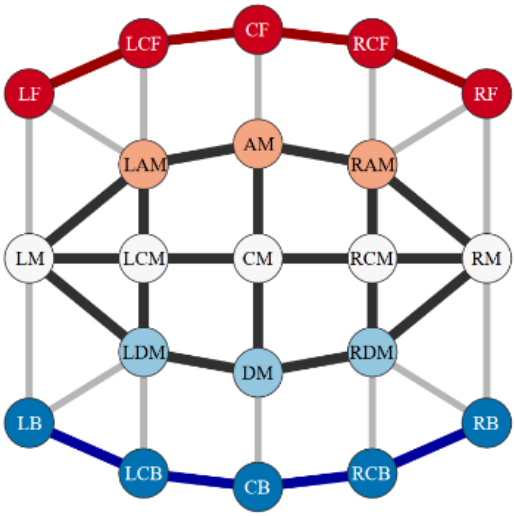



Figure 3.5: Template for player roles based on team shape.

## 3.8 Final Third Entries

The concept provides insights about the attacking strategy that teams adopt as they approach the opponents' goal. The metric measures the amount and location of final third entries split across five different entry zones: left channel, left inside channel, central channel, right inside channel, and right channel (Figure 3.6). Final third entries being credited to a team if the ball is successfully distributed or carried into the final third [20].

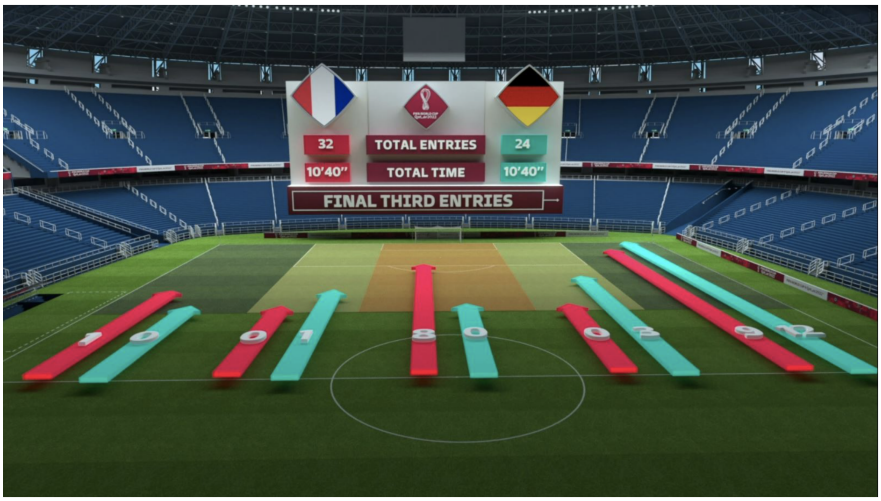



Figure 3.6: An example of final third entries' analysis [20].

## 3.9 Pressure on the Ball

Pressure on the ball refers to the defensive action of a player, reducing the distance between themselves and the opponent in-possession of the ball. By closing down the space, this defensive player limits the amount of time and available choices for the player with the ball. Information such as the defender's distance to the ball, the angles of the defender to the ball carrier and the proximity of defenders towards the ball carrier are considered [20].

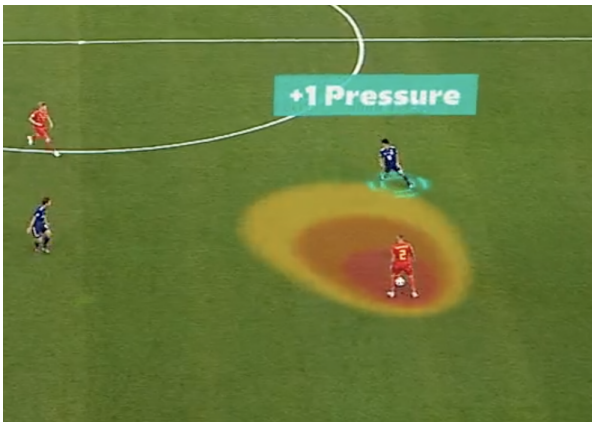



Figure 3.7: An example of pressure on the ball analysis [16].

## 3.10 Forced Turnovers

Forced turnovers is a defensive metric awarded to the defending team. This metric takes into account the events when the attacking team lose possession of the ball due to pressure being applied by the defending team. A team is credited with a forced turnover if they exert pressure on the ball and then gains possession of the ball on the next touch [20].

## 3.11 Expected Goal (xG)

xG represents the probability of scoring from a given attempt at goal, based on a statistical model developed over a historical database of shots and their scoring rates. The probability produced is dependent on several factors from before the attempt at goal was taken. The major features are: distance; angle; number of players obstructing the goalmouth; pressure on the shooter; whether the attempt is with the head, foot or body; the goalkeeper position at the time of the attempt [20].

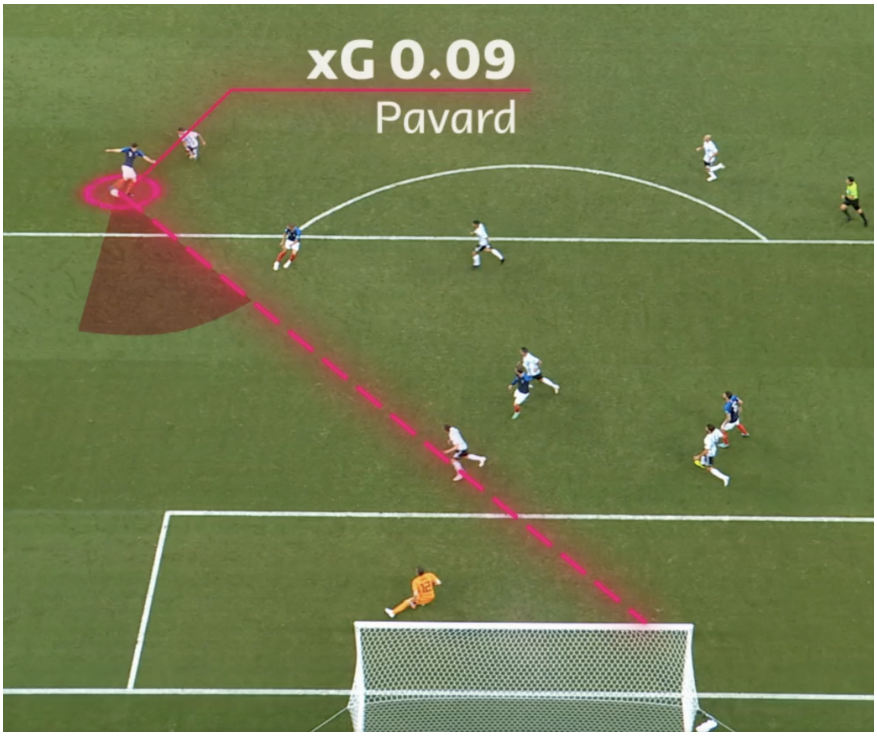



Figure 3.8: An example of expected goal analysis [8].

# 4

# Library Design

The library design provides an overview of the structure of the implemented source code, which was developed in Python. The term "library" refers to the publicly available code that is organized into several layers, all of which work cohesively. The following sections elaborate on each layer and outline the underlying logic incorporated into the implementations.

## 4.1 High Level Structure

The designed library consists of three main layers: the data layer, concept layer, and performance and visualization layer. The data layer includes three classes: Match, Event, and Tracking (Appendix A.2.1). The concept layer contains the EFI class, while the visualization layer is formed by the Visualizer class (Appendix A.2.2, Appendix A.2.3).

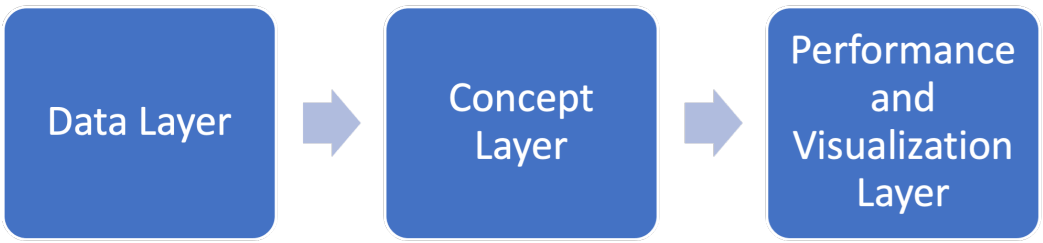



Figure 4.1: High level structure of the library.

The first step involves creating match, event, and tracking objects using the classes in the data layer (Appendix A.2.1). Then, these objects are passed to the concept layer in order to initialize the EFI object (Appendix A.2.2). Afterward, the EFI object can be used to generate outputs based on the desired concepts. Finally, by leveraging the visualization object, which can be created from the Visualizer class, these outputs can be displayed with visual representations (Appendix A.2.3).

## 4.2 Data Layer

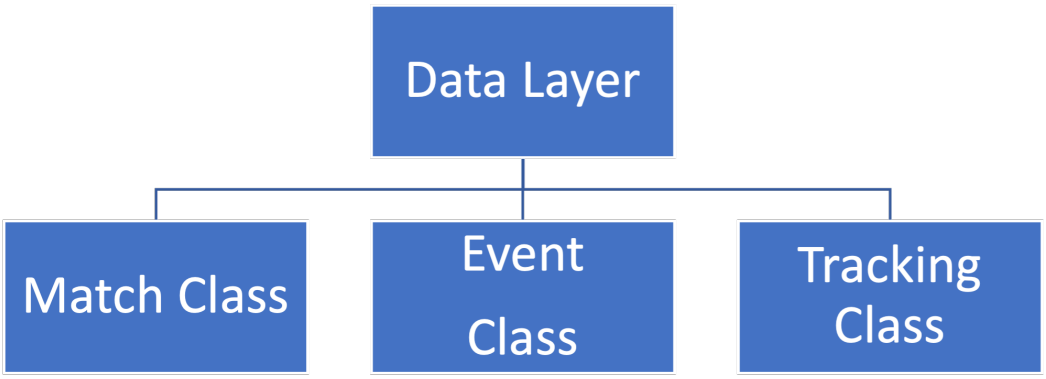



Figure 4.2: The structure of the data layer.

In the designed architecture, the data layer plays an important role in parsing the provided data and transforming it into a form that is efficient to use and readily accessible in the concept layer. For this purpose, an instance of the Match class, Event class, and Tracking class is created for each distinct dataset of a game, such as match data, event data, and tracking data (Chapter 2). These classes support the organization and manipulation of the corresponding data in a structured manner for use in the concept layer (Appendix A.2.1).

## 4.3 Concept Layer

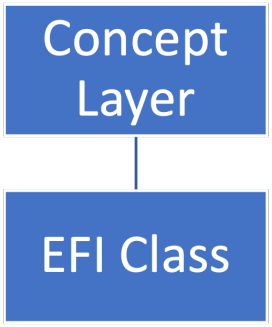



Figure 4.3: The structure of the concept layer.

In the concept layer, the EFI class compromises the implementations of the EFI concepts. Successfully initialized data layer objects, such as match object, event object and tracking object, are employed in the forming process of the EFI object. The instance of the EFI class then facilitates the given data objects accordingly to perform the analysis of the preferred game via the implemented EFI concepts (Appendix A.2.2).

## 4.4 Performance and Visualization Layer

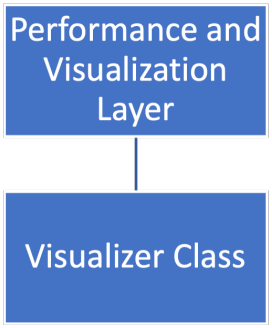



Figure 4.4: The structure of the performance and visualization layer.

The raw outputs derived from the analysis in the concept layer can be further processed in the performance and visualization layer, enabling them to be viewed in an organized format or visually represented to enhance interpretation (Appendix A.2.3). In some cases, comparisons with the FIFA results are incorporated into the visuals to improve clarity and facilitate crosschecking for validation purposes (Chapter 6).

# 5

# Implementation of Enhanced Football Intelligence Concepts

## 5.1 Automatic Event Detection Using Tracking Data

**Algorithm overview** The Automatic Event Detection algorithm is implemented in the data layer within the Tracking class (Appendix A.2.1).The algorithm deploys the tracking data to label each frame with the corresponding event taking place, enabling precise analysis and interpretation [30]. The frame classification process is based on the state of the ball, which is provided in the raw possession information (Appendix A.1.3). The ball state can be observed as either alive, indicating that the game is in play, or dead, indicating that the game is not in play. By examining the state of the ball, the corresponding events are assigned to each frame.

**Game in play frames** Ball alive frames in the game are categorized into three distinct situations: home team in-possession, away team in-possession, or in-contest. The tracking data already provides raw possession information, labeling frames as either home team in-possession or away team in-possession (Appendix A.1.3). However, the analysis used in the EFI document goes a step further by including the option of in-contest, which demonstrates that neither team has controlled possession of the ball [20].

The detection of the in-contest frame commences by considering a circle around the ball, which essentially defines the duel zone, with a radius of $r_{\mathrm{dz}}$. If there are at least two opponents within the duel zone, an in-contest situation is deemed to be occurring [30]. Otherwise, the raw possession information for the corresponding alive frame is kept the same. The determination of the value of radius $r_{\mathrm{dz}}$ is discussed in the possession control section (Section 5.2).

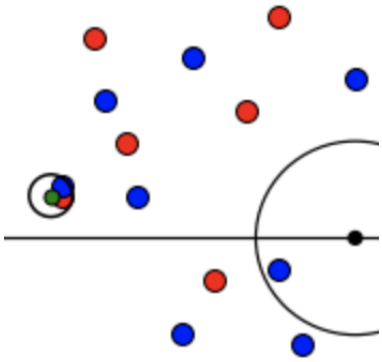


Figure 5.1: An example of in-contest frame.

The figure illustrates an in-contest frame with players distinguished by blue and red nodes representing different teams, while the green node represents the ball. Notably, the figure features a circle centered on the ball, defining the duel zone, and containing two opponents inside it (Figure 5.1).

**Game not in play frames** Dead ball frames are divided into six categories: kick-off, penalty, goal-kick, corner-kick, throw-in, and free-kick. Each event has specific conditions that must be met for classification, and the order in which these conditions are checked plays a crucial role in determining the event.

**Pitch dimensions** Before analyzing each routine in detail, it is important to note the dimensions of the pitch (used in the FIFA World Cup 2022) and specific measurements of the divided areas. The key areas to observe include the penalty area, goal area, corner area, touchline and center circle (Figure 5.2).

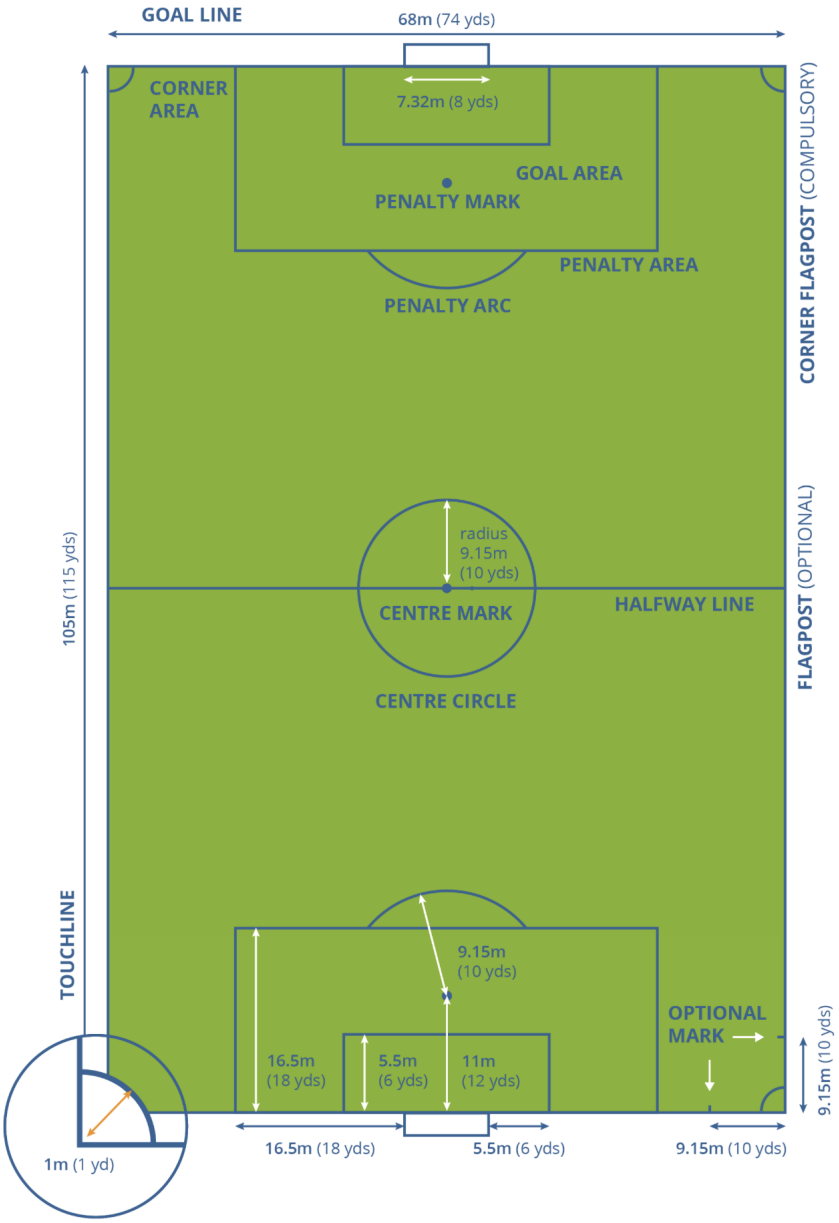



Figure 5.2: Key pitch dimensions [15].

**Kick-off** The first step is to check whether the dead ball frame is part of the kick-off event. For this condition, all players should be within their own halves, with a tolerance of $\epsilon_{k1}$ (4 meters), and there should be at least one player within $\epsilon_{k2}$ (12 meters) of the center mark (Figure 5.3) [13], [30].

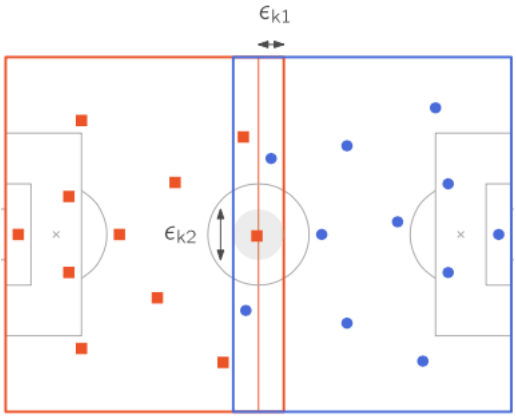



Figure 5.3: Kick-off event [30].

**Penalty** If the dead ball frame does not correspond to a kick-off event, the condition for a penalty event is then checked. It requires that only one player is at their goal line between the posts (with a tolerance bounding box of $\epsilon_{p1}$, i.e., 3 meters), only one opponent is within a square bounding box from $\epsilon_{p2}/4$ (1 meter) in front of $3\epsilon_{p2}/4$ (3 meters) behind the active penalty mark, the other players are neither within the penalty area nor within 9.15 meters from the penalty mark (with a tolerance of $\epsilon_{p3}$, i.e., 4 meters) (Figure 5.4) [9], [30].

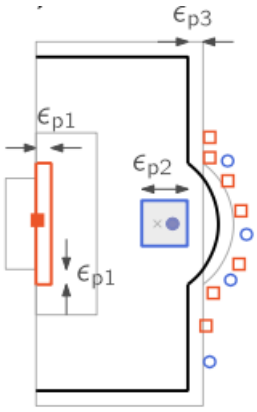



Figure 5.4: Penalty event [30].

**Goal-kick** Moreover, when the penalty option is also ruled out, the next step is to inspect for a possible goal-kick event. To satisfy this condition, there should be at least one player from the team taking the goal-kick within their own goal area (with a tolerance bounding box of $\epsilon_g$, i.e., 0.5 meters), no players from the opposing team should be in the penalty area, and the ball must be present inside the goal area (Figure 5.5) [11], [30].

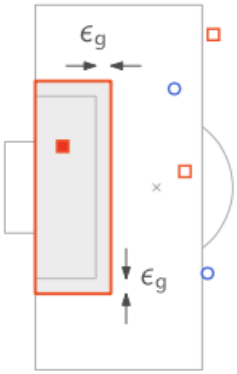



Figure 5.5: Goal-kick event [30].

**Corner-kick** Furthermore, the next routine to investigate is corner-kicks. The rule states that at least one player is within $\epsilon_c$ (2 meters) of one of their active corner marks (Figure 5.6) [12], [30].

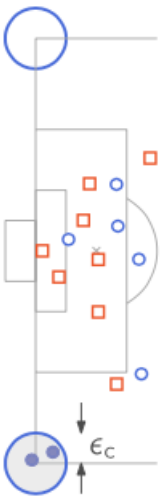



Figure 5.6: Corner-kick event [30].

**Throw-in** The analysis of the throw-ins is the penultimate step that should be scanned. The condition suggests that at least one player and the ball is beyond the auxiliary sideline (with a tolerance $\epsilon_t$, i.e., 1 meter) (Figure 5.7) [10], [30].

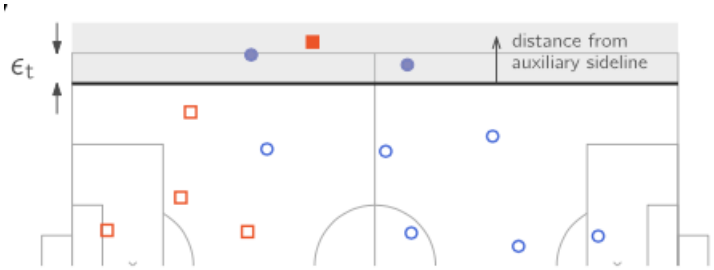



Figure 5.7: Throw-in event [30].

**Free-kick** Ultimately, the free-kick events are considered. Unfortunately, free-kicks lack distinct trigger configurations. Therefore, if none of the previously mentioned dead ball events apply, the dead ball frame is classified as a free-kick. This classification also accounts for instances where the algorithm may be confused due to inaccuracies in the tracking data [30].

## 5.2 Possession Control

After applying the Automatic Event Detection algorithm, the calculation of the possession control metric becomes straightforward. The metric takes into account the ball alive frames for calculating possession distribution (Section 3.1). These frames are already classified as either home team in-possession, away team in-possession, or in-contest. Therefore, the only step left is to determine the percentage distribution of these frames throughout the match. Please note that the determination of duel zone ($r_{\text{dz}}$) plays a key role for the analysis to be accurate. According to the parameter tuning process, $r_{\text{dz}}$ is taken as 2 meters (Appendix A.3.1, Equation 5.1).

$$\text{Home team in-possession (\%):} \quad \frac{\#\text{frames for home team in-possession}}{\#\text{ball alive frames}} \times 100 \tag{5.1}$$

$$\text{Away team in-possession (\%):} \quad \frac{\#\text{frames for away team in-possession}}{\#\text{ball alive frames}} \times 100 \tag{5.2}$$

$$\text{In-contest (\%):} \quad \frac{\#\text{frames for in-contest}}{\#\text{ball alive frames}} \times 100 \tag{5.3}$$

## 5.3 Phases of Play

The phases of play metric distribute the time spent during the match while the ball is in play into corresponding phases (Section 3.2). Each team and possession information are represented as percentages that should add up to a hundred (i.e., home team in-possession, home team out-of-possession, away team in-possession, away team out-of-possession). However, it should be noted that in FIFA reports, there are inconsistencies

in the phases of play results, resulting in percentages that may not add up to a hundred (Figure 3.1). Therefore, the implementation of this metric can be seen as a refinement according to the given definitions.

The detection and analysis of the phases of play are divided into separate parts, some of which are conducted individually, while others are analyzed together for efficiency and potential dependencies between these phases. The initial step involves considering set piece and long ball events as separate entities. Subsequently, the analysis encompasses attacking transition, defensive transition, recovery, counter-attack, and counter-press events, which are examined collectively. The final part of the analysis focuses on the evaluation of build up (opposed/unopposed), progression, final third, high press/block, mid-press/block, and low press/block phases.

During the analysis of the phases of play, the assigned ball alive frames are recorded for each team and possession situation to avoid double counting. Moreover, the denominator used for percentage distribution is determined based on the number of ball alive frames. There are two separate denominators for the ball alive frames: one for the home team in-possession (away team out-of-possession) and another for the away team in-possession (home team out-of-possession). After completing each part of the analysis, verifications are conducted to ensure the correct allocation, and the computed percentages are stored accordingly. The conditions to be controlled ensure the assignment of the frame to the correct team, the utilization of ball alive frames only, and prevent the double inclusion of the same frame. These confirmations help maintain accuracy and consistency in the analysis process.

**Set-piece** To begin with, the Automatic Event Detection algorithm is utilized to identify set-piece events that occur when the ball is out-of-play, such as goal-kicks, corner-kicks, free-kicks, kick-offs, penalties, and throw-ins (Section 5.1). The purpose of these stages is to estimate the duration of time allocated after the game transitions into the in-play phase. To achieve this, the frames in the match are iterated, and the last frames of the set-piece events, just before the ball becomes alive, are detected. A parameter called "set piece duration" (147 frames) is introduced to determine the number of frames to allocate after the game transitions into the in-play phase (Appendix A.3.2). Depending on the team in-possession in the subsequent ball alive frame, 147 frames are allocated accordingly. At the conclusion of this phase, checks are performed, and the corresponding percentage is computed for each team.

**Long ball** The following stage involves the detection of long ball events, which is accomplished by identifying pass and cross events in the event data. The match run time is synchronized to frames using the appropriate equations (Equation 2.1, Equation 2.2). Later, taking into account the event data coordinate system, the vertical distance covered by these pass/cross events is computed. A parameter named as "long ball distance" (0.45) is introduced as an initial threshold to filter out pass/cross events that have not traveled a certain vertical distance (Figure 2.1, Appendix A.3.2). Furthermore, using the synchronized potential long ball events, the height of the ball is evaluated

within a specific interval determined by the parameters "long ball height threshold" (3.24 meters) and "long ball threshold" (197 frames) (Appendix A.3.2). Within this interval, if the ball's height exceeds the long ball height threshold, it is identified as a long ball. 197 frames are used to allocate the long ball event. It is crucial to note that the success of the event does not affect the team's phase or the strategy they are employing. Hence, any attempt for a potential long ball is accounted. The last step involves conducting necessary checks and computing the corresponding percentage for each team.

**Counter-attack** After completing the individual analysis of the long ball and set-piece phases, the examination of the attacking transition, defensive transition, recovery, counter-attack, and counter-press events can be completed. In order to detect the counter-attack, factors such as directness and intensity are taken into consideration. For each turnover case, an interval is determined based on a parameter called the "forward threshold" (40 frames), which defines a line segment formed by the ball locations at the beginning and end of this interval (Appendix A.3.2). The slope of the line segment is considered as an indicator of directness, and it should exceed a threshold value named as the "slope threshold" (0.51) (Appendix A.3.2). If the slope test is successfully passed, another assessment is applied to ensure directness and validate the intensity. The vertical distance covered by the ball during the interval, "counter-attack threshold" (94 frames), should be greater than the "forward distance threshold (2.11 meters)" (Figure 2.2, Appendix A.3.2). This approach takes into account the team's intensity based on their attitude towards the ball. The speed of the ball is indirectly measured by calculating the distance it travels within a specific timeframe. If these conditions are satisfied, the next 94 frames are reserved for the counter-attack phase of the attacking team.

**Counter-press** During the same turnover event, the potential counter-press, recovery, and defensive transition phases are investigated. Using the frames with pressure from the concept pressure on the ball, the cause of turnover is checked whether it is due to oppression (Section 5.10). Following the loss of the ball, the next "counter-press threshold" amount of frames are investigated for a potential pressure on the ball scenario (i.e., 21 frames) (Appendix A.3.2). If that is the case, a parameter called "counter-press duration" is used to reserve the next 49 frames for the opposition (Appendix A.3.2).

**Recovery** Moreover, when the counter-press is not the cause of the turnover, a potential investigation for the recovery phase is completed. In this phase, the defending team should be quickly moving towards their own goal. Thus, the number of frames the attacking team is in-possession of the ball is counted until another change in-possession is detected. If that number of frames is smaller than a threshold named "recovery threshold" (139 frames), then the count is used as the interval (Appendix A.3.2). Otherwise, the recovery threshold replaces it, since numerous frames would probably go beyond the recovery phase and might steal frames from other phases. The average speed of the defending team's players, the start and end points covered during the defined interval

by that team's players, is obtained to match the definition in the EFI document (Section 3.2). If the average speed of the defending team in the selected interval is greater than the average speed they perform during the match (when the ball is alive), and the average direction is towards their own goal, then the frames in the interval are allocated for the recovery phase of the defending team.

**Defensive/Attacking transition** As the final phase of this section, the FIFA reports indicate that the time spent in the defensive transition of the home/away team is equal to the time spent in the attacking transition of the away/home team. Therefore, focusing on the defensive transition phase of both teams would suffice to capture the moments of the attacking transition phase as well. The defensive transition metric explains that this interval encompasses both the recovery and counter-press phases [21]. Following a loss of possession, the typical response is to apply counter-pressing and then transition into recovery to defend the goal [21]. The defensive transition phase is composed of these two phases, which means that the frames allocated for recovery and counter-pressing are included in the calculation of the percentage of time spent in the defensive transition. The attacking transition of the opposing team can then be computed by reserving the same frames. Finally, checks are done to ensure the correct allocation of the ball alive frames. Percentages are calculated accordingly.

The last part of the concept contains the buildups, blocks, pressure, progression and final third phases.

**Build up opposed/unopposed** The build up phase of the game is typically seen in the first third of the pitch, where the attacking team initiates their game plan (Section 3.2). In order to determine whether the team is in the build up phase, the location of the ball is checked (Figure 5.8). To classify whether the build up phase is opposed or not, the units of the team out-of-possession need to be established (Section 3.4). For this purpose, the zonal unit classification is employed (Paragraph 5.5). The average y-coordinate of the attacking unit is calculated, and it is ensured that they are also in the first third of the pitch relative to the team in-possession. If these conditions are satisfied, the Euclidean distance between the defending team's players and the ball is computed. If there is a player with a distance smaller than the "opposed distance" (5.36 meters), then the frame is considered as the opposed build up phase of the team in-possession (Appendix A.3.2). Otherwise, it is stored as the unopposed build up phase.

**Progression and final third** Detection of the progression and final third phases is directly related to the location of the ball (Figure 5.8). If the ball is in the second third of the pitch, it indicates that the attacking team is typically in the progression phase. Similarly, if the ball is in the final third of the pitch, it suggests that the attacking team is most probably in the final third phase.

**High block/press** These phases consider the position of the team out-of-possession. If the ball is in the attacking team's first third of the pitch, the distances between the

defending team's players and the ball are computed. If there is a defending player with a distance smaller than the "high pressure distance" (5.07 meters), it indicates a potential high press frame (Appendix A.3.2). Alternatively, to assess the possibility of a high block phase, it is necessary to ensure that the defending team positions itself high up the pitch, near the attacking team's first third, and in an organized fashion. To achieve this, the attacking unit of the defending team must initially be positioned within the first third of the pitch in relation to the team in-possession (similar to the build up phase). Additionally, the length of the defending team's formation should be smaller than a threshold known as the "high block threshold" (37.70 meters) (Appendix A.3.2).

**Mid-block/press** Multiple criteria are assessed to determine whether the defending team is implementing a mid-press strategy. Initially, the ball should be in the second third of the pitch. Additionally, the distance between the defending team's players and the ball should be smaller than the "mid-pressure distance" (2.28 meters) (Appendix A.3.2). If these conditions are not met, another phase is considered (i.e., mid-block). For this purpose, the location of the defending team's attacking unit is considered. It is examined whether the average y-coordinate value of the attacking unit falls within the second third of the pitch (Section 3.4). Furthermore, the length of the defending team's formation should be smaller than the "mid-block threshold" (35.31 meters) (Appendix A.3.2). If both of these criteria are satisfied, it indicates that the defending team is in the mid-block phase.

**Low block/press** To determine if the defending team is implementing a low-press strategy, certain standards are assessed. To begin with, the ball needs to be located in the final third of the pitch with respect to the attacking team. Moreover, the distance between the defending team's player (i.e., the player closest to the ball) and the ball should be less than the predetermined "low-pressure distance" (1.23 meters) (Appendix A.3.2). If the mentioned conditions are not met, another phase is considered (i.e., low block). The average y-coordinate of the defending team's attacking unit is investigated to determine if it falls within the final third of the pitch. In addition, the length of the defending team's formation should be smaller than the specified "low block threshold" (31.85 meters) (Appendix A.3.2). If both sets of conditions are fulfilled, it points out that the defending team is effectively employing a low block strategy.

Finally, the necessary assessments are performed, and the corresponding percentages are computed. The algorithm divides the calculated percentages so far into four distinct categories: home team in-possession phases, home team out-of-possession phases, away team in-possession phases, and away team out-of-possession phases. Each category represents the percentage of time that the respective team spent in each phase during the overall ball-in-play time.

## 5.4 Ball Recovery Time

The implementation of the ball recovery time concept involves tracing the game when the ball is alive and noting the team in-possession for each case. For each possession loss by one of the teams, the number of frames is counted until possession is regained. These frames are stored for each possession loss scenario and represent the ball recovery times after each turnover. Once the analysis of all frames within the game is completed, a threshold named "recovery threshold" (24 frames) is checked against the recorded ball recovery times (Appendix A.3.3). This is done to ensure accurate identification of possession loss and to prevent erroneous frame intervals or misclassification of in-contest situations. The stored ball recovery times are compared with this threshold, and values below it are discarded. The remaining values are then averaged and divided by the sampling rate to obtain the ball recovery time for each team in seconds.

## 5.5 Line Breaks

The metric provides insights into the effectiveness of the ball being used by a team, taking into account how it bypasses (distribution type) the units of the opposing team, as well as the direction in which it is played. The answer to the question "how" can be categorized into three ways: pass, cross, and ball progression. Similarly, the direction can be classified as through, around, or over (Figure 3.2).

The event data already includes the recorded passes, crosses, and ball progressions in the game. For each of these events, the start and end locations, match run time, and players involved (sender, receiver, and the player progressing with the ball) are extracted and saved (Appendix A.1.2).

The analysis focuses only on the successful completion of these events, filtering out any unsuccessful attempts. After retrieving the data, several pre-processing steps are required before initiating the analysis. These steps involve converting the coordinates provided in the event data to match the coordinates in the tracking data. Additionally, the match run time value is used to determine the frame interval during which the corresponding event took place (Section 2.4). By performing these pre-processing steps, the data becomes suitable for further analysis and interpretation, enabling comparison with the line locations.

To ensure that only successfully completed attempts are analyzed, certain criteria are considered. Firstly, pass/cross events without any value in the receiving side are dropped from the analysis. Afterward, the end locations of both pass/cross events and ball progression events are examined to ensure that they fall within the boundaries of the pitch. It is important to consider the direction of play according to the team in-possession. Therefore, any backward attempts of these events are discarded, focusing only on line-breaking events that progress the ball in the direction of play according to the team in-possession. By applying these filtering criteria, the analysis focuses on valid and relevant events for further examination.

After completing the pre-processing steps, the successful pass, cross, and ball progres-

sion events can be investigated. For each pass event, the ID of the player initiating the event is used to determine the team taking the action. The start and end locations of the event, which have already been converted, are fetched.

To assess whether a line is broken or not, a parameter called "frame gap" (54 frames) is employed (Appendix A.3.4). This heuristic determines the frame at which the lines of the opposing team should be calculated relative to the event taking place. It is crucial because the presence or absence of line breaks depends on the positions of the opposing team's players. This means that the locations of the opposing team are considered 54 frames after the event takes place.

**Zonal unit classification** Another crucial aspect of the metric involves determining the lines formed by the opposing team, which is achieved through zonal classification. Initially, the deepest and highest players, excluding the goalkeeper, are identified (Section 3.6). Their y-coordinate differences provide the length of the team. This length is then divided into three sections, representing the defensive, midfield, and attacking units (Section 3.4). Each player is assigned to their corresponding unit based on their y-coordinate.

Next, the lines are defined based on these units. In each unit, the player with the minimum y-coordinate value represents the line for that unit (Section 3.4). Thus, there are three lines: the defensive line, the midfield line, and the attacking line. It's important to note that if there is no player in a unit, then that unit is not considered valid. A line is deemed to be broken if the event starts behind the line and ends ahead of it. In such cases, the initial event type provided in the data is used to categorize the distribution type.

The widest players (i.e., those with the minimum and maximum x-coordinate values) are identified within each unit for further analysis of potential line break events. Conversely, the height of the ball is checked within a specific time interval, determined by tuned parameters, to determine if the direction type is over. The "height threshold" is set at 1.67 meters, and the controlled duration spans 27 frames (Appendix A.3.4). Once the over case is ruled out, the widest player's x-coordinates are compared to determine if the direction type is around. If neither of these conditions applies, the direction type is classified as through.

Given that the event data includes labeled event types (e.g., pass, cross, and ball progression), there is no need for further analysis in order to classify the distribution type (Appendix A.1.2).

Finally, the algorithm provides the start frames of the events that result in line breaks, categorized based on their distribution type (pass, cross, over) and direction type (through, around, over).

## 5.6 Receptions Behind Midfield and Defensive Line

Receptions behind the midfield and defensive line are analyzed and categorized into two separate cases. The first case focuses on receptions that occur between the midfield

and defensive lines, while the second case involves receptions that happen behind the defensive line. A reception, in this context, refers to the successful act of receiving or controlling the ball [20]. The key aspect of this metric is to classify the relative locations of these receptions in relation to the lines constructed by the opposing team. The end location of these receptions serves as an indicator of the attacking team's effectiveness during the match (Section 3.4).

Receptions usually occur following a successful pass or cross event. However, to ensure that no other events resulting in a reception are overlooked, the reception events in the event data are directly considered instead of analyzing all potential actions that could lead to a reception. For each recorded reception event, the event data provides the location of the receptions, match run time, and the ID of the receiver (Appendix A.1.2). The pre-processing steps applied in the line breaks concept are also applied in this concept to ensure the compatibility of the time and locations given in the event data with the tracking data (Section 2.4).

Furthermore, in order to determine the frame at which the lines of the opposing team should be calculated relative to the computed reception frame, a parameter called "frame gap" (-5 frames) is defined (Appendix A.3.5). The reception point is classified based on the locations of the opposing team's players, making this parameter crucial.

The approach utilized to establish the midfield and defensive lines follows a methodology similar to the line breaks concept (Paragraph 5.5). The distinction lies in the exclusion of the attacking line, since the focus is on receptions behind the midfield and defensive lines. Once the players are categorized into units and the representatives of the lines are identified, the reception points are examined in relation to the midfield and defensive lines. The algorithm yields the frames in which receptions take place behind the midfield and defensive lines by comparing the y-coordinate of the reception point with the lines. It provides separate information for each team, distinguishing between receptions that occur between the midfield and defensive lines and those that happen behind the defensive lines.

## 5.7 Defensive Line Height and Team Length

The analysis aims to understand how the players, as a team, position themselves on the pitch during various phases of the game [20]. The phases are categorized into different segments based on the positioning of the players on the field, which is determined by the location of the ball. These segments include the first third, second third, and final third zones (Figure 5.8). This categorization applies to both in-possession and out-of-possession cases. For each specific combination of possession information and player locations (i.e., in-possession & first third, in-possession & second third, in-possession & final third, out-of-possession & first third, out-of-possession & second third, out-of-possession & final third), the team's length, width, and line height are determined. This is achieved by aggregating the frames that correspond to the specific combination throughout the match. By analyzing these aggregated frames, the team's length (extent of vertical coverage on the field), width (extent of horizontal coverage on the field), and

line height (height of the deepest line) can be evaluated and measured.

To observe the actual strategic positioning of a team during the game, the ball's alive frames are taken into account. To simplify the computations, the team's and the ball's coordinates are considered as if both teams are attacking in the same direction (Figure 5.8). For each alive frame and team, the deepest player (excluding the goalkeeper) is identified to calculate the line height, the highest player is located to determine the team length, and the two widest players (leftmost and rightmost) are found to measure the team width. Since the bottom line of the pitch is y = -52.5, the line height is calculated by subtracting the y-coordinate of the deepest player from -52.5 (Figure 5.8). The team length is obtained by finding the difference between the y-coordinates of the highest and deepest players. Lastly, the horizontal difference between the two widest players is determined by subtracting the rightmost player's x-coordinate from the leftmost player's x-coordinate, resulting in the team width at the corresponding frame. The values are then stored in the corresponding lists based on the location of the ball for further aggregation. The aggregation process involves averaging the corresponding stored values for each combination.

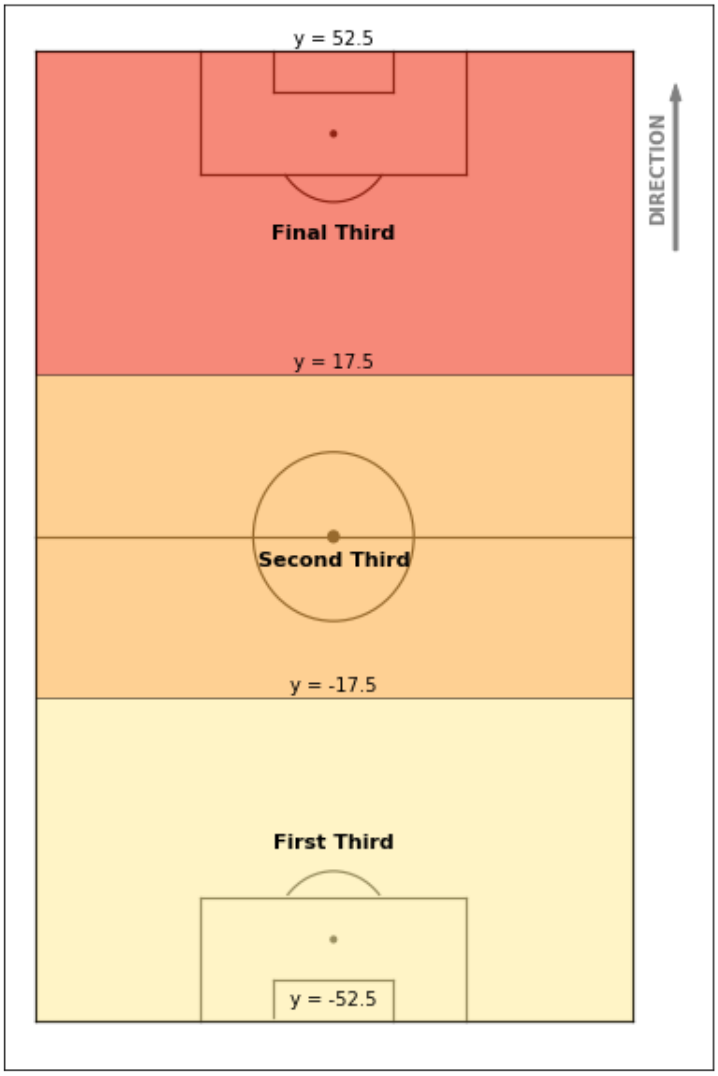



Figure 5.8: The segmentation of the pitch.

In conclusion, defensive/offensive line heights, defensive/offensive team lengths, and defensive/offensive team widths are obtained for each team, considering different locations of the ball such as in the first third, second third, and final third of the pitch.

## 5.8 Team Shape

The shape/formation of a team provides insights regarding the positioning of the players on the pitch while in-possession, out-of-possession and overall. The shape of a team is sort of an aggregation of the players' distribution on the field throughout the match while the game is in play (i.e., the ball is alive). It is influenced by several

factors, such as the team's tactical approach and specific game strategies. In addition, the formation determines the team's defensive and offensive structure, spacing between players, and overall balance on the field.

The algorithm has two key steps to reveal the shape of a team. The prior action is to determine the way to assign a shape to a single frame. The latter stage is to find an aggregation technique which summarizes the formation of the team throughout the match.

The technique used to determine the shape of a team in a given frame is an extended zonal-classification approach, as applied in the implementation of the phases of play, line breaks, and receptions behind midfield and defensive line concepts (Paragraph 5.5). The modification lies in the initial assignment of players to four distinct units: defensive unit (DU), defensive midfield unit (DMU), attacking midfield unit (AMU), and attacking unit (AU). If the total number of players in the defensive midfield unit and attacking midfield unit exceeds 4, then the formation assigned to that frame is represented by a 4-level formation (Figure 3.5, Equation 5.4).

$$\text{4-level formation} = \texttt{\#DU - \#DMU - \#AMU - \#AU} \tag{5.4}$$

The main goal is to accurately classify the team's shape which involve four levels (e.g., (4-2-3-1), (4-1-4-1), (3-4-1-2)). If the sum is less than or equal to 4, then the approach applied in the concept of line breaks is valid. This results in three units: defensive unit, midfield unit (MU) and attacking unit. Thus, the team's shape can be represented in three levels (Figure 3.5, Equation 5.5).

$$\text{3-level formation} = \texttt{\#DU - \#MU - \#AU} \tag{5.5}$$

Once the shape of the team is determined for a given frame, the formation can be stored based on the possession information. If the home/away team is in-possession, the formation of the home/away team is stored for both in-possession and overall scenarios. Similarly, the formation of the away/home team is stored for out-of-possession and overall scenarios.

Now, the methodology for aggregation needs to take place. To capture the team's shape at the frame level and avoid overlooking strategies by averaging over the entire match, a majority count approach is employed. For each scenario (i.e., in-possession, out-of-possession, and overall), the formation with the highest frequency is selected. Ultimately, the team shape is determined for each of these cases.

## 5.9 Final Third Entries

Final third entries reveal a team's attacking strategy by highlighting the points of entry into the final third area of the pitch. The pitch is divided into three zones, which provide insights into the phase of play based on the ball's location (Figure 5.8). Additionally,

the final third zone is further divided into five sections known as the left channel, left inside channel, central channel, right inside channel, and right channel (Section 3.8).

Entries are recorded when the ball is either distributed or carried into the final third area [20]. It's important to note that entries starting outside the final third area and ending within it are counted. Actions occurring solely within the final third area are not considered. This determines the events that should be taken into account when counting the entries for each channel.

The event data includes reception events along with their respective locations. However, the starting point of the event leading to a reception is also relevant. Therefore, instead of solely relying on receptions, we consider the actions that would possibly lead to a reception, such as pass and cross events. Additionally, entries can also be completed through ball progression. For this aim, tracking data is used to detect ball progressions that result in a final third entry.

The implementation contains two steps. The first step is the utilization of event data and tracking data to detect the pass, cross and ball progression events that result in a final third entry. The second step is to develop an approach to count the entries accurately.

The pass and cross events are stored in a similar format, capturing information such as start and end locations, match run time, sender and receiver player IDs (Appendix A.1.2). The successfully completed pass and cross events are adjusted to synchronize the event data with the tracking data, incorporating calculations such as converting milliseconds to frames and subtracting halftime (Section 2.4).

Considering the coordinate system of the event data, the dimensions of the pitch, and the channels depicted in the EFI document, the channels are delineated (Figure 2.1, Figure 5.2, Figure 3.6). The pass and cross event locations are mirrored to align with one of the two goals. Using this information and the event data's coordinate system, the line segments dividing the channels are defined as follows (x and y coordinates respectively):

- Points forming the line segments separating the left and left inside channel (Figure 2.1):

$$\text{Point } 1 : (0.67, 0.796) \text{ - Point } 2 : (1, 0.796) \tag{5.6}$$

- Points forming the line segments separating the left inside and central channel (Figure 2.1):

$$\text{Point } 1 : (0.67, 0.634) \text{ - Point } 2 : (1, 0.634) \tag{5.7}$$

- Points forming the line segments separating the central and right inside channel (Figure 2.1):

$$\text{Point } 1 : (0.67, 0.366) \text{ - Point } 2 : (1, 0.366) \tag{5.8}$$

- Points forming the line segments separating the right inside and right channel (Figure 2.1):

$$\text{Point } 1 : (0.67, 0.204) \text{ - Point } 2 : (1, 0.204) \tag{5.9}$$

Using the synchronized pass and cross events, the start and end locations are examined. Events that start before the final third and end in the final third are categorized into the corresponding channels where they end. During this process, a parameter called "pass reception duration" (14 frames) is introduced to estimate the frame where the pass or cross ends (Appendix A.3.6). This parameter is simply added to the start frames of the pass/cross events. For each entry, the approximate end frame of the pass/cross events is recorded based on the entry channels.

Besides pass and cross events, the ball progression actions should be analyzed for final third entries concept. Since the analysis is based on tracking data, it involves various controls since there are not many features given like in event data (Section 2.2, Section 2.3). The coordinate system of the tracking data is considered to classify entries (Figure 2.2). According to the dimensions of the pitch (Figure 5.2), and the channels depicted in the EFI document (Figure 3.6), the channels are delineated. As with the pass/cross events, the locations in the tracking data are also mirrored. Employing this information and the tracking data's coordinate system, the line segments dividing the channels are defined as follows (x and y coordinates respectively):

- Points forming the line segments separating the left and left inside channel (Figure 2.2):

$$\text{Point 1} : (17.5, -20.16) \text{ - Point 2} : (52.5, -20.16) \tag{5.10}$$

- Points forming the line segments separating the left inside and central channel (Figure 2.2):

$$\text{Point 1} : (17.5, -9.16) \text{ - Point 2} : (52.5, -9.16) \tag{5.11}$$

- Points forming the line segments separating the central and right inside channel (Figure 2.2):

$$\text{Point 1} : (17.5, 9.16) \text{ - Point 2} : (52.5, 9.16) \tag{5.12}$$

- Points forming the line segments separating the right inside and right channel (Figure 2.2):

$$\text{Point 1} : (17.5, 20.16) \text{ - Point 2} : (52.5, 20.16) \tag{5.13}$$

After establishing the final third entry channels, the conditions required for a ball progression to be considered a final third entry can be elaborated. The entry is determined based on the location of the ball, specifically requiring the ball to be within the final third zone. Additionally, the game must be in play (i.e., the ball is alive) for the condition to be triggered. Furthermore, the team in-possession should maintain possession for a certain duration after the entry, as determined by the optimized parameter called "possession threshold" (107 frames) (Appendix A.3.6). To ensure that the ball is under the control of a player from the attacking team (indicating ball progression), a circle is

defined around the ball with a radius of 1.84 meters (Appendix A.3.6). If a player from the attacking team is found within this circle, they are considered to be in control of the ball. Finally, considering the coordinates of the entry channels, the frame in which each entry occurs is stored for each respective channel.

Using the frames stored for each channel from the pass, cross and ball progression events, the count of the final third entries should be established. To achieve this goal, a parameter called "out of final third threshold" (128 frames) is introduced (Appendix A.3.6). It determines the gap necessary to distinguish two separate entries.

Finally, the algorithm provides the indices where the final third entries occur along with the counts of entries per channel.

## 5.10 Pressure on the Ball

Pressure on the ball supplies insights into the defensive characteristic of the team out-of-possession. The concept provides information regarding the spatial distribution and the amount of pressures applied by each team throughout the game. To accomplish this, there are two milestones that needs to be sustained with the use of tracking data. Firstly, the development of a methodology that effectively identifies instances of pressure within a single frame. Subsequently, an approach is needed to accurately count the number of pressure events by grouping consecutive frames with pressure and treating them as a single instance.

To determine the presence of pressure in a single frame, several factors are considered. Let's denote the player in-possession as the attacker and the player out-of-possession as the defender. The attacker and defender players are identified as the ones with the minimum Euclidean distance to the ball within their respective teams.

To assess the presence of pressure and inherit the proximity of defender towards the attacker and ball carrier, the geometrical relationship between the attacker, defender, and the ball is examined. Key factors include the line segment connecting the attacker and defender, the line segment connecting the attacker and the ball, and the distance between the defender and the ball, denoted as $d$. There are four cases that classify a frame with pressure presence based on the calculated angle ($\theta$) between these lines in degrees. For each team and each case, the frames with pressure are stored for the latter part of the concept.

$$\text{Case 1:} \quad 0^\circ \leq \theta \leq 30^\circ \quad \text{and} \quad d \leq 3 \text{ meters}, \tag{5.14}$$

$$\text{Case 2:} \quad 30^\circ < \theta \leq 60^\circ \quad \text{and} \quad d \leq 2.5 \text{ meters}, \tag{5.15}$$

$$\text{Case 3:} \quad 60^\circ < \theta < 90^\circ \quad \text{and} \quad d \leq 2 \text{ meters}, \tag{5.16}$$

$$\text{Case 4:} \quad 90^\circ \leq \theta \quad \text{and} \quad d \leq 1 \text{ meters}. \tag{5.17}$$

The following part of the analysis involves aggregating the frames with pressure and dividing them to count the number of pressures. Two parameters are introduced for this purpose: the "pressure threshold" (27 frames) and the "continuous pressure threshold" (5

frames) (Appendix A.3.7). The pressure threshold indicates the minimum gap required between groups of consecutive pressure frames for each group to be counted as a single pressure event. On the other hand, the continuous pressure threshold represents the minimum number of consecutive pressure frames required to confirm the presence of actual pressure and avoid erroneous calculations.

For each team, the algorithm outputs the count of pressures, the indices of frames where the pressure is observed, and the indices of frames representing a single count.

## 5.11 Forced Turnovers

The concept of forced turnovers is based on the outcomes observed from the pressure on the ball (Section 5.10). It aims to capture turnovers that occur as a result of pressure from the opposing team. The algorithm considers the labeled pressure frames obtained from the output of the pressure on the ball concept.

The algorithm iterates through the frames of the game and checks for potential pressure events whenever there is a change in-possession information. It should be noted that the iteration is performed only for the frames where the game is in play (ball is alive).

Before classifying a turnover as forced, the algorithm verifies the possession of the attacking team. This is done by examining the number of consecutive frames in which the attacking team was in-possession. For this purpose, the algorithm uses a parameter called "possession threshold" (97 frames) (Section A.3.8). If the number of consecutive possession frames falls below the threshold, it indicates that the required possession duration is not achieved, and the turnover is not classified as forced. This ensures that the attacking team was truly in-possession before the turnover occurred.

While tracing frames, the algorithm counts consecutive possessions for each team and resets the count when the team in-possession changes. This allows for accurate tracking of possession durations.

The algorithm produces a defensive metric by outputting the number of forced turnovers for both teams. In addition, it provides the distribution of the locations where possession is regained after a forced turnover.

## 5.12 Expected Goals (xG)

Expected goals, commonly referred to as xG, provide information about the likelihood of scoring a goal by assigning a probability to each shot. This approach incorporates machine learning techniques, which include ensemble learning (i.e., combination of the outputs of individual machine learning models). By aggregating the outputs of several machine learning models, xG models predict the probability of shots resulting in a score. In a single match, the probabilities assigned to shots for each team are summed, resulting in the expected number of goals that team could potentially score.

In the implementation of this concept, the ensemble learning methodology is utilized with the models: “Logistic Regression”, “Random Forest”, “Gradient Boost Trees (GBT)”, “Support Vector Machine (SVM)”. The reason for choosing these models are their distinct approaches to the same problem. Having different angles to the same concept increases the robustness of the results. Logistic regression is chosen due to its simplicity and interpretability [4]. Moreover, random forest is a meaningful choice because it is robust, handles high-dimensional data, and is resistant to overfitting (i.e., a model becomes overly adapted to the training data, losing its ability to generalize well to unseen data). It can capture complex, non-linear relationships between features and the target variable [23]. Additionally, SVM is commonly employed when the decision boundary between shots that result in goals and those that don’t is non-linear. It aims to discover the optimal hyperplane that maximizes the margin between different classes, which can assist in recognizing critical regions for scoring goals [3]. Lastly, GBT is a methodology that can process complicated interactions between features and capture non-linear relationships [22].

In order to determine the xG value of shots that take place in a match, the rest of the matches in the dataset is used as training set. Hence, the match to be investigated is the test set. However, to be able to efficiently build the ensemble model, there are some mandatory pre-processing steps required. These steps involve construction of the features for both training and test sets, followed by the incorporation of these datasets to execute the machine learning algorithm.

To begin with, the EFI class incorporates a separate method for pre-processing both the training and test sets. The method involves the following steps:

Firstly, using the event data of a match, shots are identified by examining the “attempt at goal” values in the event column. For each shot, various pieces of information are collected, including the team ID, match run time, player ID, mirrored start locations (adjusted for consistency), presence of pressure information, the body part used to take the shot, the origin of the shot, and goal information (Appendix A.1.2).

Moreover, the start locations of the shots are transformed from the event data coordinate system to the tracking data coordinate system (Equation 2.3, Equation 2.4).

Subsequently, the Euclidean distance between the shots and the center of the goal (0, 52.5) is computed (Figure 2.2).

Furthermore, considering the length of the goal as 7.32 meters, the left pole and right poles are located at (-3.66, 52.5) and (3.66, 52.5) respectively (Figure 5.2). By employing the angle formed between the line segments connecting the shot location and the poles, the angle of the shot is determined.

Referring to the equations to find the frames in which the shot takes place, the match run time is interpreted in frame-level (Equation 2.1, Equation 2.2). These shot frames are then used to fetch the opposition team’s coordinates at the time the shot was taken. By utilizing the player locations of the opposition, the number of obstructing players in the goalmouth is calculated. To determine if a player is classified as an obstructor, a geometrical approach is employed. Denoting the left/right pole as $L/R$, with coordinates $(Lx,\ Ly)/(Rx,\ Ry)$, the shot location as $(Sx,\ Sy)$, and each player under investigation as $(Px,\ Py)$, the areas of the sub-triangles $PRL$, $PRS$, and $PLS$ are calculated. If

the sum of these areas is equal to the area of $SRL$, then the player is considered to be obstructing the goalmouth.

At the end, for the given matches' event data, the following information is available in a data frame: team ID, mirrored start location of the shot (in tracking data coordinates), pressure information, body type, origin, goal information, distance to the goal, angle, goalkeeper location, and the number of obstructing players in the goalmouth.

As mentioned earlier, these pre-processing steps are applied to each match individually. The training set is created by applying these stages to every match except the one being examined, and then concatenating the resulting data frames. On the other hand, for the test set, the match under observation is pre-processed individually.

Before feeding the datasets into the machine learning models, it is important to note that the features "pressure", "body type" and "origin" are categorical variables. To ensure compatibility with the input requirements of the models, these categorical features are one-hot encoded. Once the encoding is complete, each column is standardized, and the goal information is separated to serve as the label.

For each model, the parameters are defined with varying ranges (Appendix A.3.9). The purpose of defining parameter ranges is to perform validation and select the optimal values for training the model based on the training set. Validation is conducted for each model using a 5-fold cross-validation technique. This resampling method involves splitting the data into different portions, allowing the model to be trained and validated on different iterations using different subsets of the data.

After the validation step, the models are trained using the entire training set with the optimal parameters determined. When the test data is inputted to the models, each model generates the probability of a goal, referred to as "proba", as well as a predicted indicator value indicating whether the shot results in a goal. To determine the final ensemble probability result, the accuracy of these predictions is calculated using the provided test labels. These accuracy values are used as weights for each model's probability outcomes. The probabilities from each model for each team in the test set are summed, resulting in the expected goals (xG) values for the teams individually.

# 6

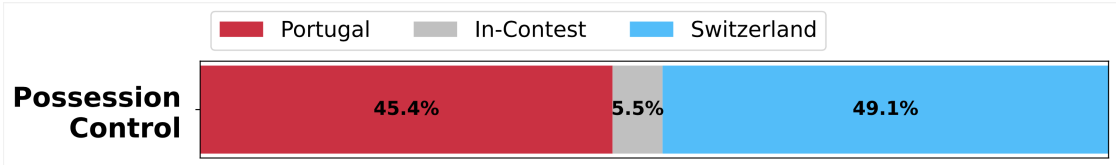
# Performance and Validation

The performance of the concepts is analyzed in conjunction with the FIFA results. Comparisons and discussions are conducted for the best, median, and worst performing matches in each concept.

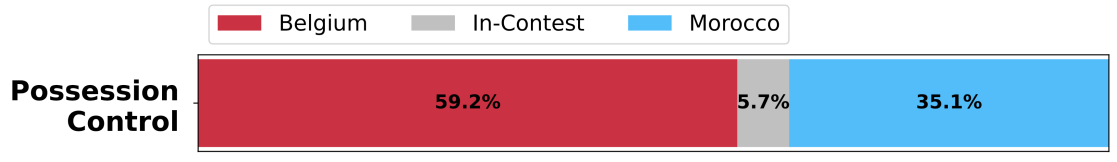
Mean Absolute Percentage Error (MAPE) and Mean Squared Error (MSE) are the two metrics used to optimize hyperparameters and assess the library performance using FIFA reports (Appendix A.3). MAPE expresses the average percentage error made by a model compared to the actual observed values [5]. On the other hand, MSE quantifies the average squared difference between predicted values and actual observed values [26].

## 6.1 Possession Control

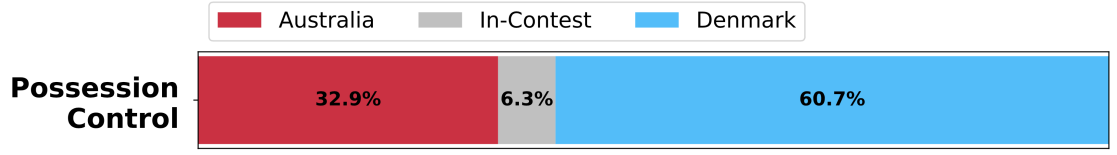
The following figures represented the plots generated by the output of implemented possession control concept.




(a) Best performance with MAPE: 0.10 (Appendix A.1).




(b) Median performance with MAPE: 0.17 (Appendix A.1).




(c) Worst performance with MAPE: 0.37 (Appendix A.1).

Figure 6.1: Possession control performances.

**FIFA results** The results obtained from the FIFA reports are given according to the order: home team in-possession, in-contest, away team in-possession.

- **Portugal - Switzerland:** 43.6%, 7.6%, 48.8%.
- **Belgium - Morocco:** 57%, 10%, 33%.
- **Australia - Denmark:** 24.5%, 15%, 60.5%.

The outputs obtained from the matches demonstrated that the radius used to define the duel zone area played a crucial role in determining the in-contest phase. This radius was essential for breaking down the raw possession control information, which initially included possession information only for the home team and away team but did not account for the in-contest scenarios. The approach considered the zone defined by this radius as the driving factor of the in-contest time category. However, there might have been some other factors that influenced the decision between in-possession and in-contest times. These aspects could be further identified by labeling the ball-in-play times during the match, which was precisely what FIFA employed when synchronizing the tracking data and event data (Chapter 7).

The obtained results from the best performance and FIFA reports indicated that there were instances where Portugal's possession events closely resembled the in-contest scenarios, resulting in ambiguity and difficulty distinguishing between the in-contest and in-possession categories. This ambiguity likely explained the difference in-possession percentage between Portugal and the in-contest category. However, Switzerland's possession performance aligned more closely with FIFA results and appeared to be unaffected by deviations from other possession control classes (Figure 6.1a, List 6.1).

Additionally, the Belgium versus Morocco match revealed that the in-contest case did occur, as evidenced by FIFA's higher percentage (i.e., 10%) assigned to that section (Figure 6.1b, List 6.1). However, this percentage was less accounted in the library's performance. Note that the difference in in-contest times was evenly distributed between the two teams.

Furthermore, the median performance being close to the better end of the spectrum suggested overall stability, although there might have been cases like the Australia versus Denmark game where deviations occurred. Specifically, the discrepancy between Australia's possession and the in-contest phase led to a higher MAPE value (i.e., 0.37). Conversely, the prediction of Denmark's possession distribution was more accurate (Figure 6.1b, List 6.1).

Overall, the performance of the possession control concept displayed that possession control distribution was captured in a satisfactory level. However, there were instances where some additional, overlooked minor factors influenced the determination of in-contest frames. These factors could be addressed and improved by implementing a more advanced approach, such as matching tracking and event data (Chapter 7).

## 6.2 Phases of Play

The figures presented below depicted the plots generated by the output of the implemented phases of play concept, alongside the corresponding results obtained from FIFA reports.

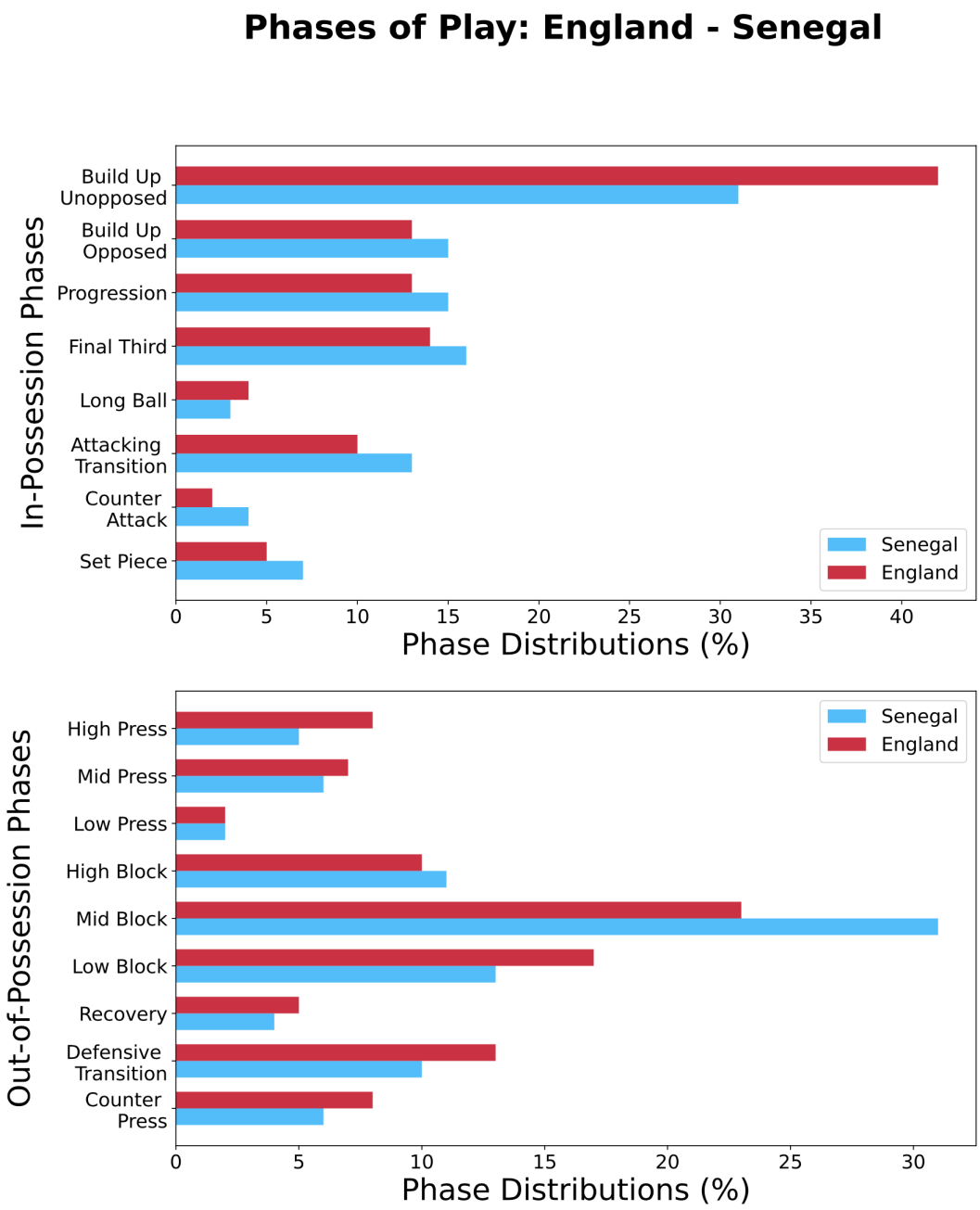



Figure 6.2: Library result on England vs Senegal match.

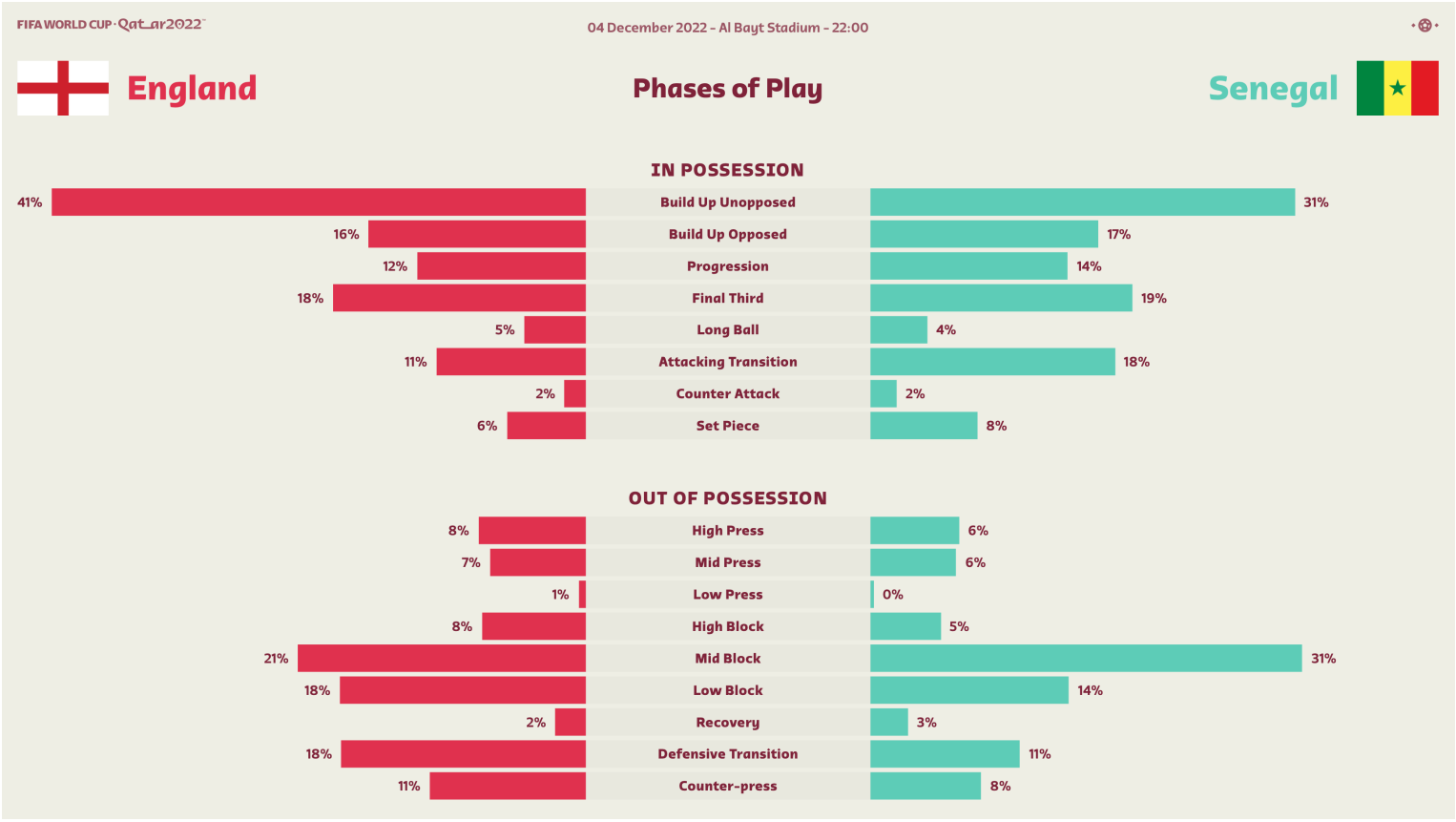



Figure 6.3: FIFA's result on England vs Senegal match.

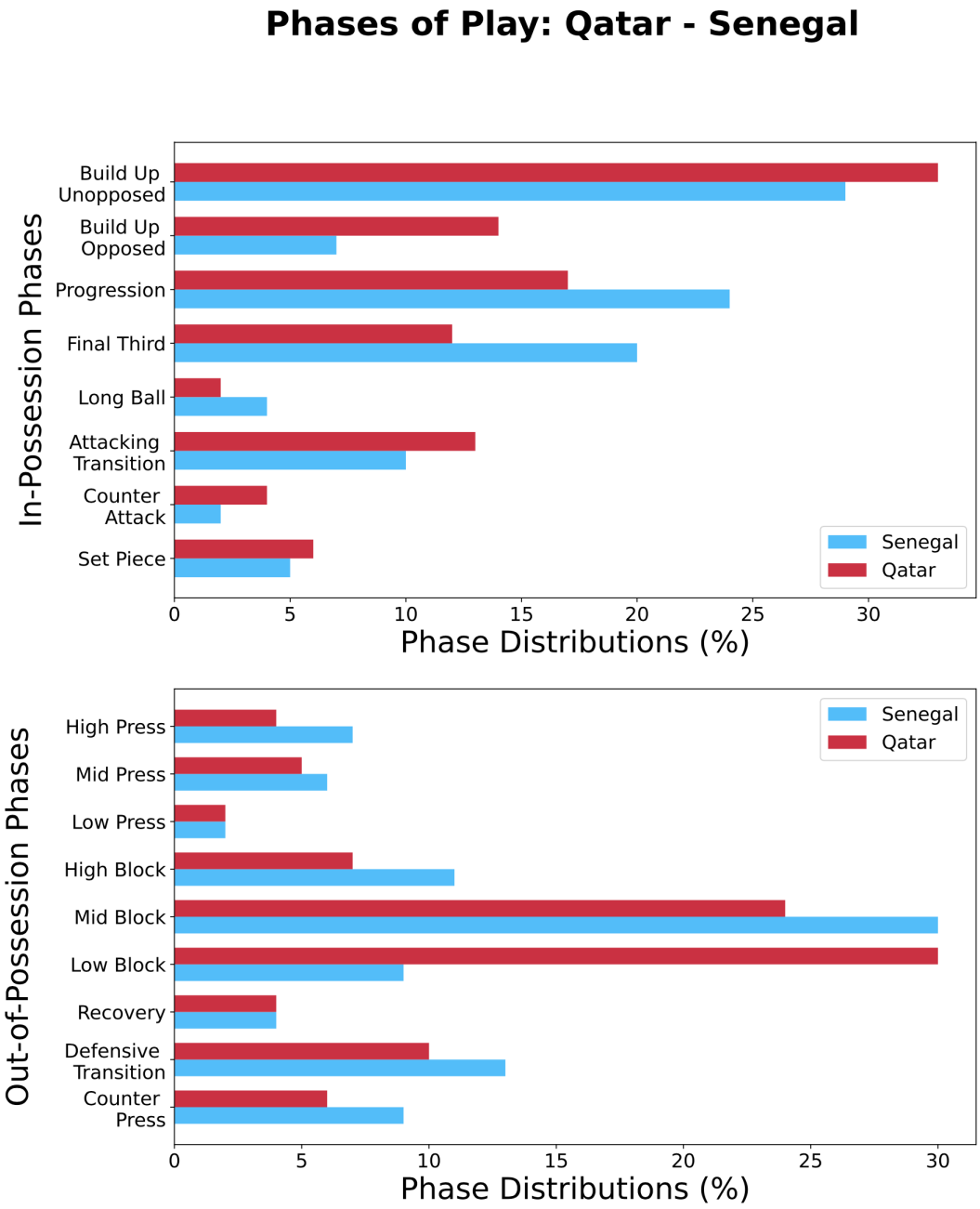



Figure 6.4: Library result on Qatar vs Senegal match.

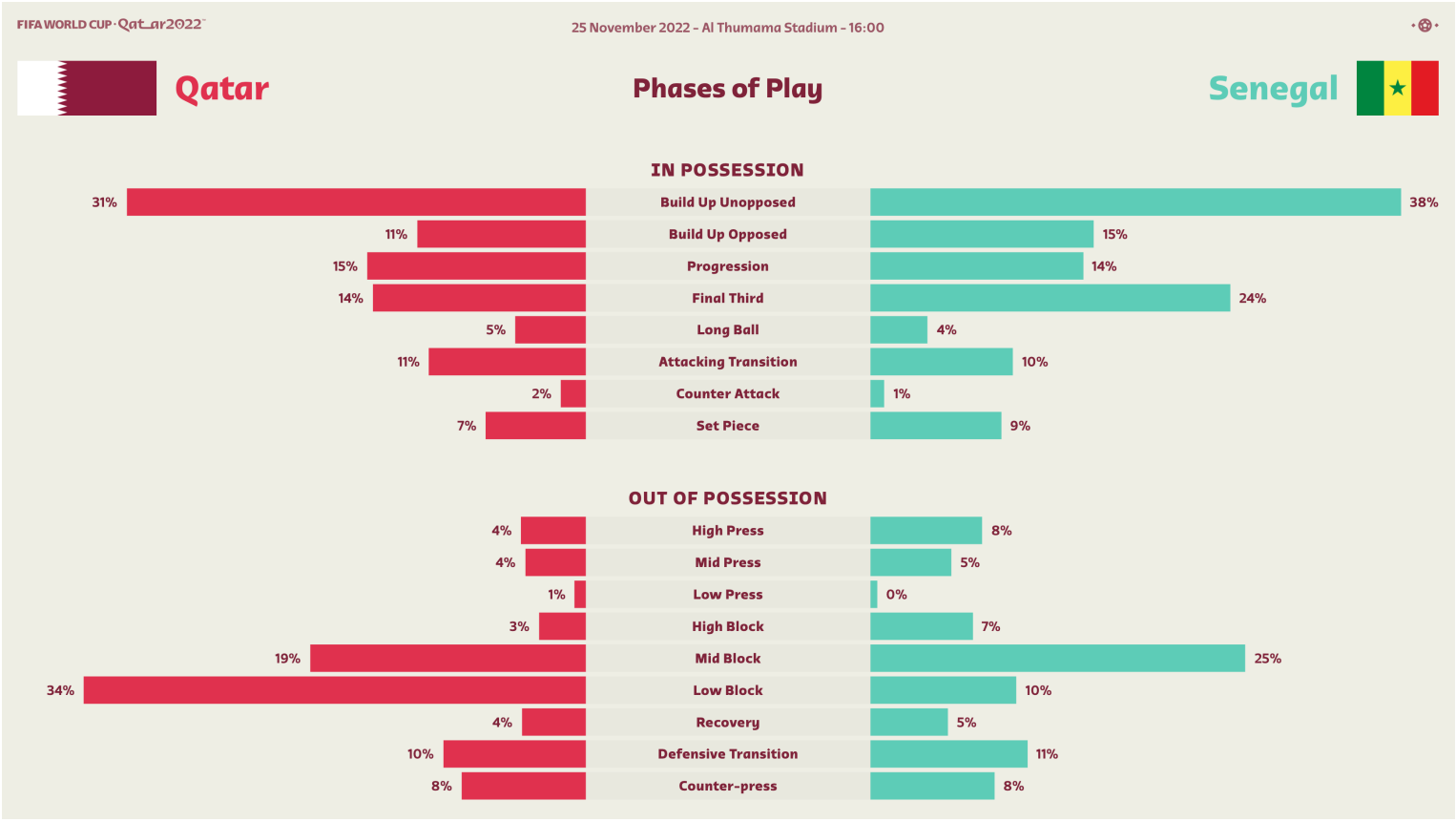



Figure 6.5: FIFA's result on Qatar vs Senegal match.

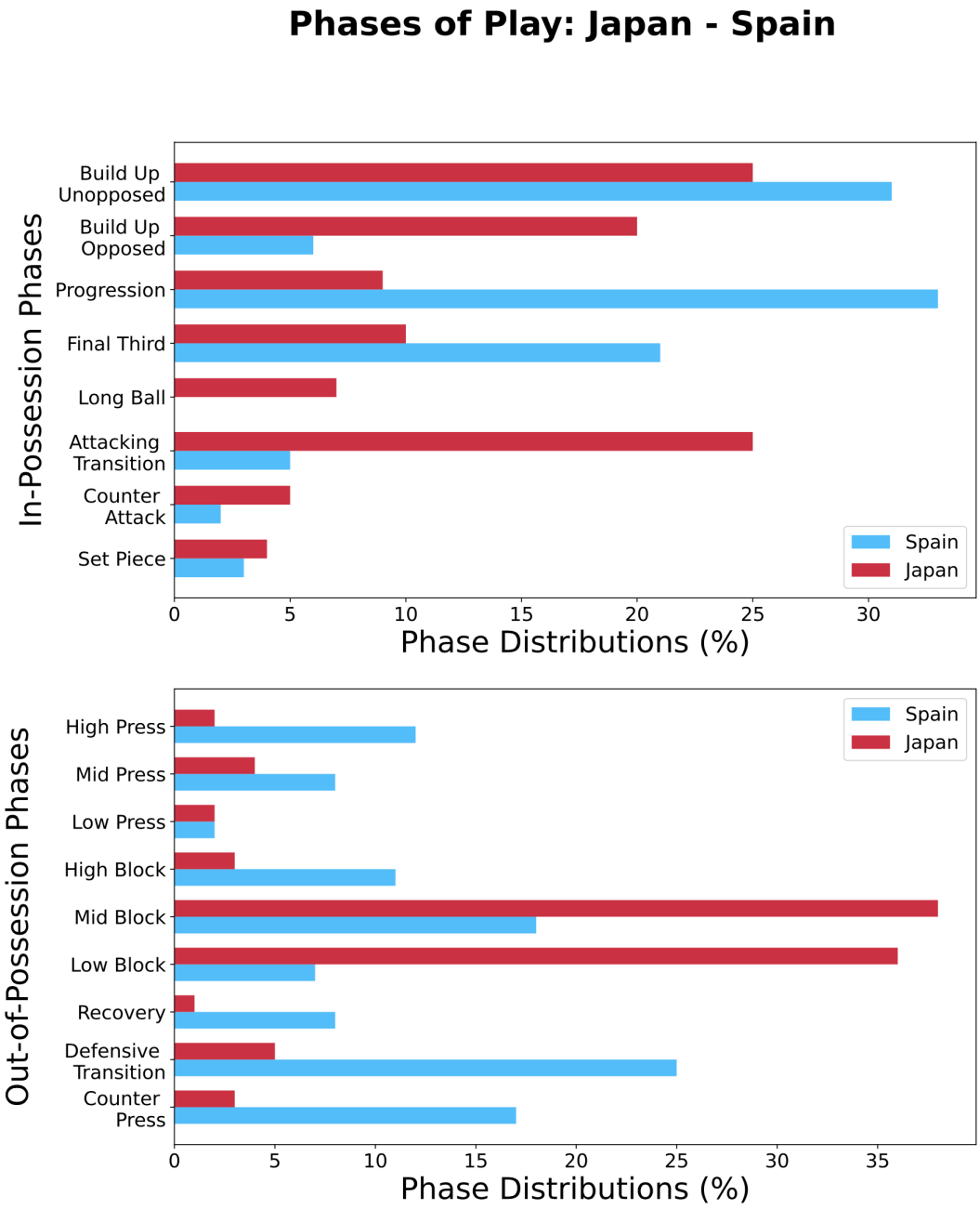



Figure 6.6: Library result on Japan vs Spain match.

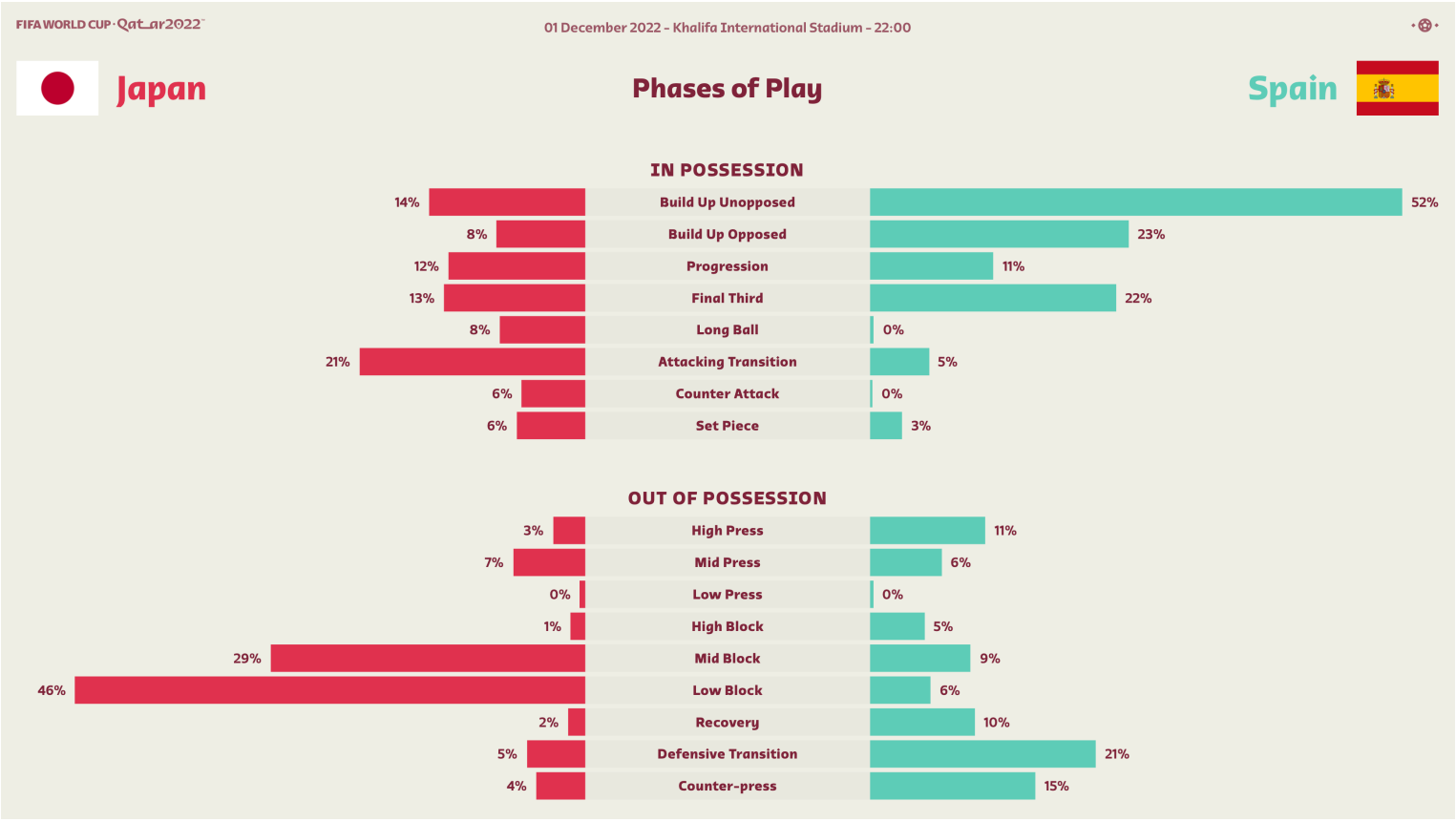



Figure 6.7: FIFA's result on Japan vs Spain match.

The concept essentially encompasses the aggregation of multiple metrics, which are divided into two categories: in-possession phases and out-of-possession phases. Due to the numerous parameters employed in the implementation of libraries, such as in FIFA, the lack of numerical implementation details for FIFA's approach, and inconsistencies in the sum of percentages in FIFA outputs, it was expected to yield different results compared to FIFA reports (Chapter 7). However, in order to maintain relative proximity in each phase and to minimize deviation from FIFA outcomes, the values in FIFA reports were considered as labels, and the provided matches represent performances based on how closely the results aligned with the so-called true values of FIFA (i.e., utilizing MSE values) (Appendix A.4.2). Taking these factors into consideration, deviations from FIFA's results did not necessarily indicate an incorrect approach; instead, they provided insights into the differences in the approaches taken.

The match between England and Senegal demonstrated the closest resemblance to FIFA's results (MSE: 5.1). The reason for this became particularly evident when analyzing the build-up unopposed phase within the in-possession category and the mid-block phase within the out-of-possession category. The values and the discrepancies in these phases were nearly identical, accounting for the highest two percentages in total (Figure

6.2, Figure 6.3). Although there were other phases with minor deviations compared to FIFA, these differences were not significant.

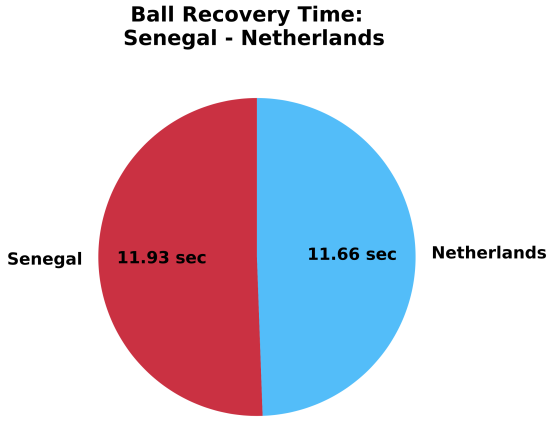
To continue with, the outcomes of the match between Qatar and Senegal revealed a median performance compared to FIFA reports (MSE: 12.7). The major difference was observed in the progression phases. The library result suggested that Senegal spent significantly more time in the progression phase, whereas FIFA reports indicated a slight dominance by Qatar in that phase. As mentioned earlier, this disparity arose from the interpretation of what constituted a progression and how it was determined. The EFI document briefly mentioned the concept, but lacked technical details, which was the main reason for the dissimilarity. On the other hand, the high block phase in both outcomes implied a similar relative superiority, but the differences in magnitude for each team contributed to an increase in the error value (Figure 6.4, Figure 6.5). Apart from these factors, the remaining variations were not notably significant.

Lastly, the most notable distinction between the library and FIFA results was observed in the match between Japan and Spain. To begin with, examine the sum of percentages for the categories: Japan in-possession, Spain in-possession, and Spain out-of-possession. The sums were 86, 116, and 83, respectively. These figures indicated that there were some frames that did not contribute to any phase and others that are double-counted. Considering these factors, it was expected to have significant differences, especially in the progression phase and build-up unopposed phase. These inconsistencies in the sums of FIFA results, coupled with their lack of clarity, result in such variations (MSE: 55.17)(Figure 6.6, Figure 6.7).

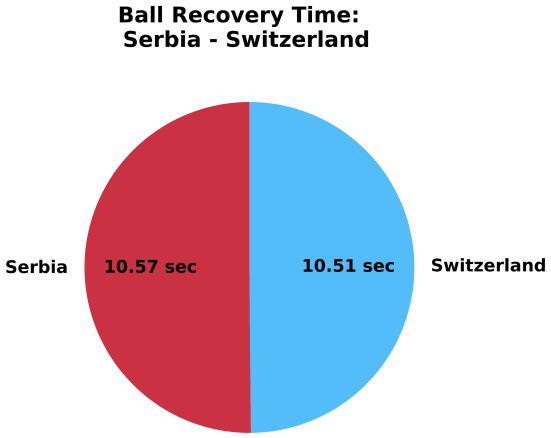
Overall, when implementing a concept with multiple metrics, limited technical explanations, and inconsistent outcomes in terms of percentage sums, it was expected to yield significant variations in the results. However, it was important to note that despite these challenges, the implemented concept provides relatively coherent results, as evidenced by the median performance and its proximity to the best performance. The concept performs well, except in certain matches that could be considered outliers due to their inconsistent total sums of percentages.

## 6.3 Ball Recovery Time

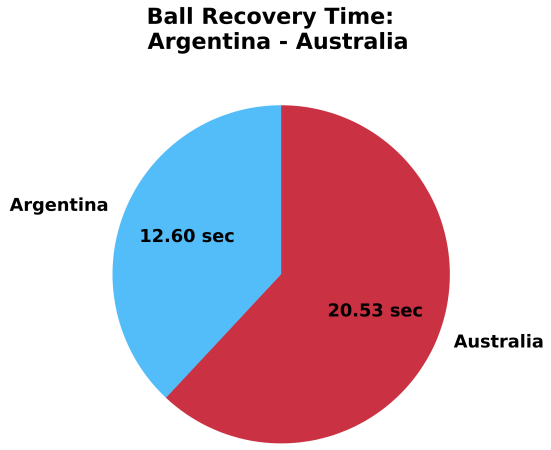
The following figures illustrated the plots generated by the output of implemented ball recovery time concept.




(a) Best performance with MAPE: 0.02 (Appendix A.1).




(b) Median performance with MAPE: 0.13 (Appendix A.1).




(c) Worst performance with MAPE: 0.39 (Appendix A.1).

Figure 6.8: Ball recovery performances.

**FIFA results** The results obtained from the FIFA reports are given according to the order: home team recovery time, away team recovery time.

- **Senegal - Netherlands:** 12.38 sec, 11.59 sec.
- **Serbia - Switzerland:** 11.5 sec, 12.87 sec.
- **Argentina - Australia:** 10.16 sec, 13.19 sec.

The metric utilized possession information during live ball periods to quantify the ball recovery time for each team in a match. In order to achieve this, accurately identifying the moment of possession loss was crucial. The determination of the recovery threshold parameter significantly impacted the results, and its optimization process was essential. On the other hand, the aggregation method used to calculate the ball recovery time was another aspect that lacked clarity in the concept's description (Section 3.3). Due to these reasons, the displayed outcomes may vary in comparison to FIFA reports (Figure 6.8).

In the context of the best performance obtained, the output slightly deviated from FIFA's reported outcomes (Figure 6.8a, List 6.3). Both teams' ball recovery times were slightly smaller compared to FIFA's data, except for Serbia and Switzerland. FIFA reports indicated that it took approximately one second more for Serbia and about two seconds more for Switzerland to recover the ball (Figure 6.8b, List 6.3). This suggested that certain possession changes occurred temporarily without constituting a turnover, and therefore, they were not considered in the computation of ball recovery time since the ball was not initially lost.

Significant differences arise in the computation of Australia's ball recovery time (Figure 6.8c, List 6.3). This discrepancy highlighted the combined impact of the recovery threshold parameter and the aggregation methodology. Their interplay resulted in a higher ball recovery time for both teams.

Ultimately, the variation between the library and the FIFA results could be attributed to two main factors: the establishment of parameters and the methodology used for aggregation. These factors played a significant role in determining the outcomes and could lead to differences between the two sources. The fact that the median performance was notably closer to the best performance than the worst indicated that the implemented concept remained consistent and robust (Figure 6.8). It demonstrated that the results were generally reliable and stable, with only a few games showing deviations.

## 6.4 Line Breaks

The following figures showed the plots generated by the output of the implemented line breaks concept.

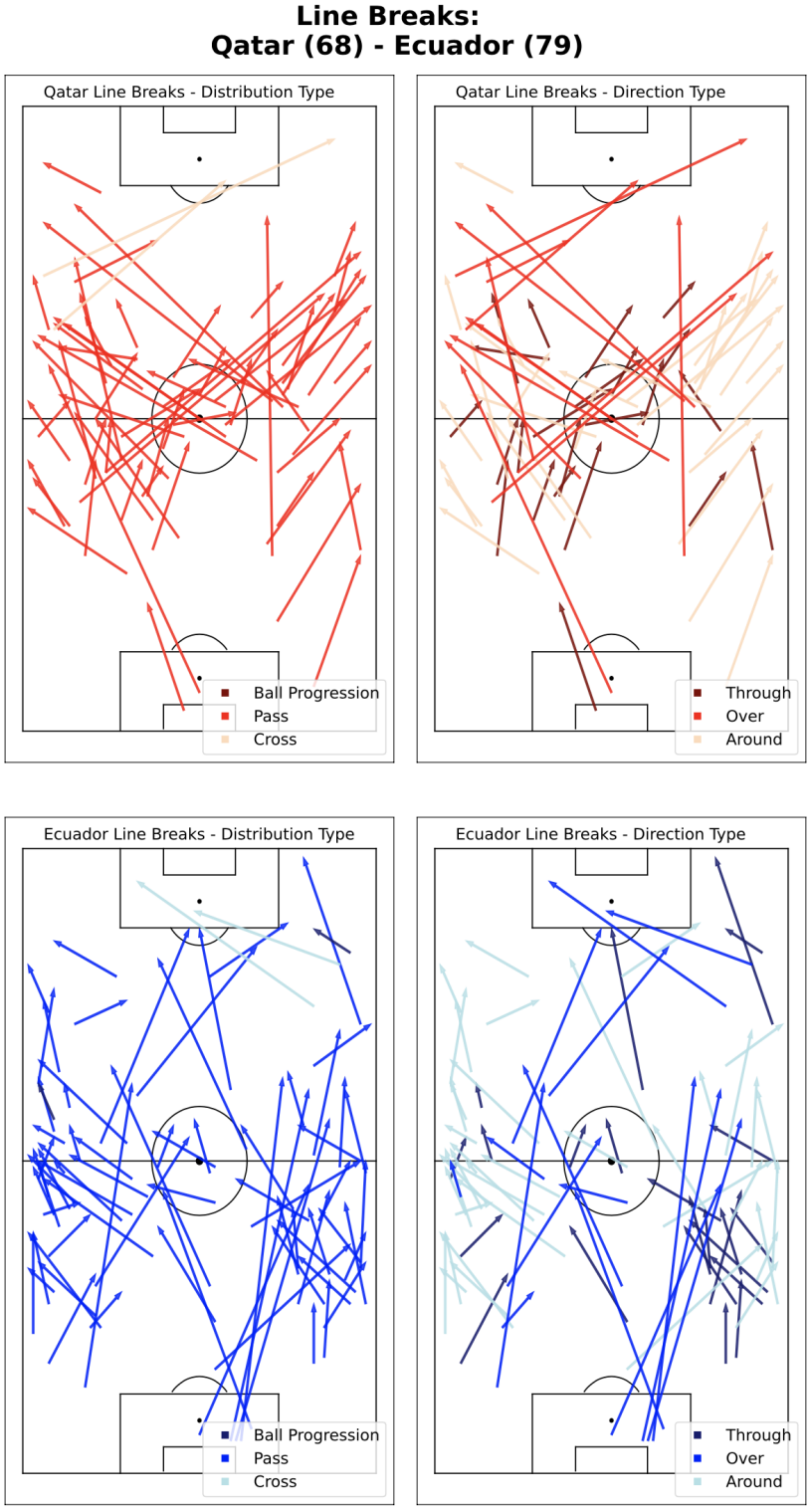



Figure 6.9: Best performance with MAPE: 0.07 (Appendix A.1).

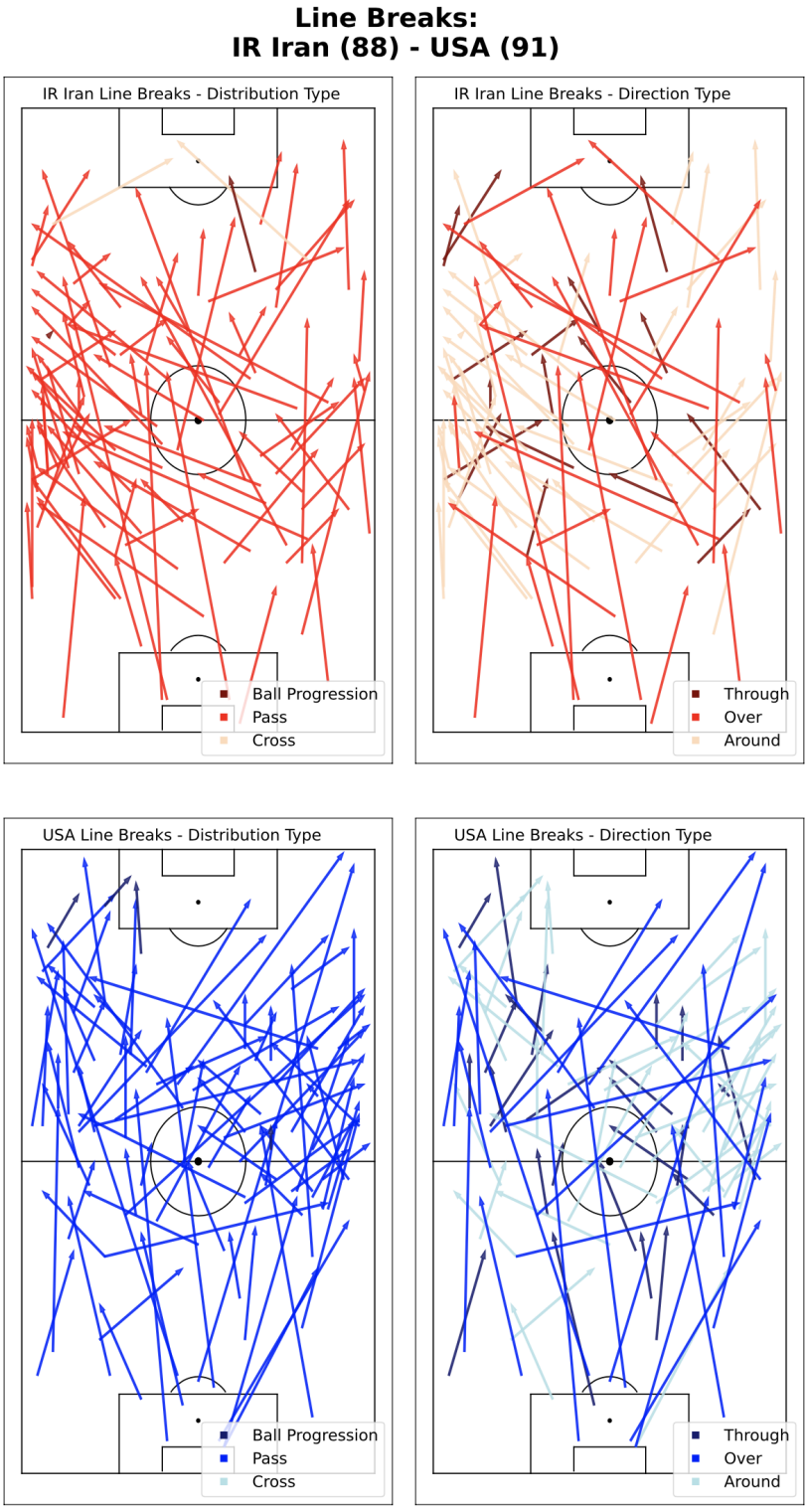



Figure 6.10: Median performance with MAPE: 0.16 (Appendix A.1).

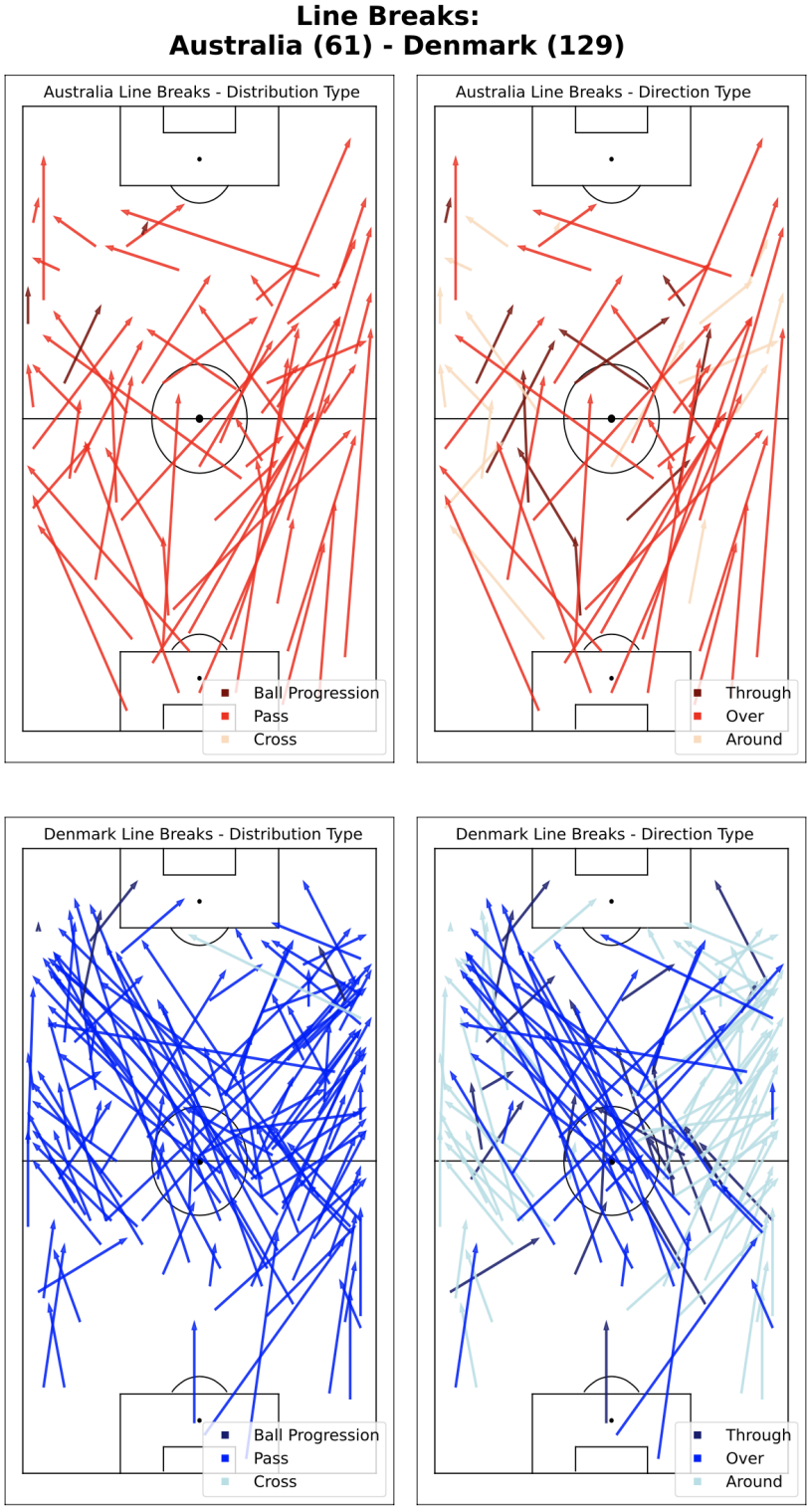



Figure 6.11: Worst performance with MAPE: 0.33 (Appendix A.1).

**FIFA results** The values obtained from FIFA reports are in the following format for each team: through line breaks, around line breaks, over line breaks.

- **Qatar - Ecuador:** (24, 34, 17), (23, 47, 16), in total: (75, 86).
- **IR IRAN - USA:** (22, 37, 26), (35, 42, 31), in total: (85, 108).
- **Australia - Denmark:** (18, 8, 38), (37, 66, 37), in total: (64, 140).

The main factors that contributed to the differences between the FIFA results and the library outputs are the definition of the team unit and the time frame in which the opposition's units need to be considered, as explained in the receptions behind midfield and defensive lines concept (Section 6.5). Additionally, factors such as synchronization (e.g., matching event data to frame level) and conversion errors could also have an impact on the variation of values, as described in the final third entries concept (Section 6.8). These factors played a significant role in understanding the discrepancies between the library outputs and the FIFA results.

From a general perspective, analyzing all three figures suggested several observations. Firstly, the over line breaks appeared to be more distant, indicating that they were potentially long balls played over a longer distance. On the other hand, the around line breaks occurred closer to the sides and tended to be shorter in terms of distance. Finally, the through line breaks were more direct in nature, as indicated by the steeper slopes of the line segments representing them (Figure 6.9, Figure 6.10, Figure 6.11). By looking at the completed line breaks, the attacking strategy of the team's could be observed clearly.

To start with, the best performance was observed in the match between Qatar and Ecuador. In the direction plot of Qatar, it was evident that their in-possession flow tended slightly towards the right wing. Additionally, analyzing the over line breaks initiated from their own penalty area suggested that the goalkeeper often began the game with a long ball aimed at the right wing. However, it was important to note that their around line breaks frequently occurred on the left wing, indicating a potential weakness in that area for Qatar. Both teams successfully completed over line breaks to enter each other's penalty areas. Ecuador, in particular, displayed more effectiveness in terms of the number of entries through over line breaks. In general, both teams executed through line breaks primarily in the first and second thirds of the pitch. There was an exception with Ecuador, as they had two line breaks that originated from the second third of the pitch and concluded near Qatar's penalty area. This implied either the presence of available space or the players' skills to progress the ball by bypassing the opposition's defensive line through other means (Figure 6.9).

Moving on, the median performance was observed in the match between IR Iran and USA. A clear pattern emerged as IR Iran consistently moved the ball towards the left wing of the pitch, indicating their intention to launch attacks from that side. This was particularly evident in the frequency of around line breaks that end on the left wing. Conversely, the USA did not exhibit a distinct wing preference and appeared to have utilized both wings fairly evenly. The USA's goalkeeper's use of over line breaks

suggested a preference for initiating the game from the center of the pitch, followed by directing the play towards the wings. Notably, the through line breaks employed by both the USA and IR Iran revealed notable insights. The through line breaks executed by the USA were more direct, as evidenced by the steeper slopes of the corresponding line segments. This provided valuable insights into the defensive abilities of IR Iran. At times, they struggled to impede the USA's attacking flow or accurately partitioned the pitch, resulting in openings that allowed the USA to execute through line breaks successfully in certain areas (Figure 6.10).

Ultimately, the worst performance was observed in the match between Australia and Denmark. Denmark demonstrated a clear inclination towards directing their attacks towards the left wing, frequently sending the ball over the lines of the Australian team. Conversely, they executed around line breaks that occur primarily in the right wing, covering shorter distances. One key factor contributing to this characteristic was the potential weakness of the Australian player in aerial challenges on the right side of their pitch (from Australia's perspective). By utilizing long balls, Denmark aimed to exploit this weakness and dominated the Australian player in one-on-one situations with their left wing player. On the other hand, Denmark did not employ a similar strategy on the right wing, which suggested that they might have been aware of either their own player's weakness in winning headers or the strength of the corresponding defensive player from the Australian team in aerial duels. Additionally, Australia completed far fewer line breaks compared to Denmark, resulting in fewer attacking opportunities for them. Moreover, the majority of their line breaks were of the over direction type, indicating that they struggled to progress the ball effectively through short passes or ball progressions. Lastly, the fact that Australia completed most of their line breaks in the first and second thirds of the pitch suggested that their creativity and effectiveness in the final third were insufficient to overcome Denmark's defensive strength (Figure 6.11). These observations highlighted the limitations and challenges faced by Australia in their match against Denmark.

In conclusion, the methodology used to define team units, determined the frame at which the unit should have been considered in relation to the line break, converted coordinate systems, and synchronized time had a significant impact on the discrepancy between the total line breaks reported by FIFA and the outcomes generated by the library. However, it was important to note that despite these variations, the relative differences between the teams remained consistent. The slight variations in the accounted line breaks did not significantly affect the overall accuracy of the algorithm. As a result, the methodology operated in a stable manner and effectively captured the attacking flows of the teams.

## 6.5 Receptions Behind Midfield and Defensive Lines

The figures below showcased the plots generated by the implemented concept for receptions behind the midfield and defensive lines.

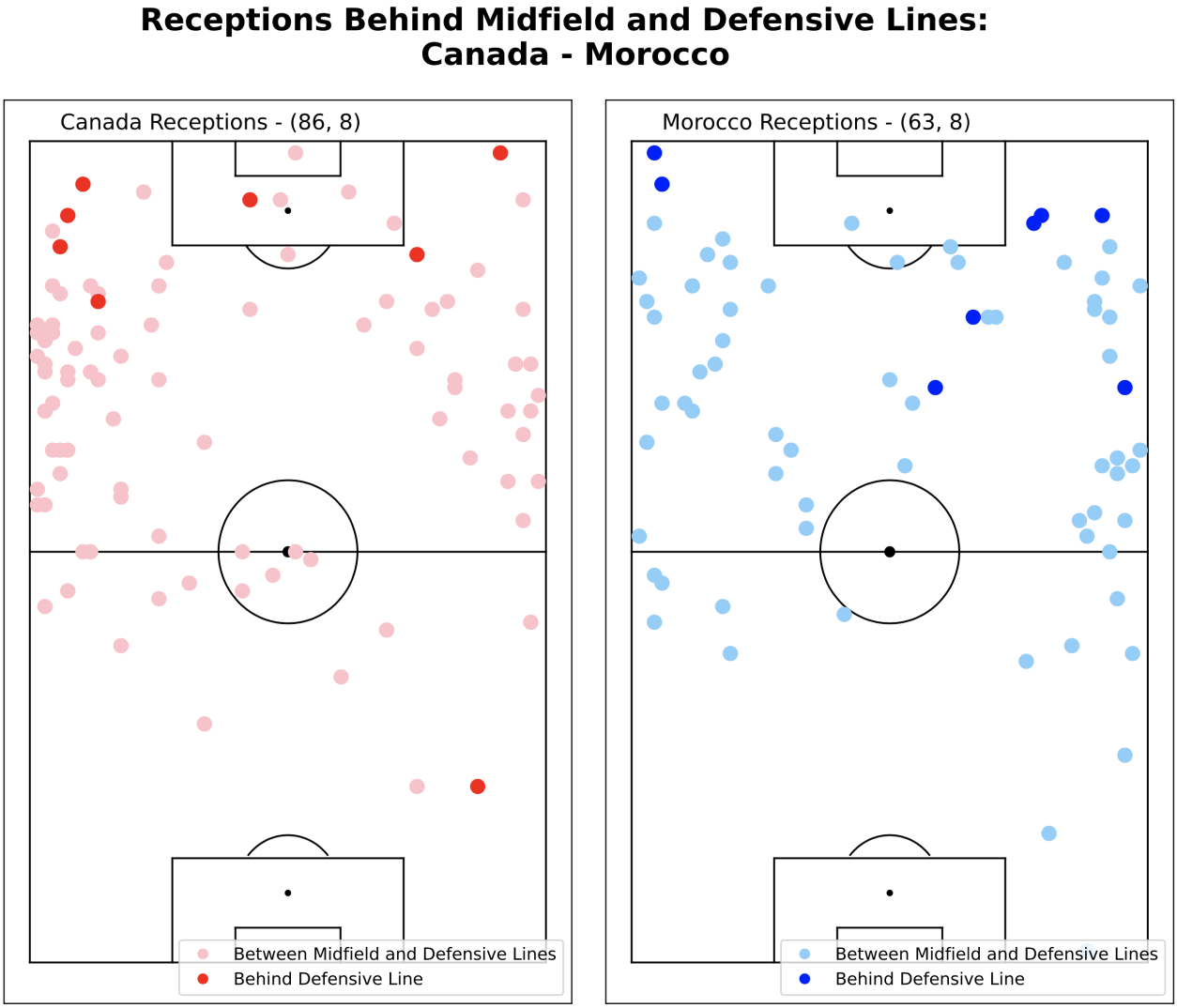



Figure 6.12: Best performance with MAPE: 0.02 (Appendix A.1).

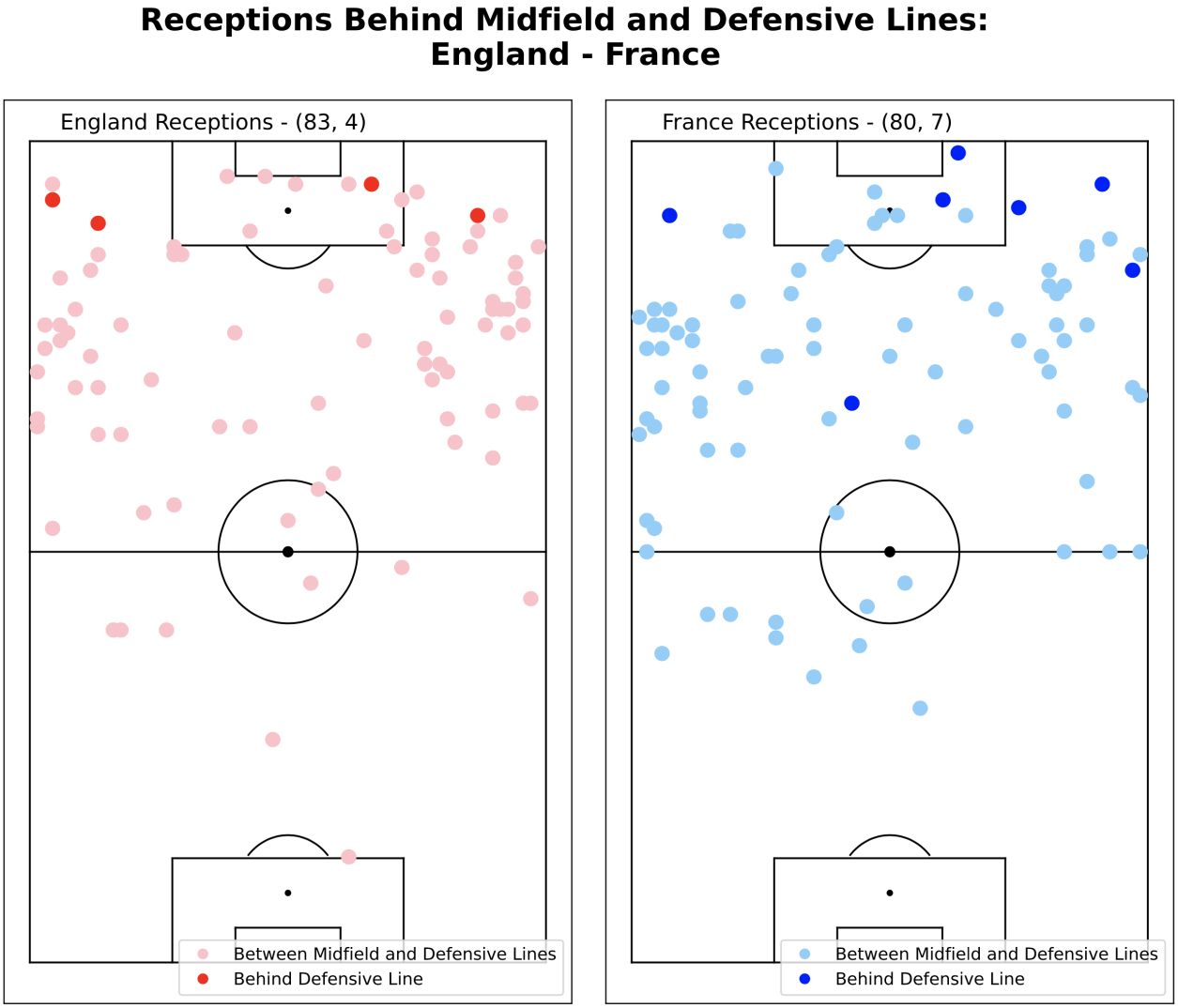



Figure 6.13: Median performance with MAPE: 0.14 (Appendix A.1).

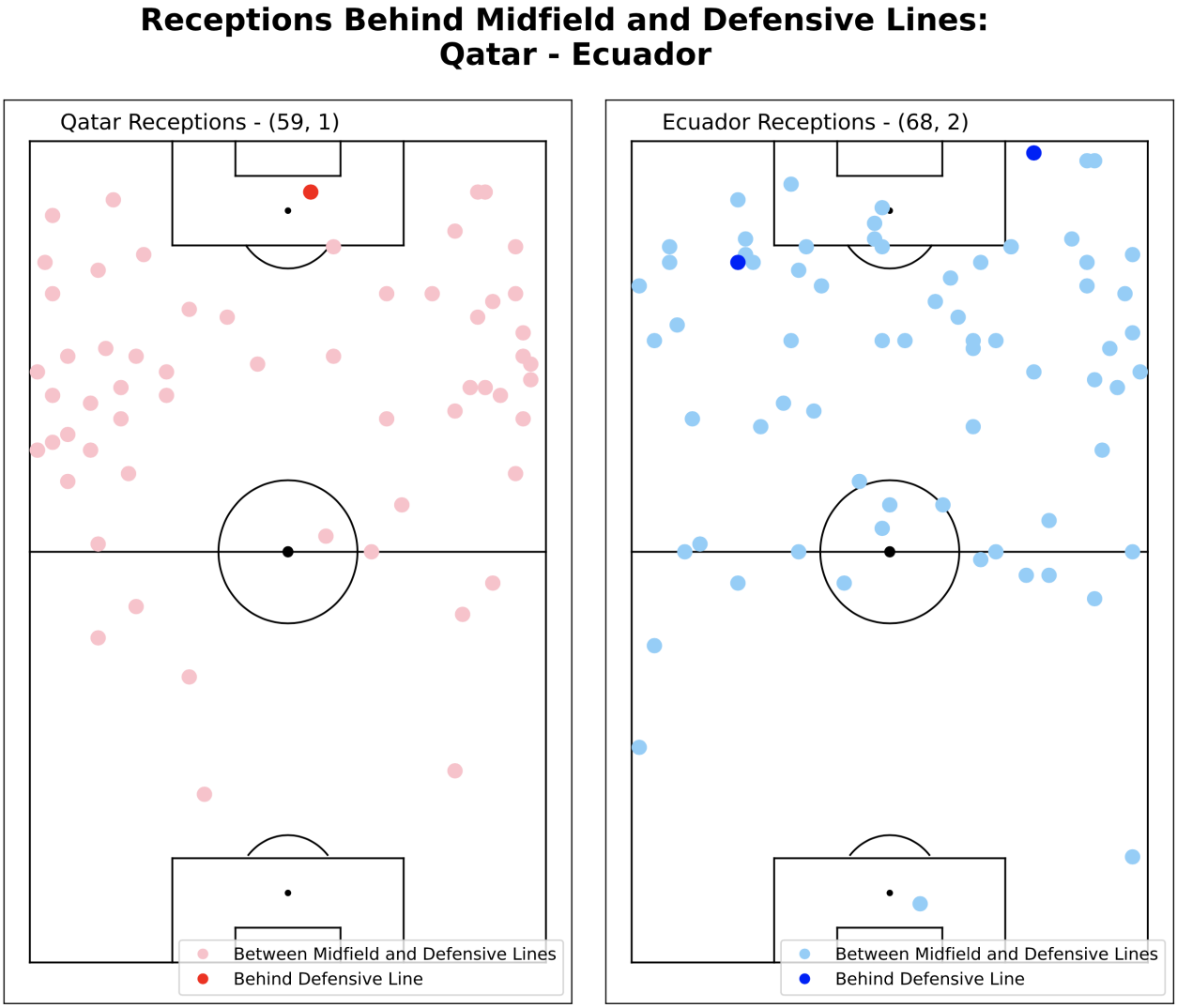



Figure 6.14: Worst performance with MAPE: 0.46 (Appendix A.1).

**FIFA results** The results obtained from the FIFA reports are given according to the order for each team: receptions between midfield and defensive line, receptions behind defensive line.

- **Canada - Morocco:** (86, 8), (58, 8).
- **England - France:** (88, 8), (79, 7).
- **Qatar - Ecuador:** (52, 5), (58, 8).

The receptions behind the midfield and defensive lines metric provided an indication of the danger posed by passes or crosses and where they occur on the field. This

information was derived from the distribution and quantity of these receptions. To accurately determined the receptions, it was important to establish the units configured by the teams at each frame of the game. These units were represented by the deepest players and were categorized as lines, which were then used to classify the receptions accordingly. One significant challenge encountered in all three performance scenarios was frames where the teams do not maintain an organized shape. These instances were commonly observed during set-piece events, particularly when a team had a short team length, such as during corner kicks. In these frames, it became difficult to accurately distinguish the units and lines, leading to potential misclassification of receptions as either between the midfield and defensive line or behind the defensive line. The determination of the lines relative to the reception frame also played a crucial role and significantly influences the classification of receptions. To address this issue, the parameter "frame gap" was introduced, which had a significant impact on the concept's outcomes. The frame gap parameter helped compensate for the challenges posed by frames with disorganized shapes and aided in improving the accuracy of reception classification.

In the best performance scenario, the distribution and quantity of receptions indicated that Canada was able to find more spaces to send the ball behind the midfield and defensive lines, particularly at the left wing. On the other hand, Morocco demonstrated a balanced distribution between the wings and utilized the available spaces equally. Both teams primarily executed receptions behind the midfield on the sides of the field, which were farther from the goal and therefore less dangerous. However, one reception by Canada was located close to the six-yard area, indicating a potentially more threatening opportunity (Figure 6.12). Based on the reception locations of both teams, it could be inferred that while out-of-possession, the defensive line primarily resided in the first third of the pitch, while the midfield line was positioned in the second third of the pitch. It was important to note that this observation might have varied depending on the team's line height and the specific game situation. For example, a possible counter-attack by Canada was observed through a reception behind the defensive line in the final third of the pitch. This suggested that the defensive line was pushed forward, indicating a longer line height, and the reception occurred after a set-piece event, potentially resulting in a turnover.

Further, in the median performance case, it was observed that England tended to direct their attacking flow from the right wing, while the opposite was true for France. Interestingly, receptions behind the defensive lines occurred more frequently on the right wing for France. This showed that while the attention was drawn to the left wing, there were regularly potential spaces created on the right side of the pitch which France took advantage of. Additionally, both teams had receptions behind the midfield inside the penalty area and in proximity to the six-yard zone (Figure 6.13). Similar to the Morocco versus Canada game, it could be generally noted that the defensive and midfield units of both teams predominantly located in their own halves of the pitch.

In the worst performance scenario, it was evident that Qatar did not heavily utilize a specific side of the pitch for their attacking strategy, while Ecuador showed a slight tendency towards the right side of the pitch. Similar to the best and median performances, both teams' defensive and midfield units predominantly resided in their own

halves of the pitch. However, considering the clustering of receptions by Ecuador close to the center line, it could be inferred that they attempted potential counter-attacks, as Qatar formed their defensive and midfield units closer to the center of the pitch (e.g., in the second third of the pitch) (Figure 6.14).

When considering the reception counts, there were two factors that contributed to the variations between FIFA's reports and the outcomes of the library. The first factor was the methodology used to distinguish the units, and the second factor was the timing concerning when these units were considered relative to the reception frame. Both of these elements had vague definitions in the EFI document, which could lead to deviations from FIFA's results.

Examining all three performances collectively, the primary driver of the MAPE seemed to be the discrepancy in the number of receptions behind the defensive lines. This was because the actual value reported by FIFA was often very low, so even a small difference could have a significant impact on the error calculation. Conversely, the differences in receptions between the midfield and defensive lines were more tolerable and did not significantly affect the distribution within that category.

## 6.6 Defensive Line Height and Team Length

The results of this concept showed a MAPE of 0.04 for the best performance, 0.07 for the median performance, and 0.09 for the worst performance (Appendix A.1). Given that the variance in error values was relatively low, only the result of the best performance were depicted (i.e., Portugal vs Switzerland match).

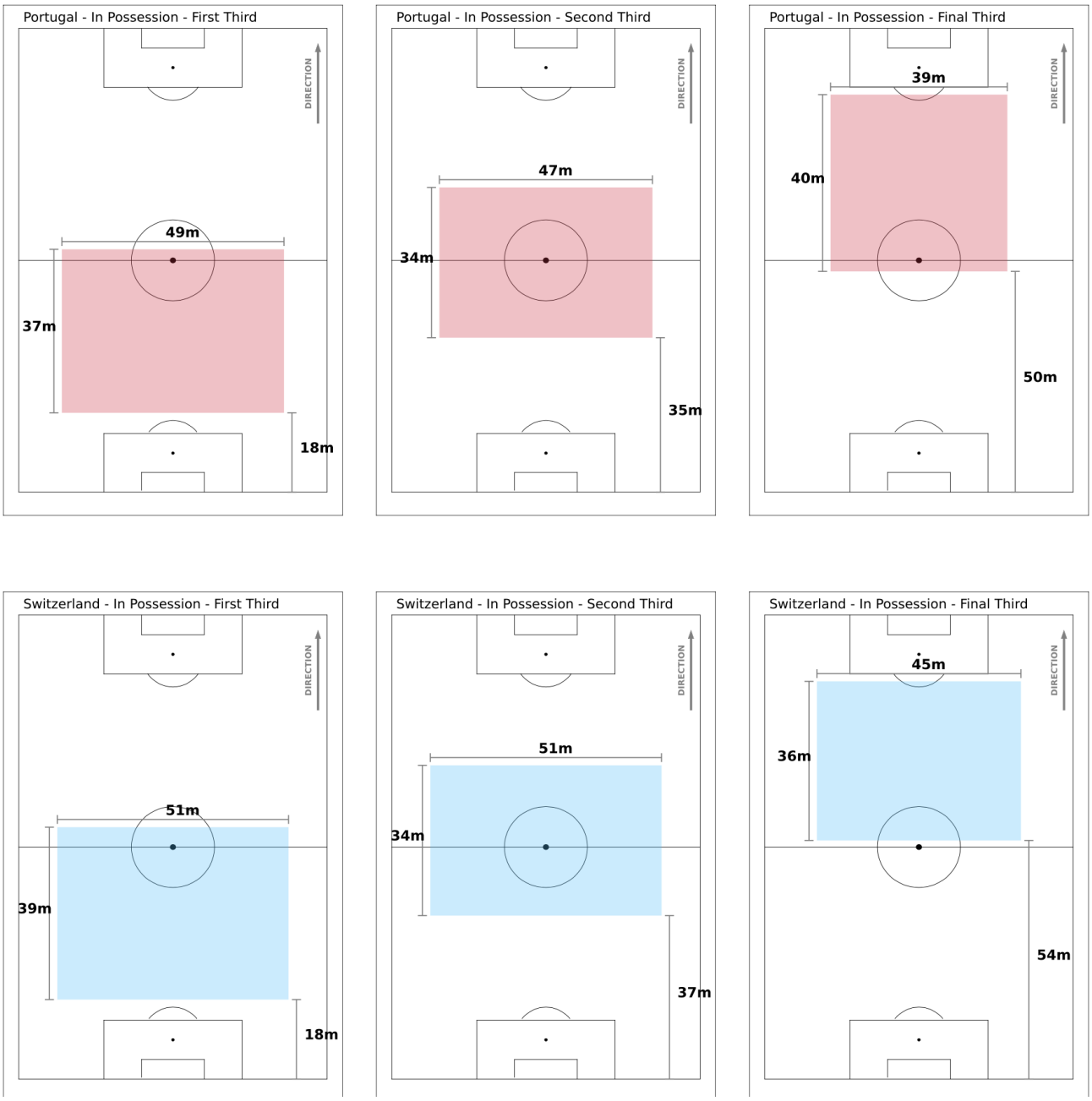



Figure 6.15: **Portugal vs Switzerland in-possession measurements** at the first third, second third and final third of the pitch.

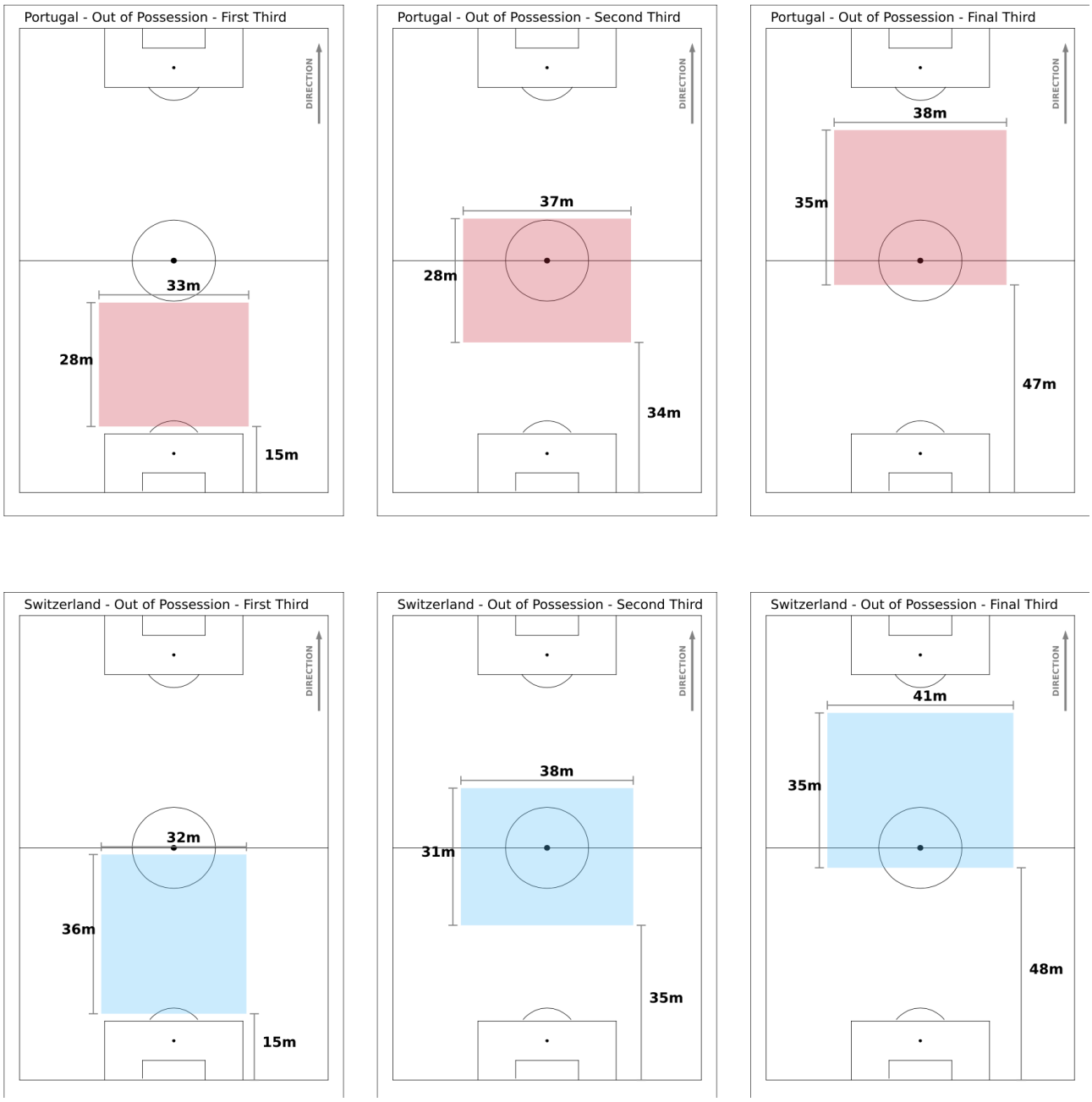
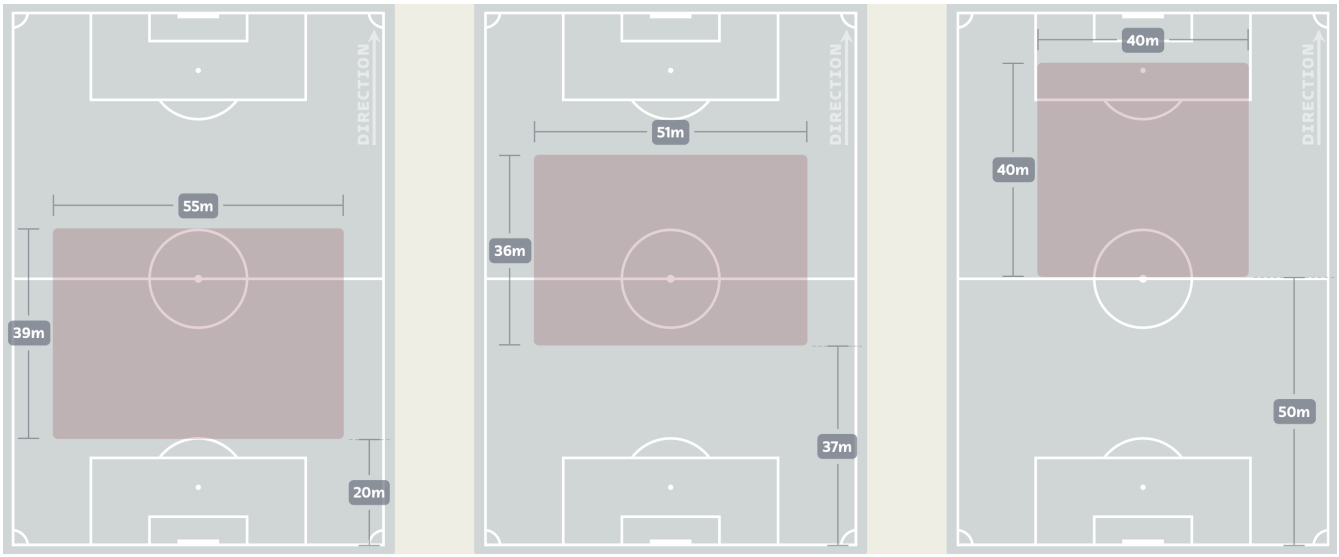
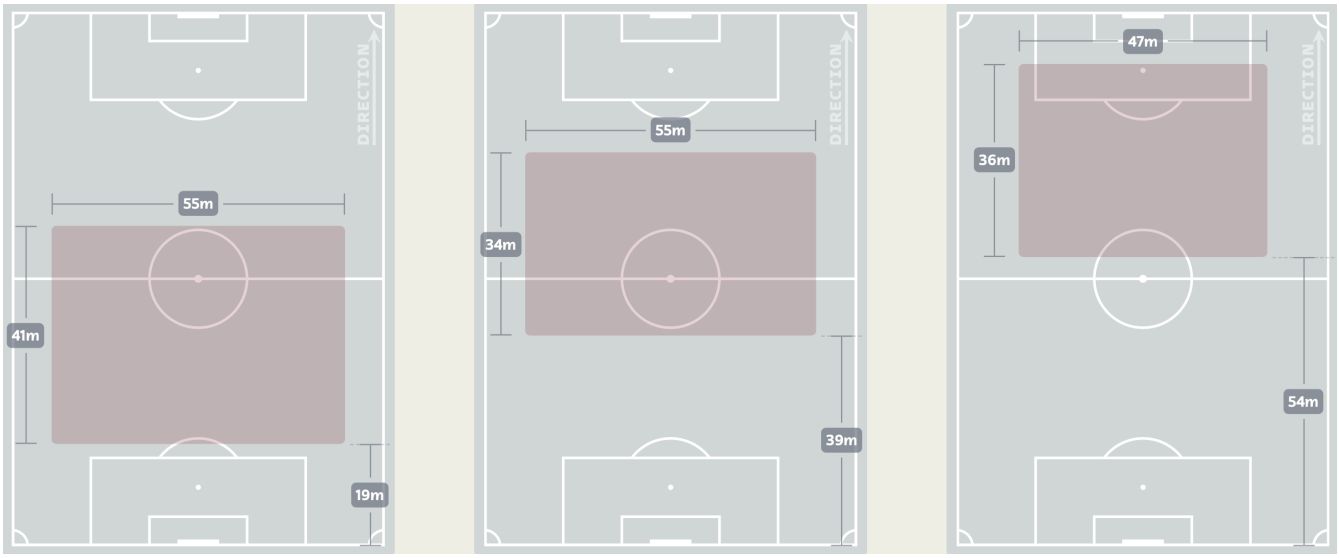



Figure 6.16: **Portugal vs Switzerland out-of-possession measurements** at the first third, second third and final third of the pitch.

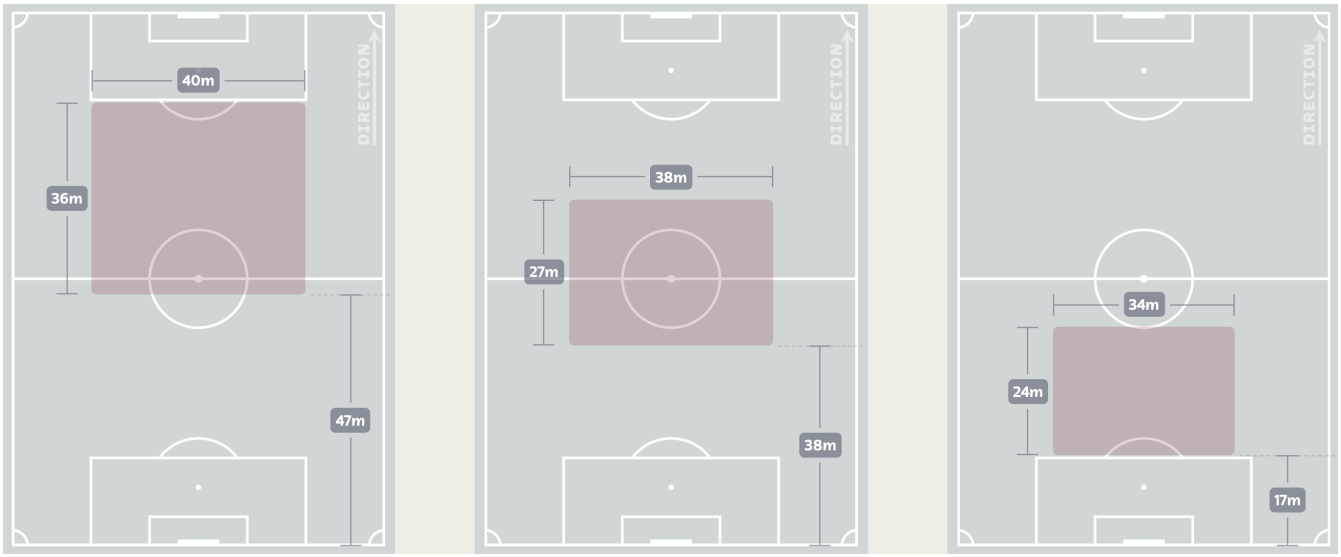



(a) FIFA results, **Portugal** in-possession measurements.

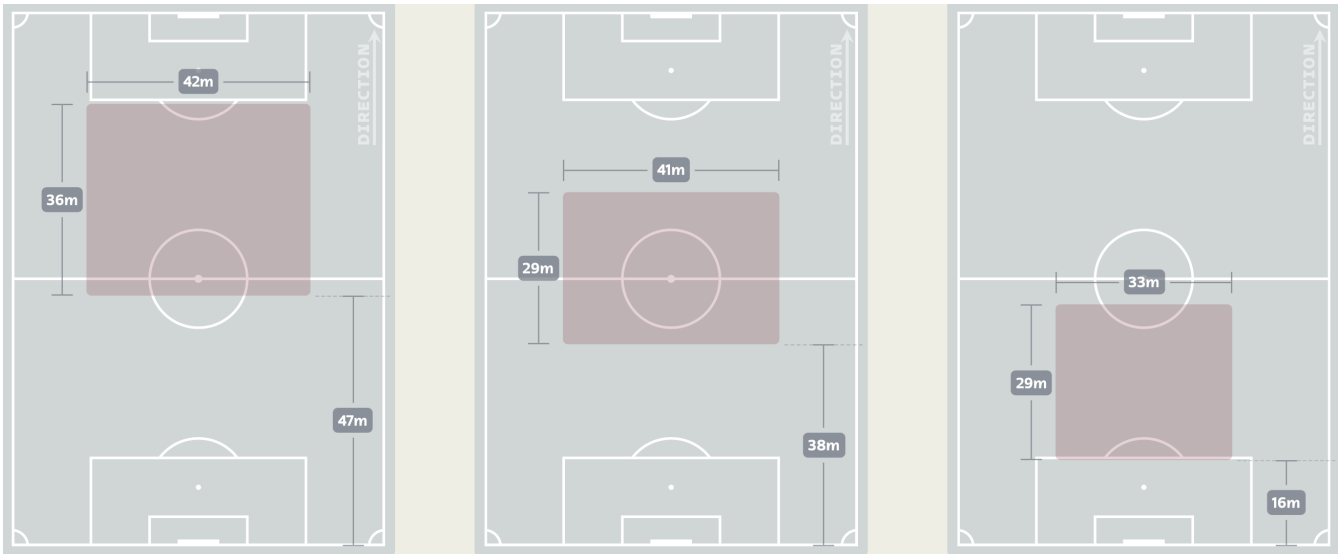



(b) FIFA results, **Switzerland** in-possession measurements.

Figure 6.17: **FIFA results, Portugal vs Switzerland in-possession measurements** at the first third, second third and final third of the pitch.




(a) FIFA results, **Portugal** out-of-possession measurements.




(b) FIFA results, **Switzerland** in-possession measurements.

Figure 6.18: **FIFA results, Portugal vs Switzerland out-of-possession measurements** at the first third, second third and final third of the pitch.

The approach taken in this concept was relatively straightforward compared to other concepts, primarily due to its heuristic-free characteristic. The main computation involved in the algorithm revolved around determining the deepest, highest, leftmost, and rightmost players in each frame and calculating metrics such as line height, team length, and team width based on these measurements.

The slight difference observed between the FIFA results and the outcomes of the library could be attributed to the assignment of measurements to the correct zones of the pitch (i.e., first third, second third, and final third). The implemented algorithm accomplished this by utilizing the location of the ball. However, employing a different approach could potentially result in assigning the same measurements to different thirds of the pitch, thereby affecting the aggregated values and final measurements of the respective category. As an instance, considering the player in-possession's location instead of the ball's location might have impacted the categorization of the measurements. This section was kept vague in the document of EFI hence, the implementation varies from FIFA reports [20].

Overall, the implemented concept could be considered highly stable, as indicated by the low variance in the MAPE values across the matches in the tournament. There was no significant variation when considering specific parts of the pitch or different possession cases. In other words, the observed errors in comparing the concept's outputs to FIFA's results could be attributed to the expected variability in measurement assignment.

## 6.7 Team Shape

The figure presented below illustrated the plot generated by the output of the implemented team shape concept, showcasing the average shapes until the first substitution occurred in the game.

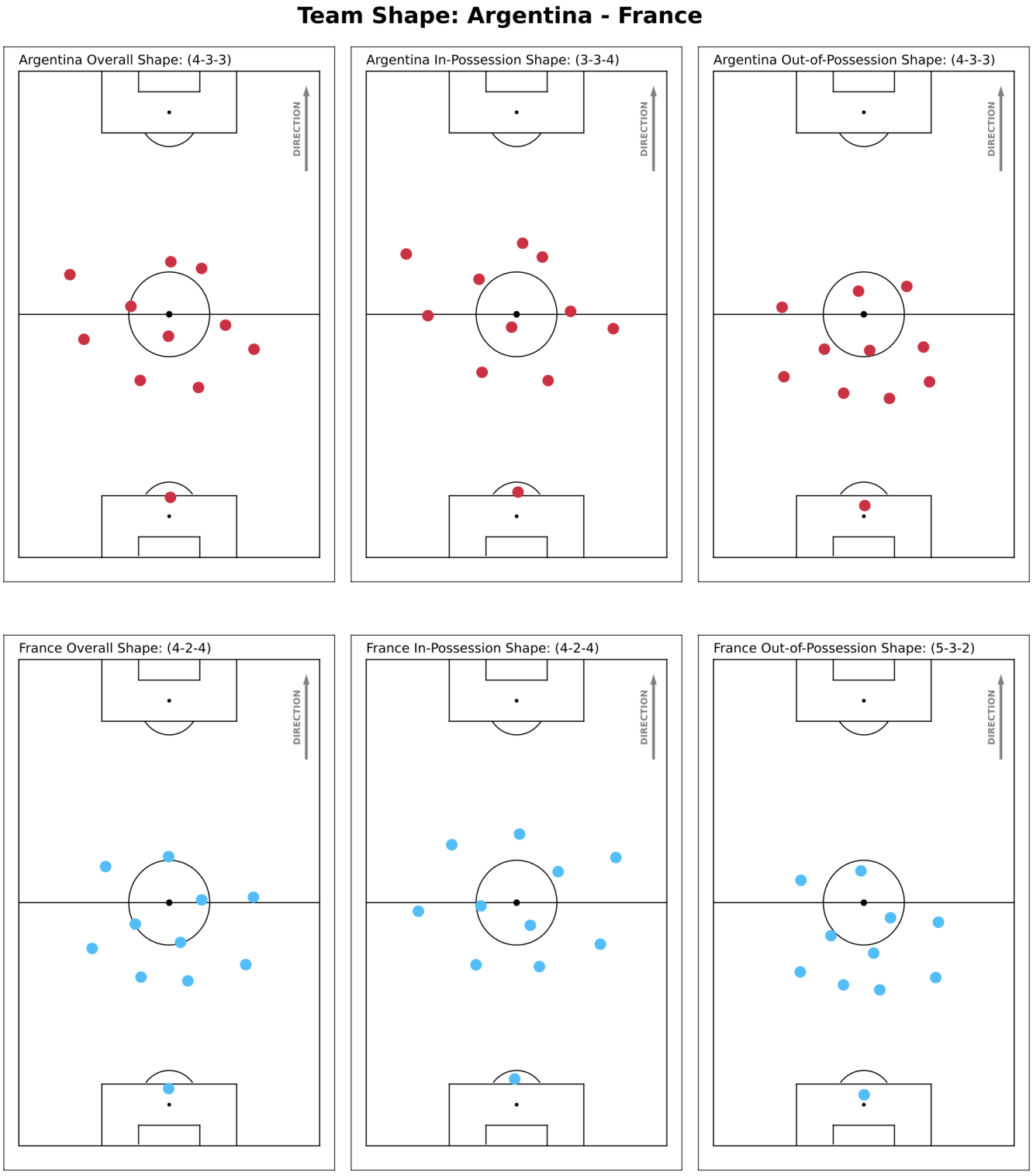



Figure 6.19: Team shapes detected by the library at the final game: Argentina vs France.

The team shape approach utilized a zonal classification method that categorized players into defensive, midfield, or attacking units. By considering the highest and the lowest player locations, this approach allowed for scalability, meaning that regardless of the game phase, the relative player positions could be used to identify the shape at any given frame.

In contrast to other concepts, team shape did not have a definitive true label. Instead, FIFA interpreted the formation based on the reported starting eleven. Therefore, only the result of the final match was considered for interpretation. The analysis provided an overall shape that encompassed the frames throughout the match, an in-possession shape that reflected the team's shape when they had control of the ball, and an out-of-possession shape that represented the team's shape when they did not have control of the ball. These distinctions revealed how the pitch was partitioned and the relative positioning of the players based on possession information.

According to FIFA's report, both Argentina and France employed the 4-1-2-3 formation, commonly referred to as the 4-3-3 formation. The overall shape plot of Argentina aligned with this information. However, the overall shape of France suggested a formation that falls between 4-3-3 and 4-2-4, leaning closer to the 4-2-4 formation (Figure 6.19). The dynamic behavior of the team's strategy was influenced by the scoreline of the game. Considering that Argentina was leading 2-0 until the $80^{\text{th}}$ minute, it was expected that France's midfielders would have positioned themselves closer to the attacking unit. This was the most likely reason for the observed team shape.

This idea was supported by the in-possession shape of France. It could be seen that one of their so-called midfielders occasionally acted as the second right center forward. Conversely, Argentina, while in-possession, utilized their left and right backs more actively in the attacking phase, while keeping their central defensive midfielder closer to the defensive unit. This results in a formation resembling 3-3-4 (Figure 6.19).

Moreover, while out-of-possession, Argentina transitioned to a more settled 4-3-3 formation, closing the gaps between the defensive unit and midfield unit. The slight distance between the attacking unit and the rest of the team pointed out the potential employment of a high press strategy at certain stages of the game. In France's case, in addition to the back four, the defensive midfielder positioned himself closer to the defensive unit compared to the other midfield players. This led to a detected formation of 5-3-2 while out-of-possession. Alternatively, one could also interpret it as 4-4-2, considering the right-winger's positioning closer to the midfield unit (Figure 6.19).

These interpretations provided insights into the tactical formations and strategies employed by both Argentina and France during the match.

## 6.8 Final Third Entries

The figures below displayed the plots generated by the output of the implemented final third entries concept.

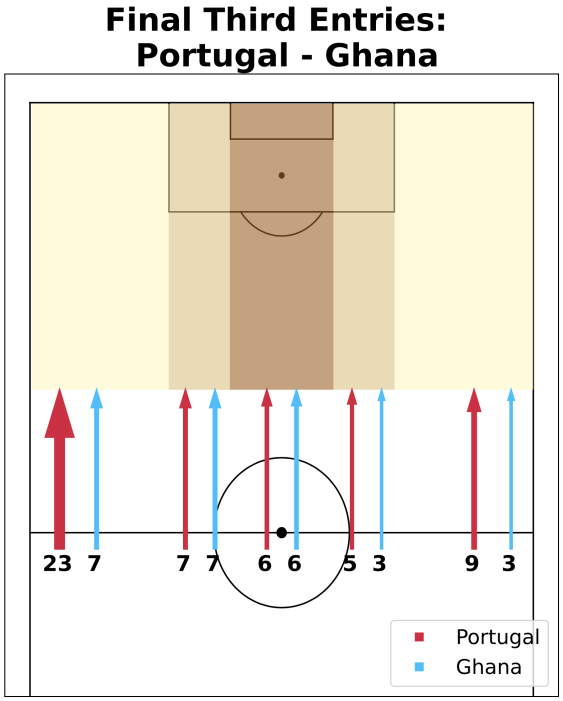



Figure 6.20: Best performance with MSE: 0.90 (Appendix A.2).

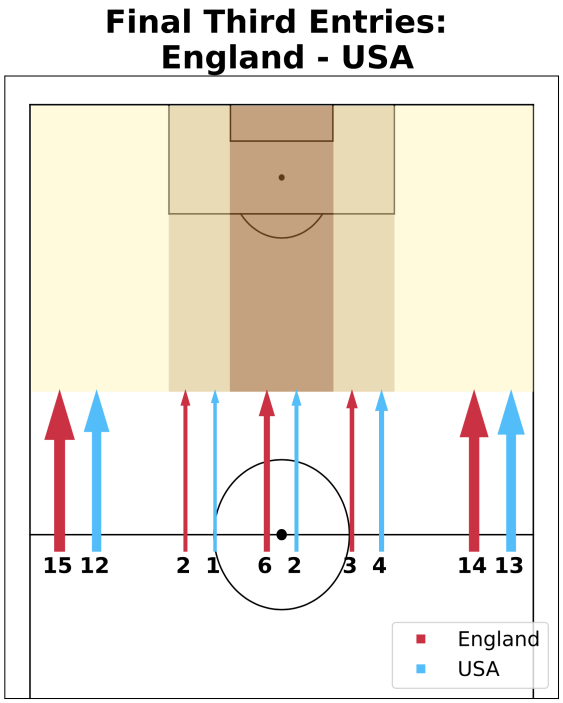



Figure 6.21: Median performance with MSE: 6.10 (Appendix A.2).

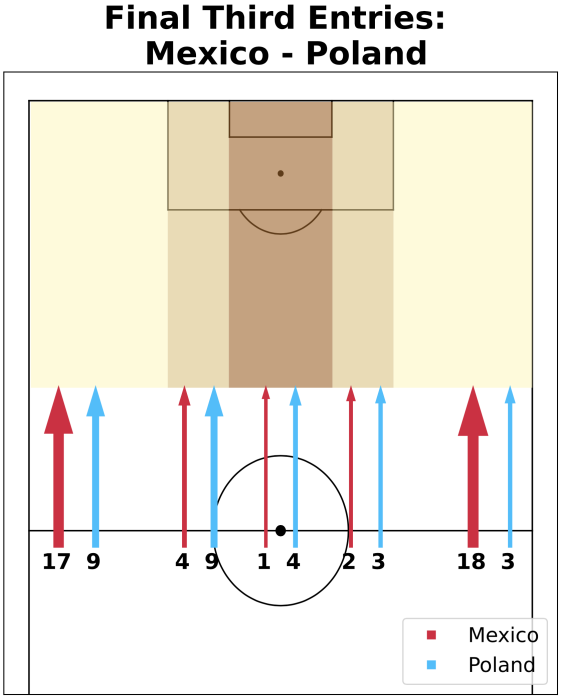



Figure 6.22: Worst performance with MSE: 21 (Appendix A.2).

**FIFA results** The outputs were presented below in the specified order for each team: left channel entries, left inside channel entries, central channel entries, right inside channel entries, and right channel entries.

- **Portugal - Ghana:** (24, 6, 7, 4, 10), (7, 9, 6, 3, 3).
- **England - USA:** (11, 2, 7, 5, 11), (12, 0, 1, 6, 8).
- **Mexico - Poland:** (20, 6, 1, 3, 27), (8, 6, 6, 4, 13).

The approach used to implement the concept incorporates both event and tracking data, and their synchronization was a crucial factor that affects the output results. The event data was utilized to detect entries through crosses and passes, while the tracking data was employed to identify ball progressions into the final third area. To distinguish between these events, they were matched at the frame-level. However, this synchronization process might have introduced some deviations, which was one possible reason for the differences in results. Furthermore, the conversion of event data coordinates into tracking data coordinates could have introduced small errors that might have led to slight discrepancies in the counts of entries between adjacent channels. Additionally, the time spent in the final third entries and the required time interval between two entries to differentiate them played a crucial role, and these aspects are handled using defined parameters. Any differences in the establishment of these parameters could significantly

impact the counting process of the final third entries metric. The lack of clarity regarding these parameters and their existence in the EFI document suggested that their interpretation was subjective, leading to different understandings of the given description. Therefore, it was possible to argue that there were no wrong answers, but rather different interpretations of the concept.

The match with the best performance demonstrated that the entries observed in this match were generally immune to the effects mentioned above. There was not much difference between the FIFA results and the library outputs (Figure 6.20, List 6.8). Portugal had clearly preferred to attack from the left wing whereas Ghana did not display such an obvious characteristic, but it could be suggested that they did not choose the right wing for their attacking flow.

Furthermore, the match between England and USA demonstrated a median performance, effectively capturing the overall characteristics of both teams' initial strategies in the final third area. However, there were instances of potential misclassification or double counting of entries, particularly in the right wing of the USA (List 6.8). These discrepancies could be attributed to the chosen parameters for distinguishing between distinct entries and the time required to consider an entry as valid, as opposed to a momentary error. Apart from these factors, it could be suggested that England displayed more efficient utilization of the central channel compared to the USA. On the other hand, neither team exhibited a specific preference for attacking down a particular side of the pitch, as the sum of left and left inside channel entries closely corresponded to the sum of right and right inside channel entries (Figure 6.21). This indicated a balanced attacking strategy from both teams in terms of channel distribution.

Eventually, the impacts mentioned above were more pronounced in the match between Mexico and Poland. Specifically, the library resulted clearly overlook Poland's right channel entries. This could be due to a small amount of time spent in that channel, leading to its erroneous accounting and subsequent discarding by the implemented algorithm. Similarly, Mexico's entry count in the right channel also exhibited a noticeable difference, likely stemming from similar reasons as in the case of Poland. However, the left channel entries for both teams aligned well with the FIFA results, showing no significant differences (Figure 6.22, List 6.8). From these observations, it can be inferred that Mexico had a significant number of entries from the wings, indicating either Poland's successful defensive coverage in the center or Mexico's preference for utilizing the wings. Conversely, Poland did not demonstrate such a prominent characteristic, suggesting a different strategic approach.

In summary, taking into account the impact of the introduced parameters and their values, along with the lack of clear technical descriptions and the possibility of conversion errors, it was expected to observe certain differences compared to FIFA results. However, considering the proximity of the error value of the median performance to that of the best performance, it could be inferred that the developed algorithm functions accurately. The algorithm showed valuable differences, particularly in outlier matches that were on the edge in terms of the employed parameters. Overall, the algorithm performed effectively while accounting for these factors.

## 6.9 Pressure on the Ball

The following figures portrayed the plots generated by the output of implemented pressure on the ball concept.

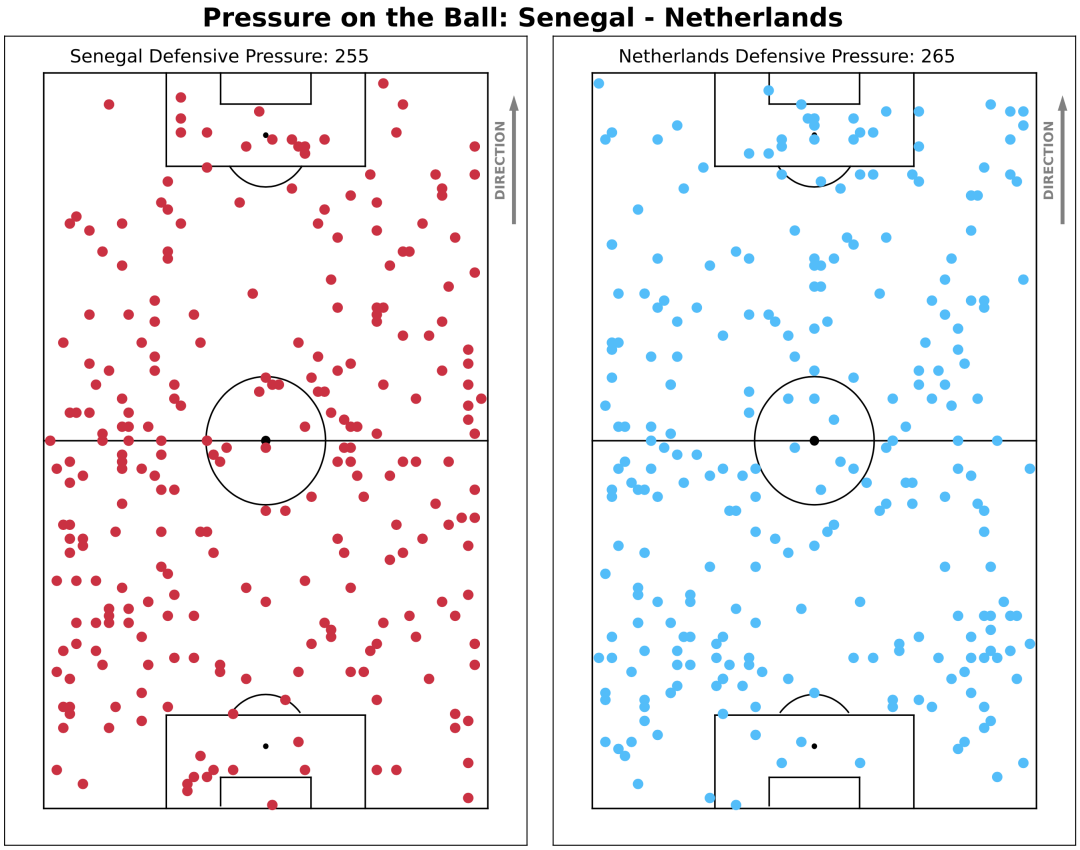



Figure 6.23: Best performance with MAPE: 0.04 (Appendix A.1).

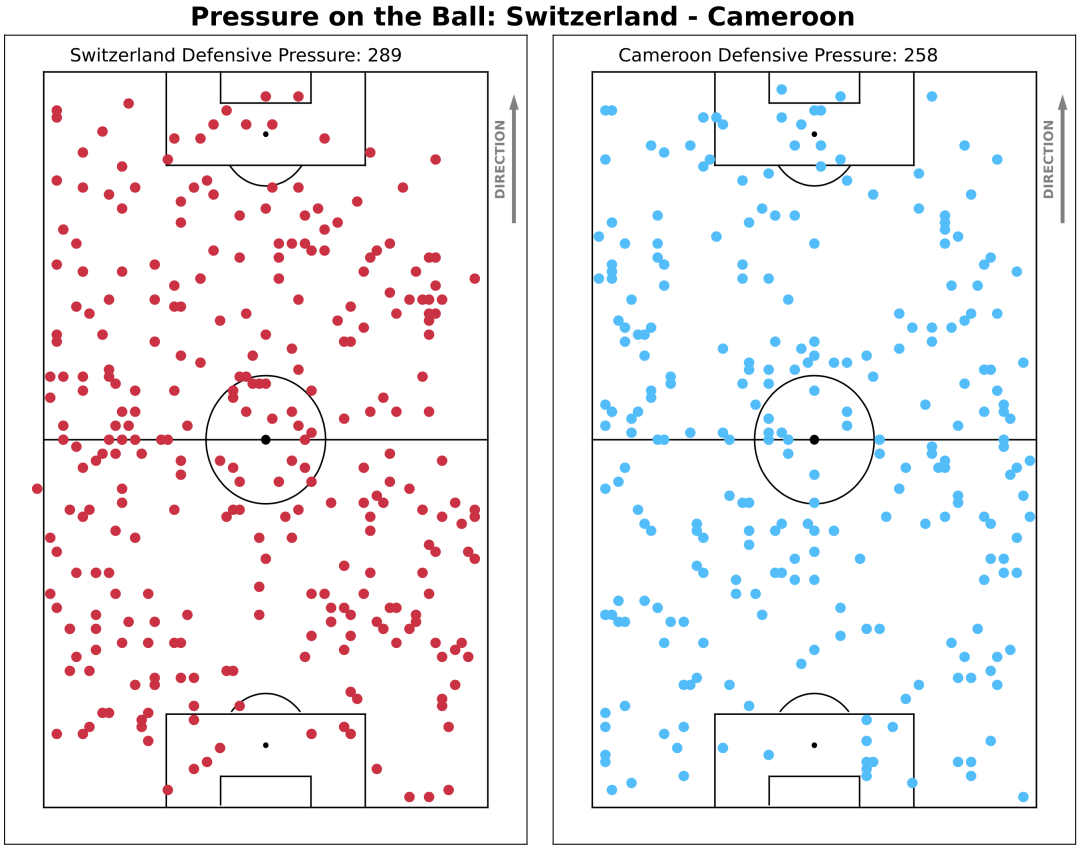



Figure 6.24: Median performance with MAPE: 0.13 (Appendix A.1).

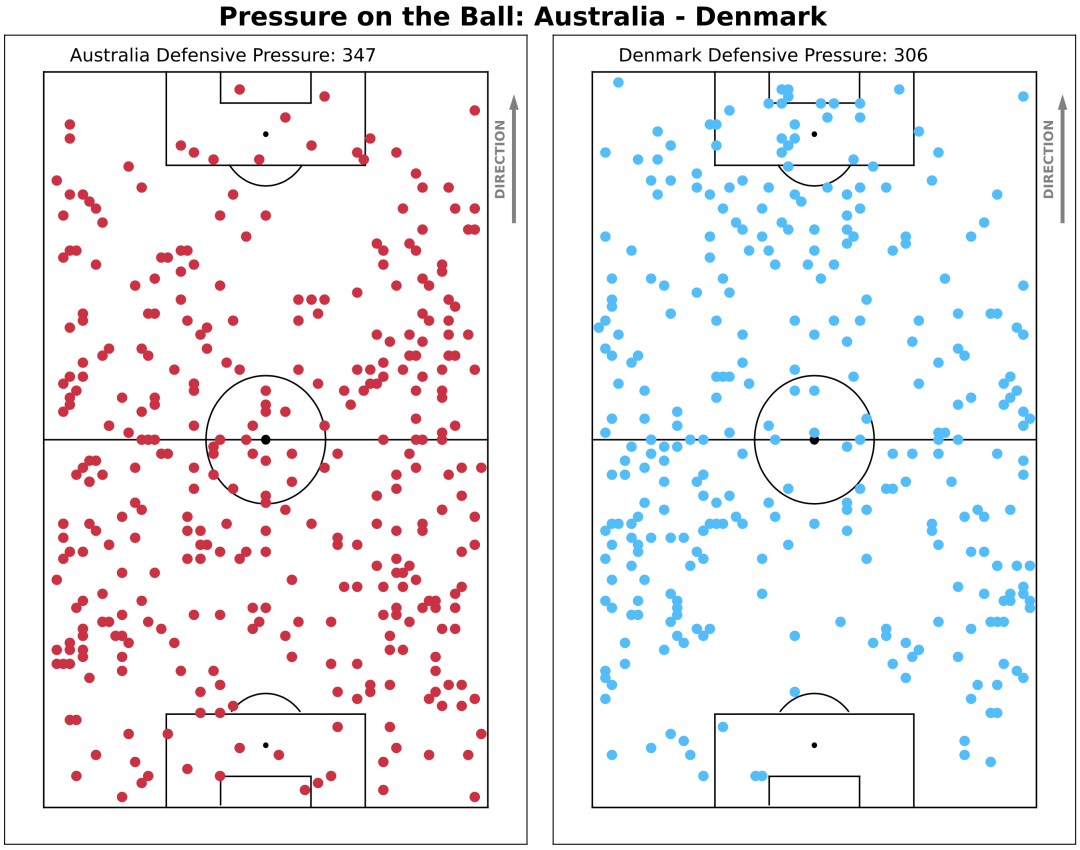



Figure 6.25: Worst performance with MAPE: 0.45 (Appendix A.1).

**FIFA results**

- **Senegal - Netherlands:** 263, 251.
- **Switzerland - Cameroon:** 313, 316.
- **Australia - Denmark:** 341, 161.

The concept outputted the locations of the pressure events completed by the defending team on the ball. The resulting plots provided two key components that offer insights regarding the offensive characteristics of the opponents and the defensive engagement of the defending team. The initial part to consider was the locations where pressure on the ball was observed. The latter metric to focus on was the number of pressures observed. However, the distribution of the pressure events was more crucial than the count of them since the counting process might vary depending on the implementation, and it was unclear in the EFI documentation [20]. Therefore, the distribution of the pressure events was provided with their amount, but it was beneficial to employ the comparison of the distributions with FIFA reports in the forced turnover section since

it directly indicated successful pressure events where the opponent lost the ball (Section 6.10).

The performance of the concept was measured based on the number of pressure event observations and compared with the FIFA results. The best performance was observed in the match between Senegal and the Netherlands. The pressure map of Senegal indicates that the Netherlands preferred to launch their attacks from the wings, where the most pressure was detected. Similarly, the Netherlands' attacking strategy also displayed a similar characteristic, as they defended the wings to impede Senegal's attacks. In addition, it can be noted that both teams effectively covered the center, prompting them to seek opportunities on the wings, where the most pressure was observed (Figure 6.23).

Moving on, the pressure map of Switzerland revealed that Cameroon tended to initiate their attacks from the right side, which explained the left-skewed distribution of pressure actions employed by Switzerland. Conversely, in general, Cameroon preferred to apply pressure in the first and second thirds of the pitch (according to Cameroon's perspective) (Figure 6.24). This distribution indicated that Cameroon aimed to close down spaces in the center and forced Switzerland to play towards the wings.

Lastly, Denmark's defensive pressure demonstrated that they faced relatively fewer attacking actions in their first third of the pitch, particularly in the center (Figure 6.25). They applied pressure in the final third of the pitch and aimed to disrupt Australia's build-up play. In contrast, similar to Cameroon, Australia primarily waited for Denmark in their first and second thirds of the pitch. Unlike Switzerland, Australia applied more pressure in the center of the pitch, highlighting Denmark's success in the progression phase, as they maintained possession in the center significantly more than Australia.

From an implementation perspective, the counting process had a significant impact on the observed errors, as it was linked to the heuristics employed to distinguish each pressure event from noise and ensure its validity. In the case of the match with the best performance, the count of pressure events slightly varied from FIFA's results (Figure 6.23). Additionally, the median performance indicated that Cameroon's pressure event count appeared to be lower than the reported value by FIFA (Figure 6.24). In contrast, the worst performance suggested that Denmark's pressure counts were the main reason for the high MAPE value (Figure 6.25). It can be inferred that Cameroon's accounted pressure events occurred less frequently than the continuous pressure threshold, leading to miscounting of distinct pressure events (List 6.9). Conversely, the same pressure event for Denmark was likely double-counted, significantly impacting the total pressure count. Furthermore, the definition provided in the EFI document might have included or excluded certain factors that were either involved or not utilized in the library's implementation [20]. Thus, the fundamental understanding of what constituted a pressure event might have still varied and contributed to result variance.

Ultimately, the MAPE value of the median performance, along with its proximity to the best performance rather than the worst, suggested that the algorithm was capable of generalizing outcomes across different matches (Figure 6.23, Figure 6.24, Figure 6.25). The counting process of pressure events remained the most challenging aspect of this concept.

## 6.10 Forced Turnovers

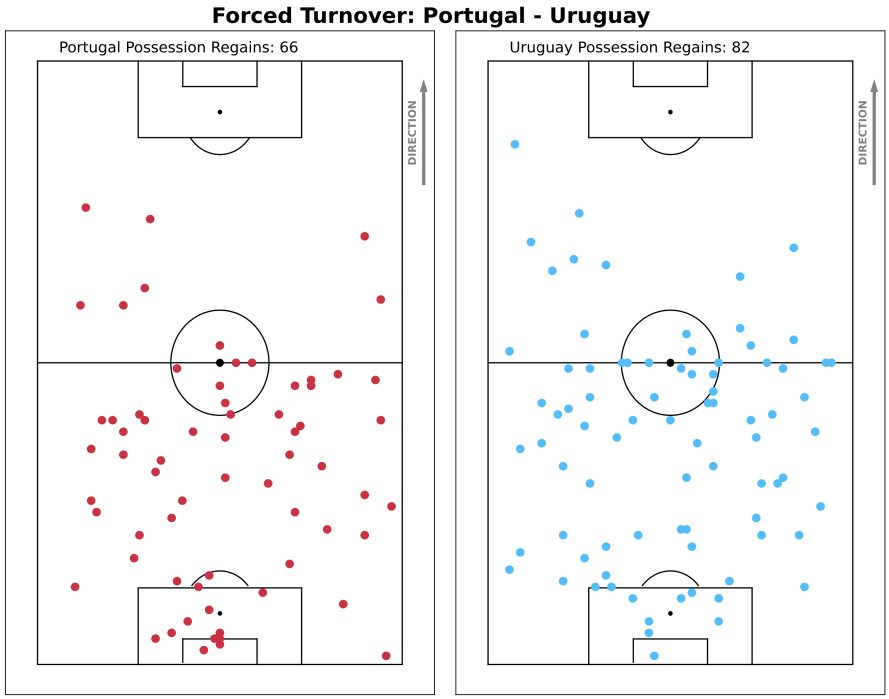
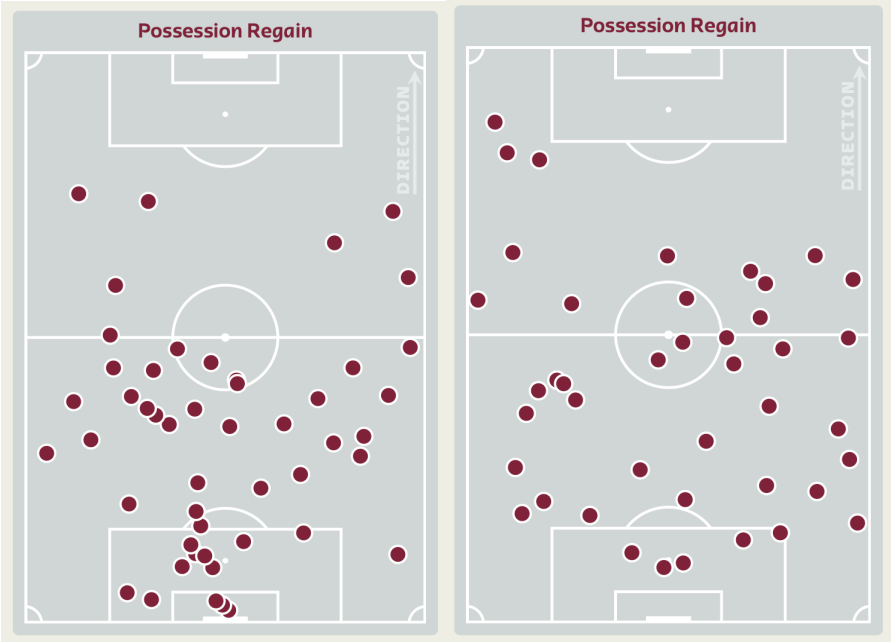



Figure 6.26: Best performance with MAPE: 0.02 (Appendix A.1).




(a) FIFA results - Portugal (b) FIFA results - Uruguay

Figure 6.27: Forced turnover - Portugal vs Uruguay.

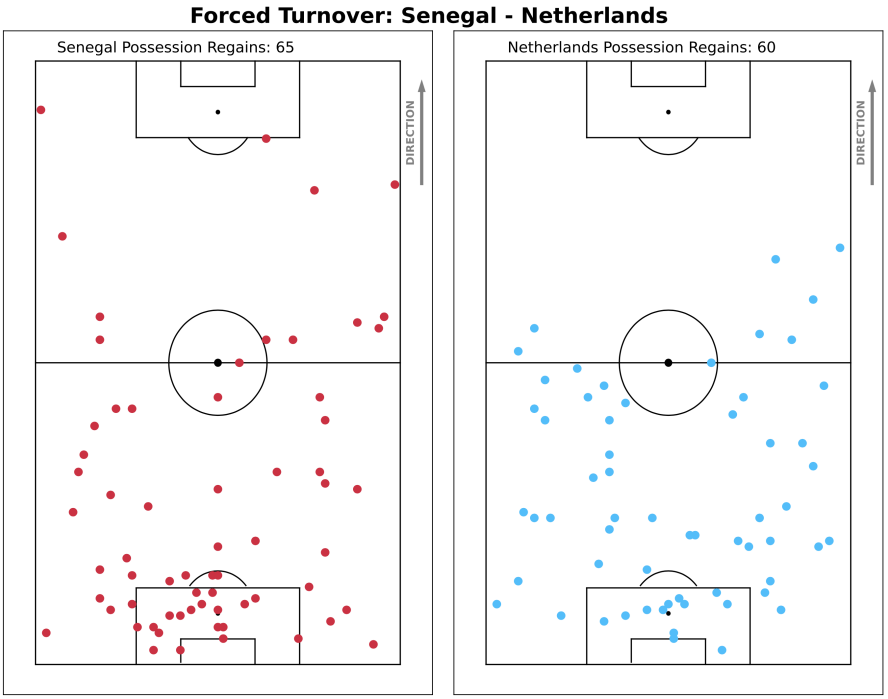
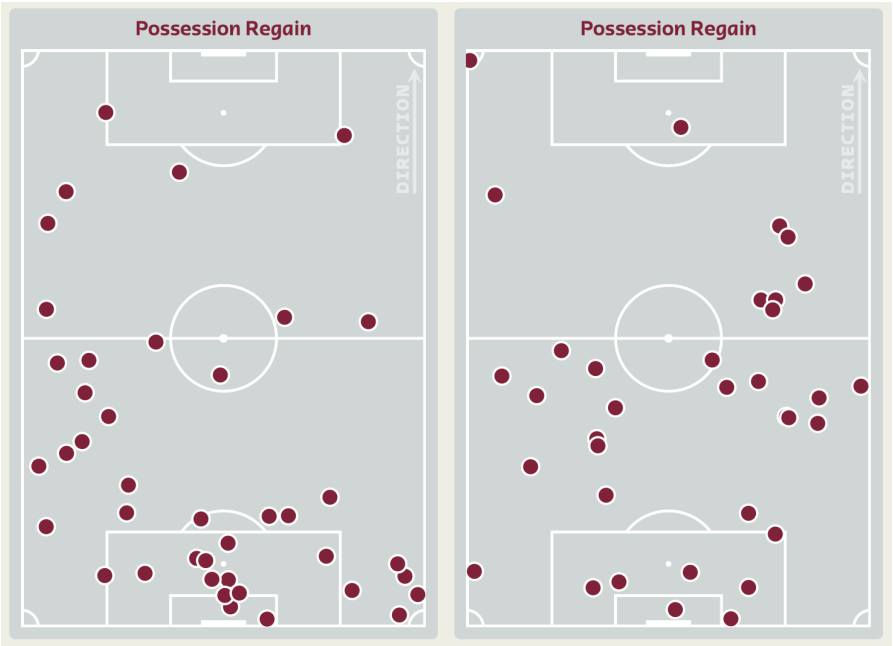



Figure 6.28: Median performance with MAPE: 0.10 (Appendix A.1).




(a) FIFA results - Senegal (b) FIFA results - Netherlands

Figure 6.29: Forced turnover - Senegal vs Netherlands.

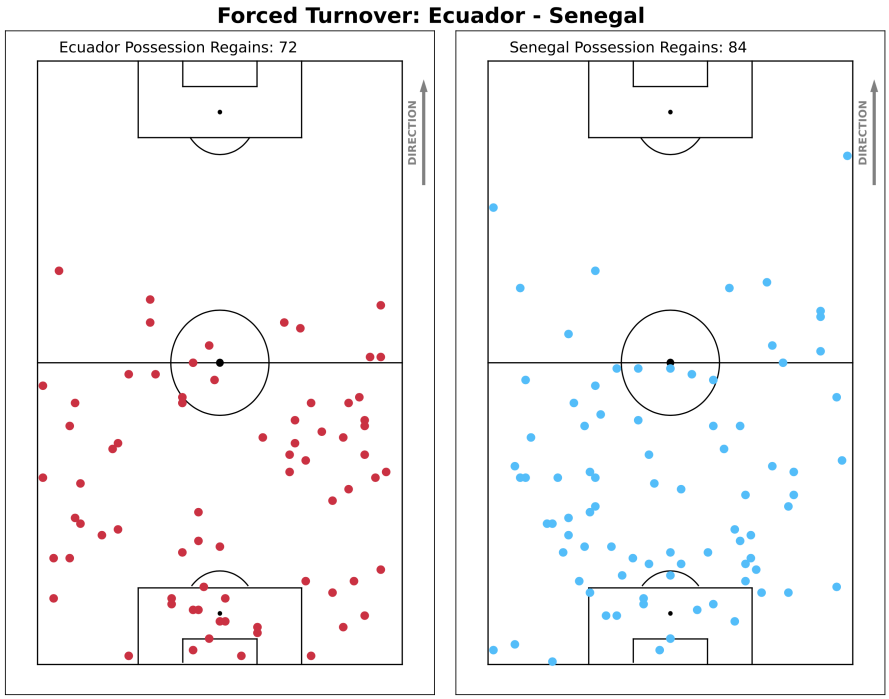
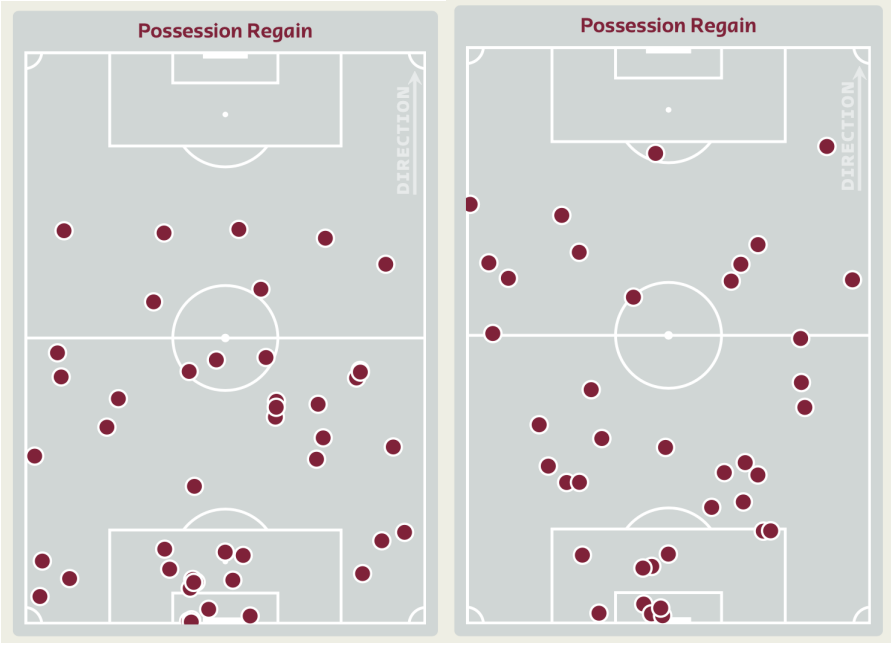



Figure 6.30: Worst performance with MAPE: 0.28 (Appendix A.1).




(a) FIFA results - Ecuador (b) FIFA results - Senegal

Figure 6.31: Forced turnover - Ecuador vs Senegal.

**FIFA results**

- **Portugal - Uruguay:** 68, 81.
- **Senegal - Netherlands:** 63, 73.
- **Ecuador - Senegal:** 59, 62.

The forced turnover metric was directly related to the outputs of the pressure on the ball concept (Section 5.11). Similar to the pressure on the ball, this concept also emphasized the distribution and quantity of forced turnovers as a defensive metric for the team out-of-possession. Therefore, comparing the results with FIFA reports not only verified the effectiveness of the forced turnover implementation, but also supported the approach taken for the pressure on the ball metric.

As in the pressure on the ball section, the algorithm's performance was evaluated based on the count of forced turnover events. Therefore, analyzing all three performance cases revealed a consistent pattern with FIFA's distributions, differing only in the number of turnover cases. This discrepancy was related to the employed heuristic, which ensured that possession was established by the opposition when the turnover occurs.

To begin with, the analysis of the best performance suggested that both teams had a higher number of possession regains in their own halves of the pitch. Particularly, Portugal's pressure was more effective in the center of the pitch, as indicated by the concentration of possession regains in both the implementation results and FIFA's data (Figure 6.26, Figure 6.27). On the contrary, Uruguay did not exhibit such a consistent characteristic and showed a more random distribution in their own half. It was worth noting that Uruguay struggled to regain possession in the center of the first third of the pitch (according to Uruguay's perspective) (Figure 6.26). This could be attributed to Portugal's attacking strategy or defensive deficiencies on the part of Uruguay.

Moving on to the analysis of Senegal and the Netherlands, both teams demonstrated a contrasting defensive approach compared to Portugal and Uruguay (Figure 6.26, Figure 6.28). Senegal's successful turnovers primarily occurred in their own penalty area, highlighting their vulnerability in keeping the opponent away from their goal and their inability to control the opponent's attacking flow through their defensive area. Additionally, while Senegal's players on the left side were able to complete forced turnovers, the same could not be said for the right side. This could be attributed to the Netherlands' attacking strategy or the weaknesses of the players operating in that specific zone for Senegal. On the other hand, the Netherlands managed to halt Senegal's attacking flow in the first and second thirds of the pitch, effectively keeping the opponent away from their goal. The correlation between the library's outputs and FIFA's results supported the notion that the Netherlands generally created more dangerous opportunities (Figure 6.28, Figure 6.29). However, it was important to note that the success of these opportunities could not be inferred solely from the outcomes of this concept.

Eventually, a more correlated forced turnover distribution is observed between Ecuador and Senegal. Both teams regained possession in their respective halves of the pitch. The

number of forced turnovers in the penalty areas was similar for both teams. The majority of the regains occurred on the sides of the pitch rather than in the center, indicating that both teams were successful in closing down spaces in the center and forcing each other to initiate attacks from the wings. Even in the worst performance scenario, the comparison with FIFA's outputs yields consistent results (Figure 6.30, Figure 6.31).

In addition to the distributions, the counting process played a major role in evaluating the results. Considering the distributions, it became evident that the choice of heuristics and their values significantly impacted the count of forced turnover events. To accurately determine that a turnover occurred, the utilization of a possession threshold was crucial. This threshold helped determine whether the opposition team was truly in possession and not just a result of noisy possession observations. In the case of the best performance, the count appeared to be accurate. However, for the median performance, some forced turnovers completed by the Netherlands were missed. Conversely, in the worst performance scenario, some forced turnovers were counted twice and failed to distinguish them from noisy observations. The errors observed in the counting process may not only be attributed to the heuristics employed for this concept but, as mentioned earlier, could also be influenced by implementation differences between FIFA and the library in the pressure on the ball concept.

Overall, considering FIFA's possession regain distributions, the outcomes of the library were correlated with them. This indicated that the approach utilized in both the pressure on the ball and forced turnovers concepts closely aligned with FIFA's definitions as outlined in their document.

## 6.11 Expected Goal (xG)

The following figures depicted the plots generated by the output of implemented expected goal (xG) concept.

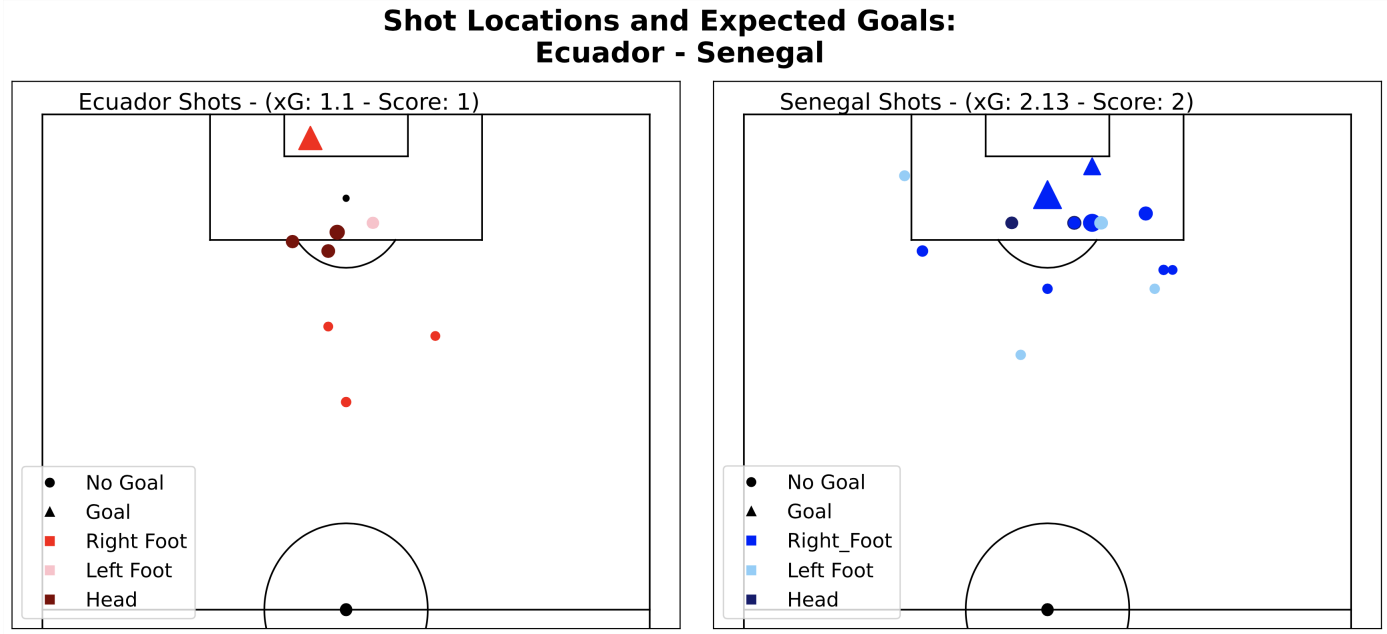



Figure 6.32: Closest value, comparing the expected goals (xG) with the actual score having MSE: 0.01 (Appendix A.2).

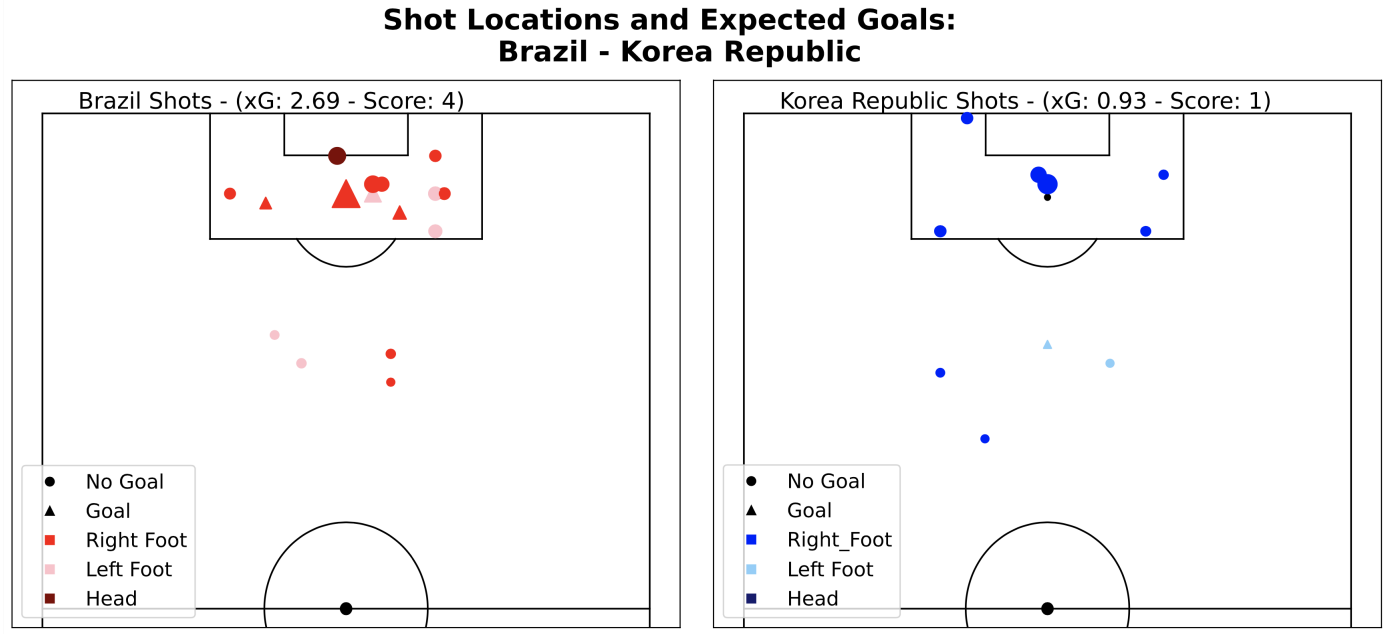



Figure 6.33: Median value, comparing the expected goals (xG) with the actual score having MSE: 0.08 (Appendix A.2).

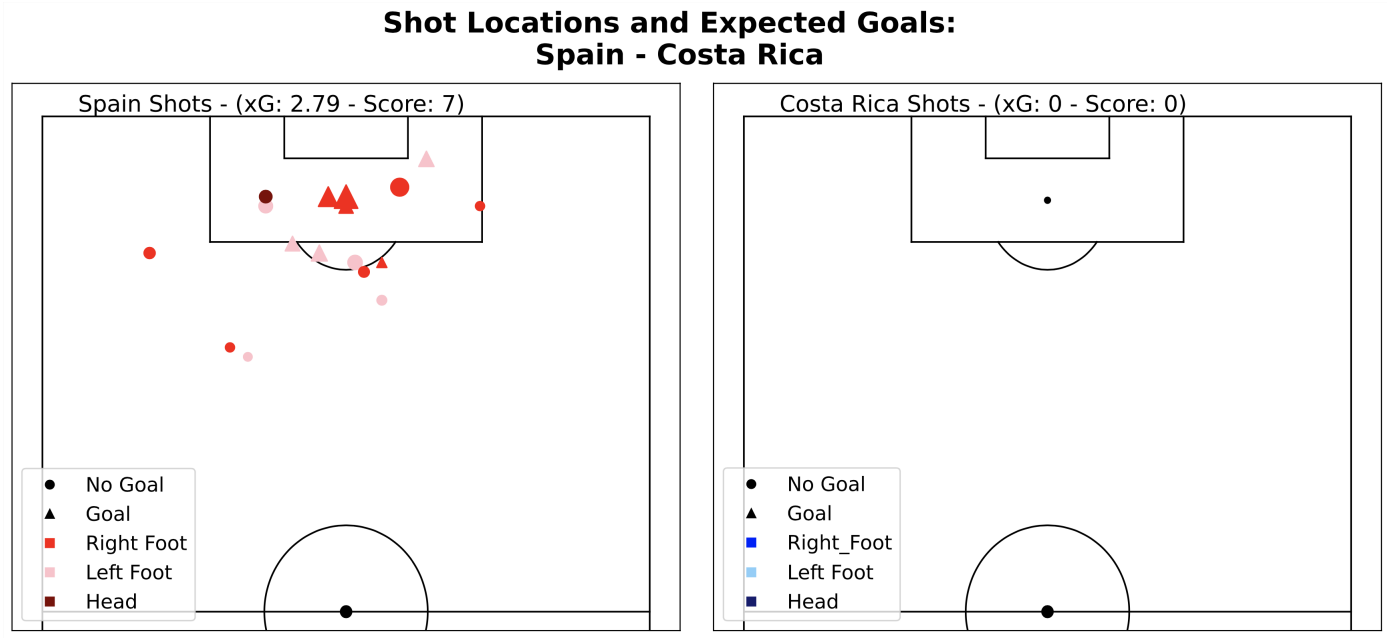



Figure 6.34: Farthest value, comparing the expected goals (xG) with the actual score having MSE: 8.80 (Appendix A.2).

Unlike the other concepts, the expected goal results were not included in the FIFA reports. Therefore, the validation of these results was based on the comparison with the actual scores of the games. It was important to note that having the expected goal (xG) value closest to the actual score did not necessarily indicate the performance of the model. The difficulty of the shots taken, and the goals scored, determines the deviation between the xG value and the actual scores.

If the actual score was significantly higher than the xG value, as observed in the case of Spain and Brazil, it suggested that the scored goals might have been challenging in terms of the defining features of a shot (Figure 6.33, Figure 6.34, Section 5.12). On the other hand, if the xG values were higher than the actual score, it implied that the team likely missed some clear goal opportunities or attempted numerous shots without effective results. Lastly, the match between Ecuador and Senegal demonstrates that the scores reflected the opportunities found in the game, and the results were fair considering that the xG values for each team were relatively close to the actual scores. Based on the provided results, it could be observed that shots directed towards the goal (with a larger angle between the shot location and the goalposts) and shots taken from closer proximity to the goal, likely with fewer obstructing players in the goalmouth, tended to have significantly higher expected goal (xG) values (Figure 6.32, Figure 6.33, Figure 6.34). The size of the shot location symbols corresponded to the magnitude of the expected goal (xG) value. Shots represented by smaller symbols could be interpreted as more challenging opportunities, while shots depicted with larger symbols could be characterized as easier ones.

From a technical standpoint, the use of an ensemble model enhanced the stability of the output by assigning weights to the models based on their accuracies in classifying shots as goals or not. Furthermore, incorporating models with diverse working principles added robustness to the system. The amount of data utilized was also crucial in determining the difficulty of the shots. Increasing the dataset would allow each model to better understand the complexity of each shot, reducing the likelihood of misclassification. Finally, the parameters chosen for the model's training process played a significant role in shaping how each model perceived and learned from the provided data.

# 7

# Limitations and Future Work

The development of an open-source implementation of FIFA's "Enhanced Football Intelligence" concepts encounters limitations that call for comprehensive improvements through distinct approaches. These limitations can be categorized into four main topics: lack of sufficient implementation details, reliance on heuristics, data synchronization challenges, and the need for dataset extension. Each of these topics presents its own set of limitations and potential areas for future work. Furthermore, these topics are interconnected and dependent on one another in various ways.

**Lack of implementation details** The initial implementation of the EFI concepts in this project incorporates the descriptions provided in the EFI document, encompassing both the football-specific aspects and the calculations involved. However, it is important to note that despite the utilization of this information, achieving results that precisely match FIFA's official match reports can still be challenging. Further improvement in the implementation would benefit from a more comprehensive and detailed explanation from FIFA, specifically regarding the terminology and data sections involved. If FIFA were to release a more detailed document outlining their specific implementation of the concepts, the methodologies in this project could be adjusted accordingly to align more closely with FIFA's approach. FIFA has revealed an example of detailed implementation details using mid-block part of phases of play concept (Section 3.2) [7]. One can compare the depth of technical details given there with the descriptions on the EFI documentation.

**Heuristics** Some methodologies in the implementation involve the use of heuristics, which are optimized through iterative processes. While heuristics are necessary, their number can be reduced by employing efficient techniques that do not significantly increase complexity. FIFA itself has introduced numerous parameters for specific sections of concepts, highlighting the importance of a robust optimization stage [7]. For instance, the mid-block phase is determined by satisfying three conditions. Firstly, players should be stationary, meaning they are not moving forward or backward at a speed exceeding 10 km/h [7]. Secondly, the team should be organized, with players (excluding the highest positioned player) forming horizontal lines and maintaining steadiness for at least 1.6 seconds within the previous 2.0 seconds [7]. Lastly, the mid-block is established when there are at least eight outfield defending players positioned in the middle third

of the pitch [7]. The end of the mid-block phase is detected when the block criteria are not met for 0.4 seconds within a 2.0-second interval [7]. Eventually, replacing these heuristics with geometric approaches would enhance the stability and consistency of the methodologies, with minimal impact on complexity.

**Tracking and event data synchronization** Furthermore, FIFA employs an algorithm that matches event data with tracking data, making the implementation of the concepts significantly easier. However, the technology used by FIFA is not open-source, which poses a barrier to replicating the results published by FIFA, even in the presence of shared heuristics. Utilizing the data provided by FIFA, only certain parts of the tracking data can be matched with the event data, as mentioned in the library (Chapter 2, Section 5.1). If FIFA were to make synchronized data available or provide a methodology for matching the datasets, it would greatly enhance the implementation of the concepts.

**Dataset extension** The utilization of heuristics necessitates an important stage known as the parameter tuning process. Enhancements in the determination of heuristic values can be achieved by incorporating more data and leveraging the outcomes of FIFA's implementations of the concepts. These outputs can serve as labels and contribute to accurately estimating the parameters, resulting in more robust and precise results for each concept. In the case of the concept of expected goals, for instance, a historical database is required, which can be constructed by augmenting the dataset with additional shots and thereby increasing the amount of data available (Section 3.11).

In conclusion, the open-source implementation of FIFA's "Enhanced Football Intelligence" concepts faces limitations and requires improvements. These include the lack of implementation details, the reliance on heuristics, challenges in data synchronization, and the need to expand the dataset. Future work should focus on obtaining more information from FIFA, exploring alternative techniques, addressing data synchronization issues, and expanding the dataset. By referring to these limitations, the implementation can become more accurate and valuable for analyzing matches.

# 8

# Conclusions

In this thesis, the concepts presented in the Enhanced Football Intelligence document published by FIFA were implemented in an open-source library, following the provided definitions for each concept. The motivation behind creating this library arises from the lack of existing implementations for the concepts described by FIFA. Ambiguities were resolved, and improvements were incorporated to ensure consistency with FIFA's reports and enhance accuracy. The primary goal of this library is to serve as a platform for researchers, analysts, and football enthusiasts, enabling them to reproduce FIFA's match reports and gain valuable insights into football performance analysis.

The results obtained from implementing the concepts underscore the significance of each word articulated in the EFI document. By utilizing these concepts, the main approach is formulated. However, additional refinements are incorporated through the utilization of specific parameters, serving as tools to quantify the implementation aspects. To ensure consistency with FIFA's results, the FIFA reports are employed as labels for parameter tuning and assessment phases. Among the implemented concepts, those that were heuristic-free or involved fewer heuristics, such as line height and team length, yielded the most stable results. Stability, in this context, refers to the magnitude of the difference between the best and worst case performances. On the other hand, the phases of play concept, which encompasses multiple metrics and consequently includes the most parameters, exhibited the least stability. It is worth noting that certain matches, such as the Australia versus Denmark match, appeared to have the worst performance in terms of the implemented concepts. However, it is possible that data inconsistencies or outliers affected the results of that particular match. Despite potential inefficiencies in the implemented concepts, the overall performance remains stable and accurate. Notably, the median performances across all concepts were much closer to the best performance than the worst, indicating a satisfactory level of performance that correlates with FIFA's outcomes.

Throughout the implementation process, several limitations were encountered, and some have been identified as areas for potential improvement in future work. One significant limitation pertains to the lack of technical details, particularly regarding numerical elaborations and the heuristics introduced. If FIFA were to publish additional details regarding their methodologies, it would warrant revisiting the implemented concepts in the

library. Another noteworthy drawback is the absence of FIFA's technology and human resources to employ an analyst for each play, which would enable accurate synchronization of event data with tracking data for implementing the concepts. Additionally, expanding the dataset would be beneficial in enhancing the stability and accuracy of the concepts. This expansion would aid in optimizing parameters and improving the training phase of certain metrics, such as expected goals. In summary, although there are obstacles to overcome, potential solutions exist to mitigate these hindrances.

To conclude, this thesis successfully implemented the concepts outlined in FIFA's Enhanced Football Intelligence document through an open-source library. By addressing the lack of existing implementations and resolving ambiguities, the library provides a valuable platform for researchers, analysts, and football enthusiasts to reproduce FIFA's match reports and gain insights into football performance analysis. The results obtained highlight the importance of each concept and demonstrate stable and accurate performance across various metrics. While limitations were encountered during the implementation process, such as the lack of technical details and the absence of FIFA's resources, potential solutions have been identified for future work. By revisiting the concepts with additional information, employing advanced technologies, and expanding the dataset, the library can further enhance its stability, accuracy, and overall performance. This thesis serves as a stepping stone towards advancing football performance analysis and offers promising opportunities for continued research and improvement in the field.

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# A

# Appendix

## A.1 Data

The following section includes the details regarding the datasets employed in the implementation of the library.

### A.1.1 Match Data

The match data encompasses the metadata of the game and the lineups with several features for each player. In this section, this information is elaborated in detail.

**Metadata** The metadata consists of essential information about the match, teams, and players. The available information is portrayed as follows:

- Match ID: The ID assigned to the match.
- Home team ID: The ID assigned to the home team.
- Away team ID: The ID assigned to the away team.
- Home team name: The name of the home team.
- Away team name: The name of the away team.

Furthermore, the phases correspond to the regulation, extra-time, and penalty shootout periods, with each phase represented at the frame-level (Figure A.1). It is important to note that not all matches went into extra time or penalty shootout. Therefore, for matches that ended in the regulation phase, no value is assigned for the phases corresponding to extra time and penalty shootout.

| | first half | second half |
|---|---|---|
| regulation | Phase 1 | Phase 2 |
| extra time | Phase 3 | Phase 4 |
| penalty shootout | Phase 5 | - |

Figure A.1: Representation of phases and match periods.

**Lineups** The following information is provided for each player on both the home team and the away team in the match:

- Team ID: The ID assigned to the team.
- Player ID: The ID assigned to the player.
- Player first name: First name of the player.
- Player last name: Last name of the player.
- Player jersey number: Jersey number of the player.
- Player starting frame: The first frame where the player is present in the match.
- Player ending frame: The last frame where the player is present in the match.

### A.1.2 Event Data

The event data compromises detailed information regarding each instance that took place in the match. Depending on the recorded event, the available data might vary. In other words, not all features are available for all events. The particulars of the feature space are as follows:

- Match ID: The ID assigned to the match.
- Match run time in ms: Time since start of the match in milliseconds (e.g., 4055010 = 01:07:35 at start of second half).
- Match time in ms: Time within match in milliseconds (e.g., 2700000 (45 min) at the start of second half).
- Match run time: Match run time in ms value converted to hh:mm:ss format.

- Event ID: The ID assigned to the event.
- Player Seq ID: Player sequence ID (i.e., the player involved in consecutive event records carries the same ID to elaborate the flow of the game).
- Half-time: The period in which the event occurred (Figure A.1).
- Side: Whether the team taking the action plays on the left or right side of the pitch (Figure 2.1).
- Event: Name of the recorded event in football terminology.
- Event type: Generalization of the events recorded in the Event column.
- Category: Possession information according to the Event Type.
- Action type: The action completed in the corresponding Event.
- From Player ID: The ID of the player initiating the recorded event.
- To Player ID: The ID corresponds to the player at which the event ends.
- Team ID: The ID assigned to the team.
- Outcome: The recorded event results.
- Outcome additional: Detailed information regarding the Outcome.
- Opposition touch: The indicator of the opposition's engagement to the ball.
- Body type: The part of the body involved in the recorded event.
- Direction: The expression indicates the location or direction of the event.
- Pressure: Indicator of pressure presence.
- Origin: A special indicator of the location where the recorded event took place, such as a penalty or corner.
- Save detail: How the ball is saved (e.g., diving).
- Stance: The mobility information recorded when the event happened (e.g., set, moving).
- X frame: The final x-coordinate of the ball trajectory according to event data coordinate system (Figure 2.1).
- Y frame: The final y-coordinate of the ball trajectory according to event data coordinate system (Figure 2.1).
- Line break direction: The direction of the recorded line break event(e.g., over, around, through).

- Line break outcome: The result of the recorded line break event (e.g., line break complete).
- Team unit: The location where the recorded event took place in relation to the shape of the team involved.
- Team units broken: The team units bypassed.
- Total team units: The number of available team units at the time the recorded event occurred.
- X: The x-coordinate of the recorded event (Figure 2.1).
- Y: The y-coordinate of the recorded event (Figure 2.1).
- X mirrored: x-coordinate from the perspective of the team taking the action.
- Y mirrored: y-coordinate from the perspective of the team taking the action.
- X location start: The x-coordinate of the starting location of the recorded event (Figure 2.1).
- Y location start: The y-coordinate of the starting location of the recorded event (Figure 2.1).
- X location end: The x-coordinate of the ending location of the recorded event (Figure 2.1).
- Y location end: The y-coordinate of the ending location of the recorded event (Figure 2.1).
- X location start mirrored: The x-coordinate of the starting location of the recorded event (from the perspective of the team taking the action) (Figure 2.1).
- Y location start mirrored: The y-coordinate of the starting location of the recorded event (from the perspective of the team taking the action) (Figure 2.1).
- X location end mirrored: The x-coordinate of the ending location of the recorded event (from the perspective of the team taking the action) (Figure 2.1).
- Y location end mirrored: The y-coordinate of the ending location of the recorded event (from the perspective of the team taking the action) (Figure 2.1).

### A.1.3 Tracking Data

The tracking data includes the spatial locations of the ball and the players throughout the game and records each observation in frames. Each frame contains objects named after the observed player/ball, which are assigned specific features. The details of these aspects are as follows:

- Frame: The index indicating the frame number.
- Team ID: The ID assigned to the team of the corresponding player (i.e., 1 for the home team, 0 for the away team, -1 for the ball). Please note that this team ID is different from the ones mentioned in Match Data and Event Data (Appendix A.1.1, Appendix A.1.2).
- Player jersey number: The jersey number that the player wore in that match. Not available for the ball object.
- X: The object's x-coordinate according to tracking data coordinate system (Figure 2.2).
- Y: The object's y-coordinate according to tracking data coordinate system (Figure 2.2).
- Z: The object's z-coordinate according to tracking data coordinate system (Figure 2.2). Only available for the ball object.
- Speed: The speed of the object in meter/second.
- State: The state of the ball object (e.g. dead or alive).
- Possession team: The indicator of the team in possession (e.g., home or away).

Using the methods defined in the Tracking class, the following variables are processed based on the raw information provided from the tracking file (A.1.3). The refinement process is performed for the interval during the play time of the game. The obtained variables are used for further analysis of the concepts. The definitions of those instances are as follows:

- Home coordinates: The coordinates of the home team players (Figure 2.2).
- Away coordinates: The coordinates of the away team players (Figure 2.2).
- Home coordinates modified: Mirrored home coordinates (from the perspective of the home team) (Figure 2.2).
- Away coordinates modified: Mirrored away coordinates (from the perspective of the away team) (Figure 2.2).
- Home jersey: The jersey numbers of the home team players.
- Away jersey: The jersey numbers of the away team players.
- Home speed: The speed of the home team players.
- Away speed: The speed of the away team players.
- Ball coordinates: The coordinates of the ball (x and y coordinates) (Figure 2.2).

- Ball height: The z-coordinate of the ball.
- Ball state: The state of the ball.
- Ball speed: The speed of the ball.
- Ball coordinates modified home: Mirrored ball coordinates (from the perspective of the home team) (Figure 2.2).
- Ball coordinates modified away: Mirrored ball coordinates (from the perspective of the away team) (Figure 2.2).
- Possession information raw: Initially provided possession information.
- Possession information detailed: The possession information which is obtained from the automatic event detection algorithm (Section 5.1).
- Directions: The indicator of the frames where mirroring occurred.
- Match length: Total amount of periods available in the match.

## A.2 Library Design

The subsequent section encompasses diagrams illustrating the classes implemented in each layer of the library. These diagrams offer a visual representation of the organization of classes within each layer, as well as the methods and variables utilized in each class.

### A.2.1 Data Layer

Match Class

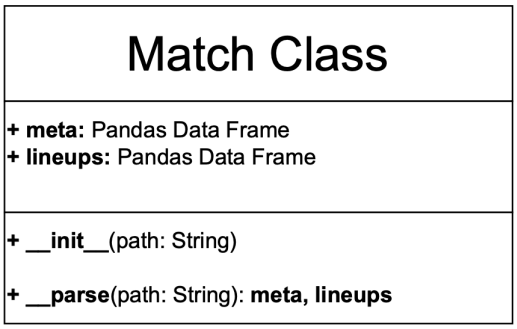


Figure A.2: The diagram of Match class.

The match class includes an initialization and parsing method. Using the given path of the match data, the metadata and the lineups of the match is obtained (Figure A.2).

Event Class

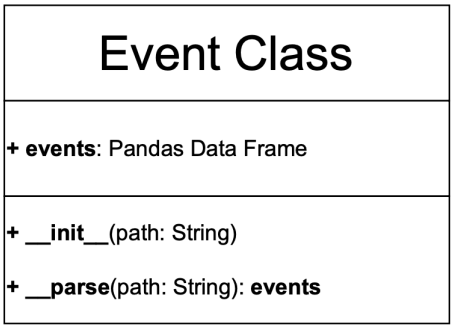


Figure A.3: The diagram of Event class.

The Event class contains an initialization and parsing method. Employing the given path of the event data, the recorded events are parsed and stored (Figure A.3).

Tracking Class

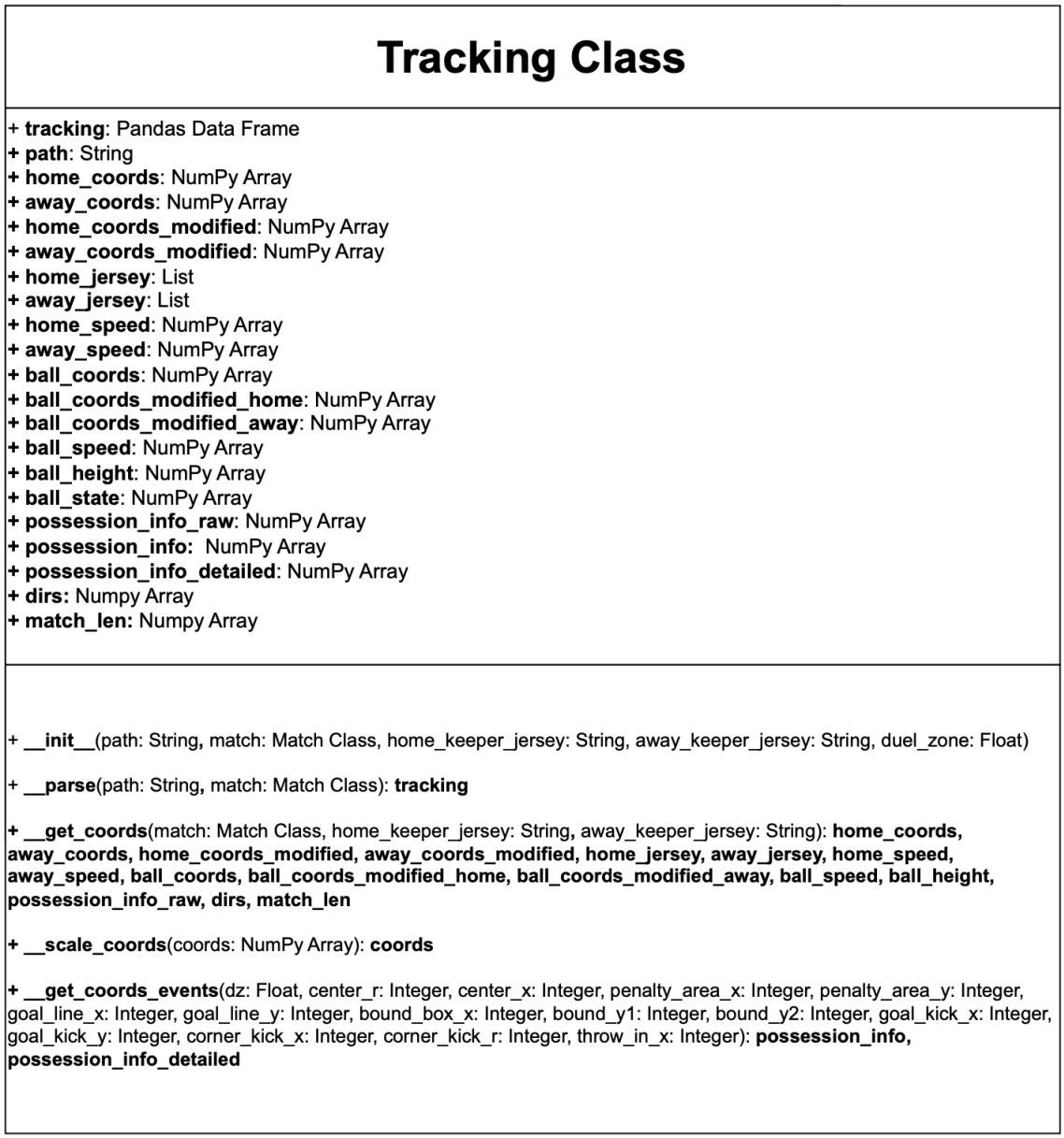


Figure A.4: The diagram of Tracking class.

The Tracking class encompasses an initialization method, a parsing method, a coordinate retrieving method, a scaling method, and an event detection method (Figure A.4).

The tracking object is initialized by employing the given path of the tracking data,

jersey numbers of both goalkeepers, and the match object. Moreover, the coordinate retrieving method provides spatial locations, jersey numbers, speeds, and raw possession information for both teams. Additionally, it also provides the spatial location, speed, and state of the ball. To aid further in analysis, the method stores the amount of time half times spent in the game. To be able to make use of the coordinates properly, the scaling method is employed to the stored coordinate values of both teams and the ball (Figure A.4). Finally, the raw possession information is processed to detect the in-contest frames and label the out-of-play events according to the implementation described in the paper: "Automatic event detection in football using tracking data" [30].

### A.2.2 Concept Layer

EFI Class


Figure A.5: The diagram of the EFI class.

The EFI class primarily consists of an initialization method and separate methods that implement each EFI concept. The method names are derived from the corresponding concepts. Certain concepts, such as ball recovery time, pressure on the ball, forced turnover, final third entries, phases of play, line breaks, receptions behind midfield and defensive lines, require hyperparameters for proper implementation. The outputs of the concepts are provided in multiple formats that can be directly used for interpretation in their raw form and further utilized in visualization without any need for pre-processing from the user's side (Figure A.5).

### A.2.3 Performance and Visualization Layer

Visualizer Class

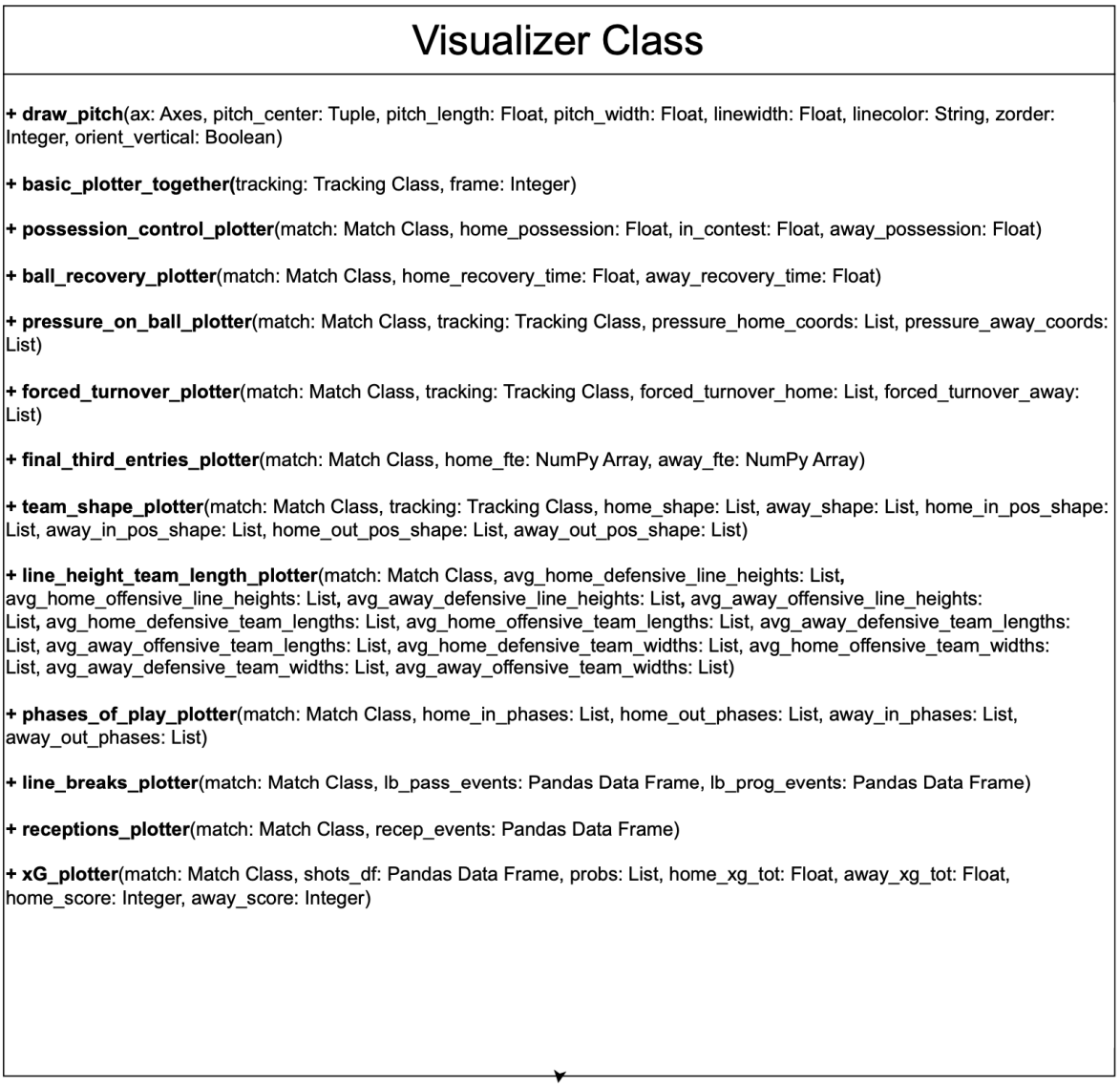


Figure A.6: The diagram of the Visualizer class.

The Visualizer Class comprises plotting methods designed to present the outcomes derived from the concepts within the EFI layer in a clear and concise manner. Each concept is associated with a specific plotting method. The results obtained from these methodologies are presented in a format that resembles the EFI document and FIFA reports (Appendix A.4). Whenever necessary, enhancements and additional features

are incorporated to improve interpretability. Additionally, a frame plotter method is included to facilitate the visualization of the game at a specific frame (Figure A.6).

## A.3 Parameter Tuning

In this section, tables are provided for each concept that includes heuristics, presenting the optimized parameters along with the intervals they were investigated in and their corresponding best values. Additionally, error plots are included to facilitate the visualization of the analysis.

**Optuna** The parameter tuning process is performed using the Optuna library, which is an automated machine learning hyperparameter optimization software framework. Optuna provides an imperative, define-by-run style user API, allowing for modular code and dynamic construction of hyperparameter search spaces [1].

**Concepts and objective functions** To take advantage of Optuna, the loss function for optimization is specified along with the parameters to be tuned for the respective concepts. The "Mean Absolute Percentage Error (MAPE)" is employed as the preferred loss function for all methods except for phases of play, final third entries, and expected goal concepts. In the first two cases, the loss function applied is the "Mean Squared Error (MSE)". On the other hand, the expected goal model includes the optimization of machine learning models' using the cross-validation technique performed by scikit-learn [27]. This distinction is made because MAPE encounters an undefined scenario when the actual values contain zero. Even though the problem can be addressed by adding a smoothing value, the error value loses its interpretability [5].

**MAPE vs MSE** MAPE is chosen because it is scale invariant, easily interpretable, and focuses on relative errors rather than absolute errors. It can be replaced by MSE when actual values are zero. On the other hand, MSE is a suitable alternative as it is a continuous and differentiable function, making it well-suited for optimization algorithms like Optuna. It forms a convex loss function that guarantees convergence to a global minimum. When comparing MSE and MAPE, MSE penalizes larger errors more than MAPE, which is particularly valuable for the methods phases of play and final third entries (Equation A.1, Equation A.2). It is crucial to avoid assigning a higher percentage to a specific phase while neglecting others, as this may lead to an inaccurate analysis of the team's strategy (Section 5.3). Additionally, misleading counts for specific channels can also result in inaccuracies in the analysis (Section 5.9).

The concepts that generate multiple values in the analysis of a single match treat each value in the resulting vector as an individual data point, which is then averaged to provide a comprehensive assessment(e.g, in the output of the possession control analysis of a match, home-team possession percentage, in-contest possession percentage, and away-team possession percentage values are provided and treated as three distinct data points).

$$\text{MAPE}(y, \hat{y}) = \frac{1}{N} \sum_{i=1}^{N} \frac{y_i - \hat{y}_i}{y_i}. \tag{A.1}$$

$$\text{MSE}(y, \hat{y}) = \frac{1}{N} \sum_{i=1}^{N} (y_i - \hat{y}_i)^2 \tag{A.2}$$

where:

- $N$ is the total number of observations.
- $y_i$ is the actual value.
- $\hat{y}_i$ is the predicted value.

### A.3.1 Possession Control

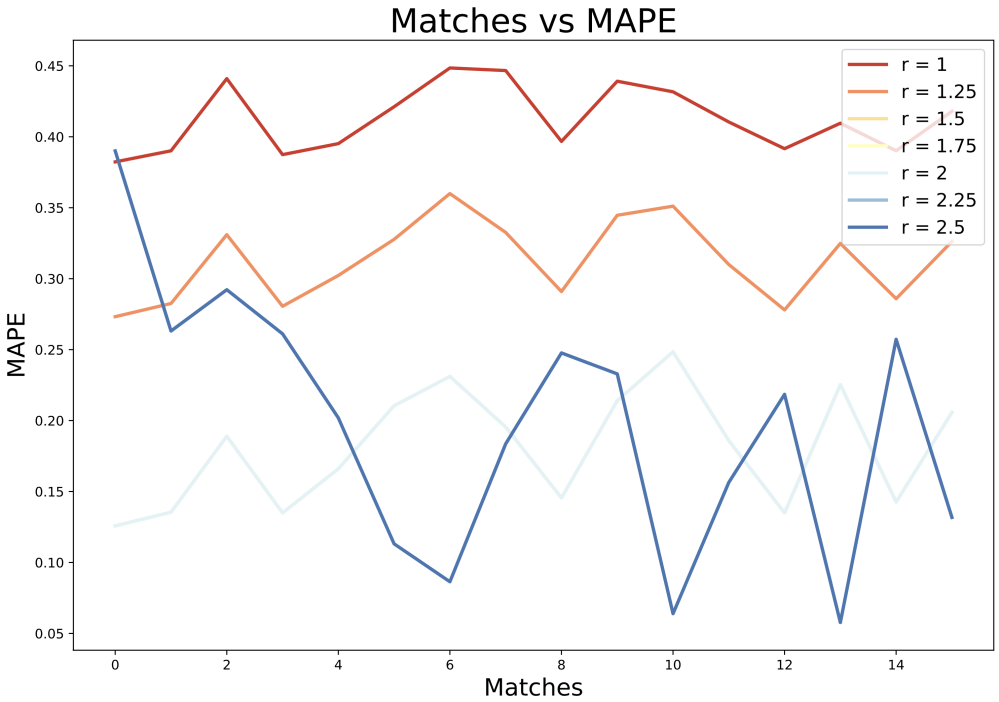


Figure A.7: Parameter tuning results for the possession control for varying matches.

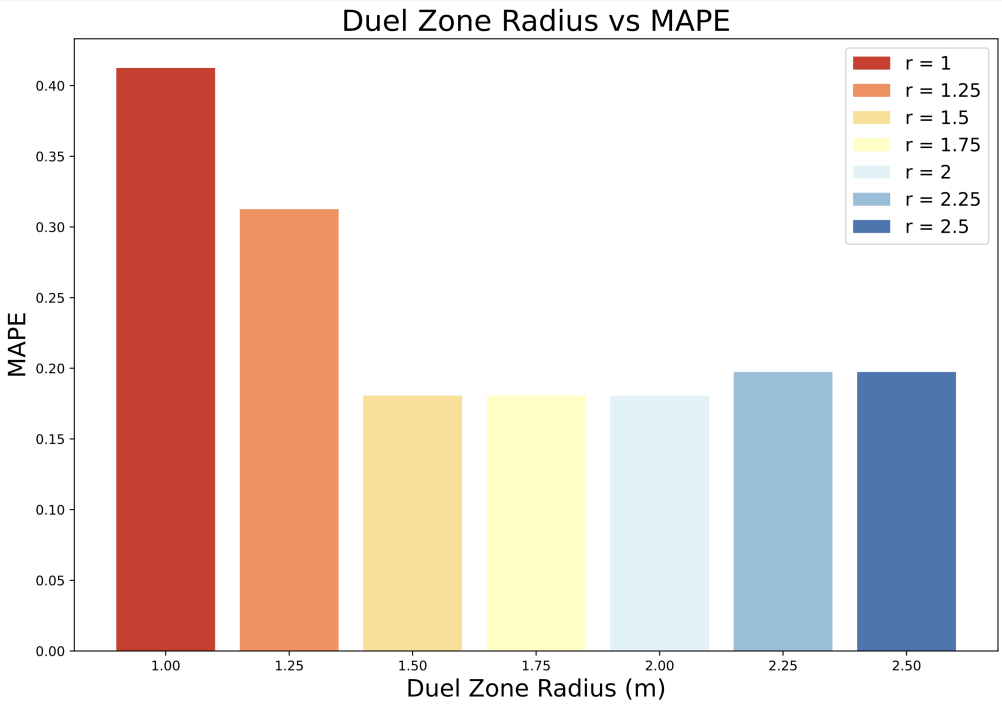


Figure A.8: Parameter tuning results for the possession control for varying radii.

Table A.1: Experimented values for the possession control.

| **Parameter** | **Low** | **High** | **Best** |
|---|---|---|---|
| duel zone ($r_{\text{dz}}$) | 1 | 2.5 | 2 |

### A.3.2 Phases of Play

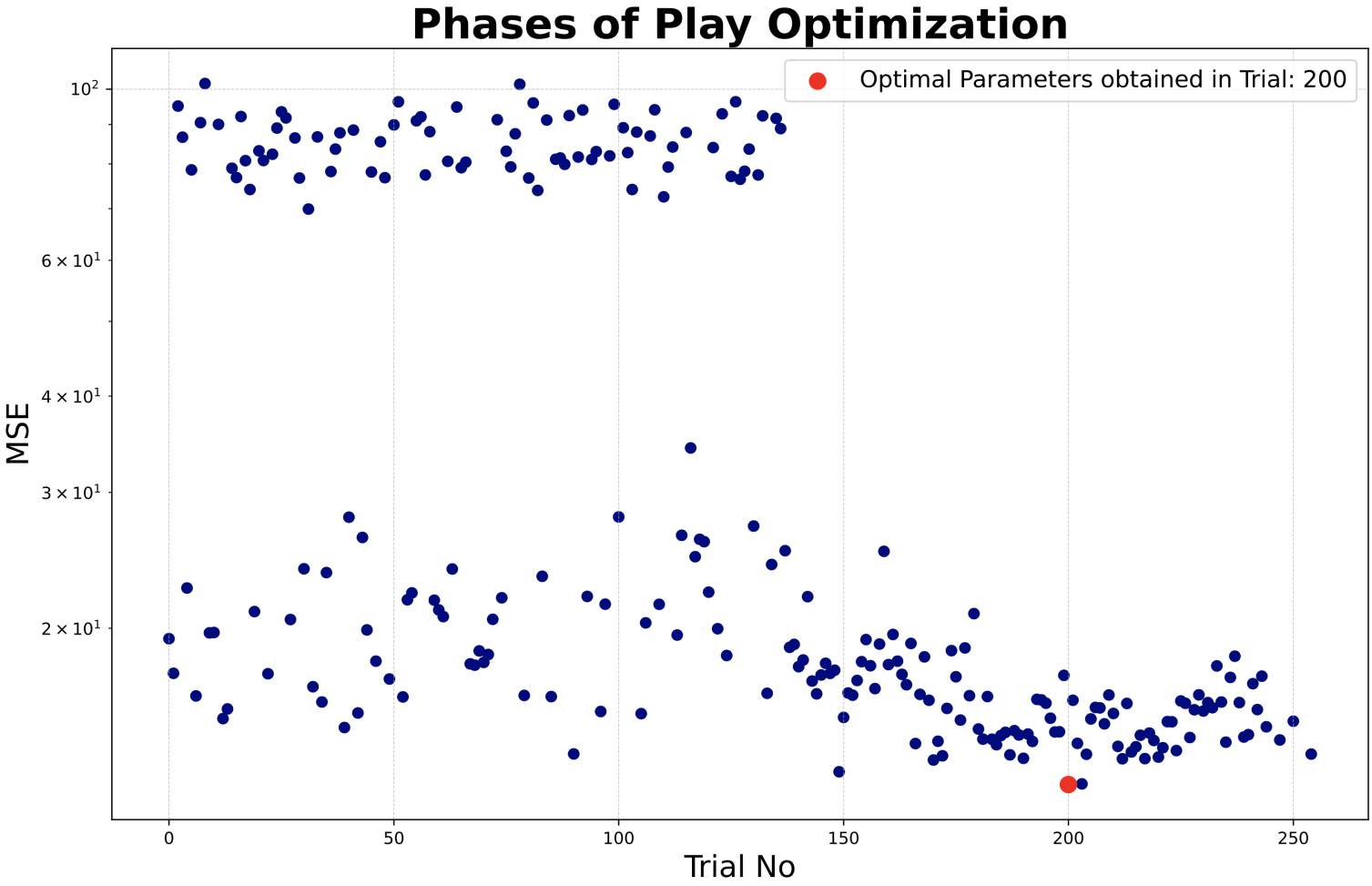


Figure A.9: Parameter tuning results for the phases of play.

Table A.2: Experimented values for the phases of play.

| **Parameter** | **Low** | **High** | **Best** |
|---|---|---|---|
| Set Piece Duration | 75 | 225 | 147 |
| Long Ball Threshold | 75 | 225 | 197 |
| Long Ball Height Threshold | 1.5 | 5.5 | 3.24 |
| Long Ball Distance Range | 0.2 | 0.5 | 0.45 |
| Previous Pass Multiplier Range | 0.1 | 0.2 | 0.11 |
| Forward Threshold Range | 25 | 100 | 40 |
| Counter Attack Threshold Range | 25 | 150 | 94 |
| Forward Distance Threshold Range | 1.5 | 5.5 | 2.11 |
| Slope Threshold | 0.5 | 1.75 | 0.511 |
| Counter Press Threshold | 10 | 50 | 21 |
| Counter Press Duration | 25 | 100 | 49 |
| Recovery Threshold Range | 75 | 200 | 139 |
| R Opposed Range | 5 | 8 | 5.36 |
| R High Range | 4 | 6 | 5.07 |
| R Mid-Range | 1.75 | 3.5 | 2.28 |
| R Low Range | 0.5 | 1.75 | 1.23 |
| High Block Threshold | 37.5 | 45 | 37.7 |
| Mid-Block Threshold | 35 | 37.5 | 35.31 |
| Low Block Threshold | 30 | 35 | 31.85 |

### A.3.3 Ball Recovery Time

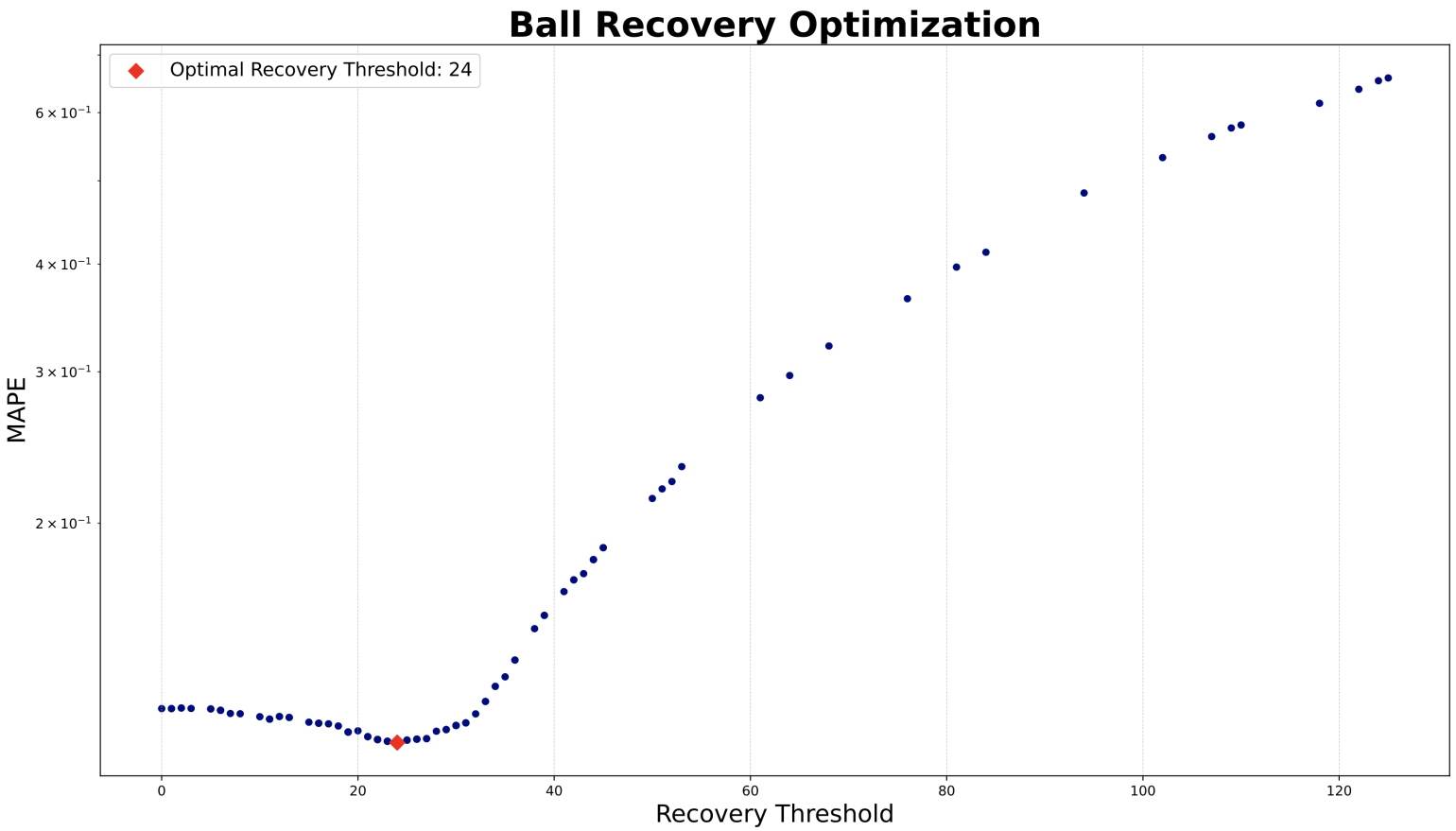


Figure A.10: Parameter tuning results for the ball recovery time.

Table A.3: Experimented values for the ball recovery time.

| Parameter | Low | High | Best |
|---|---|---|---|
| Recovery Threshold | 0 | 125 | 24 |

### A.3.4 Line Breaks

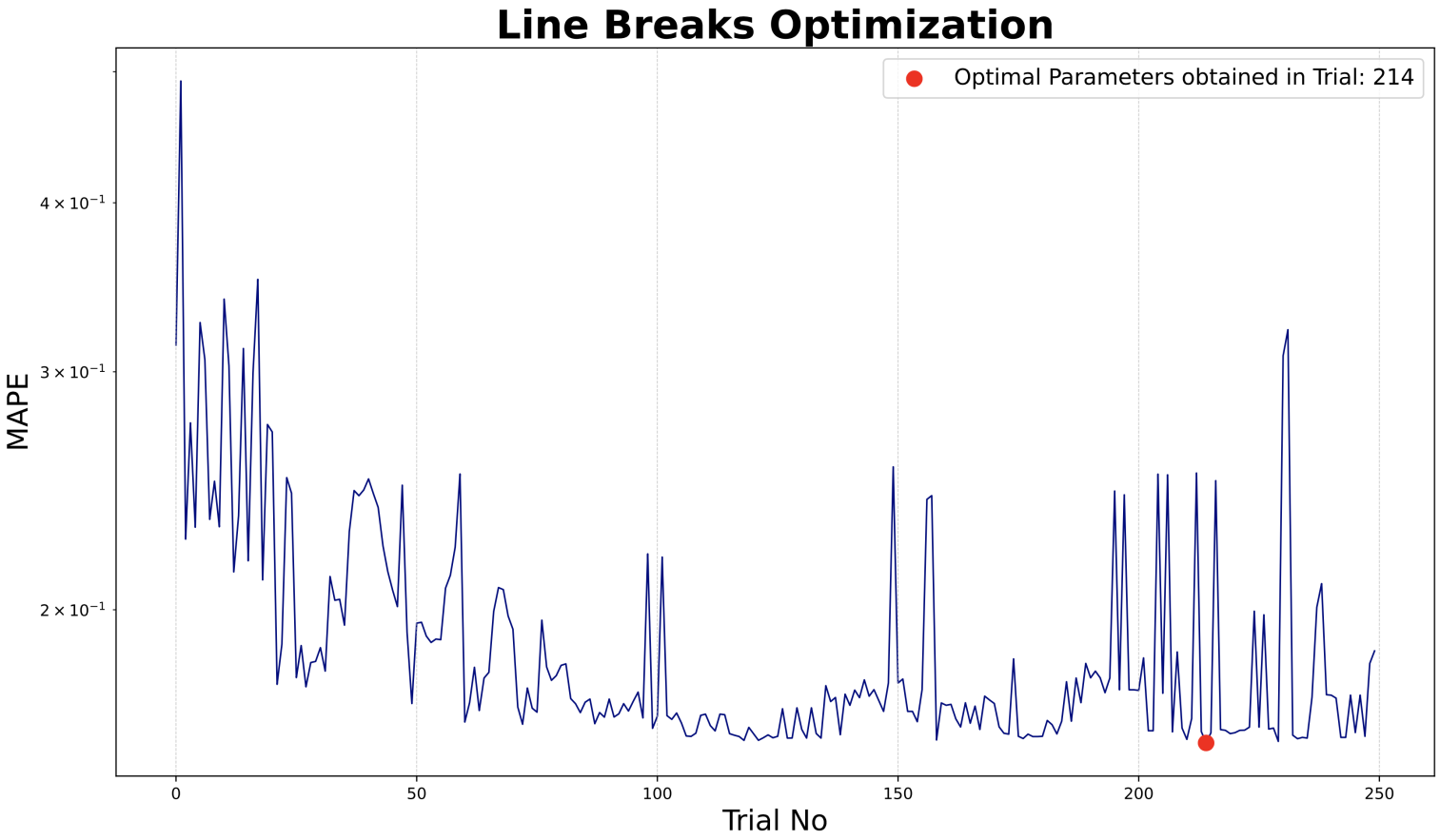


Figure A.11: Parameter tuning results for the line breaks.

Table A.4: Experimented values for the line breaks.

| **Parameter** | **Low** | **High** | **Best** |
|---|---|---|---|
| Over Duration | 25 | 150 | 27 |
| Over Height Threshold | 1.5 | 5.5 | 1.67 |
| Frame Gap | -25 | 75 | 54 |

### A.3.5 Receptions Behind Midfield and Defensive Lines

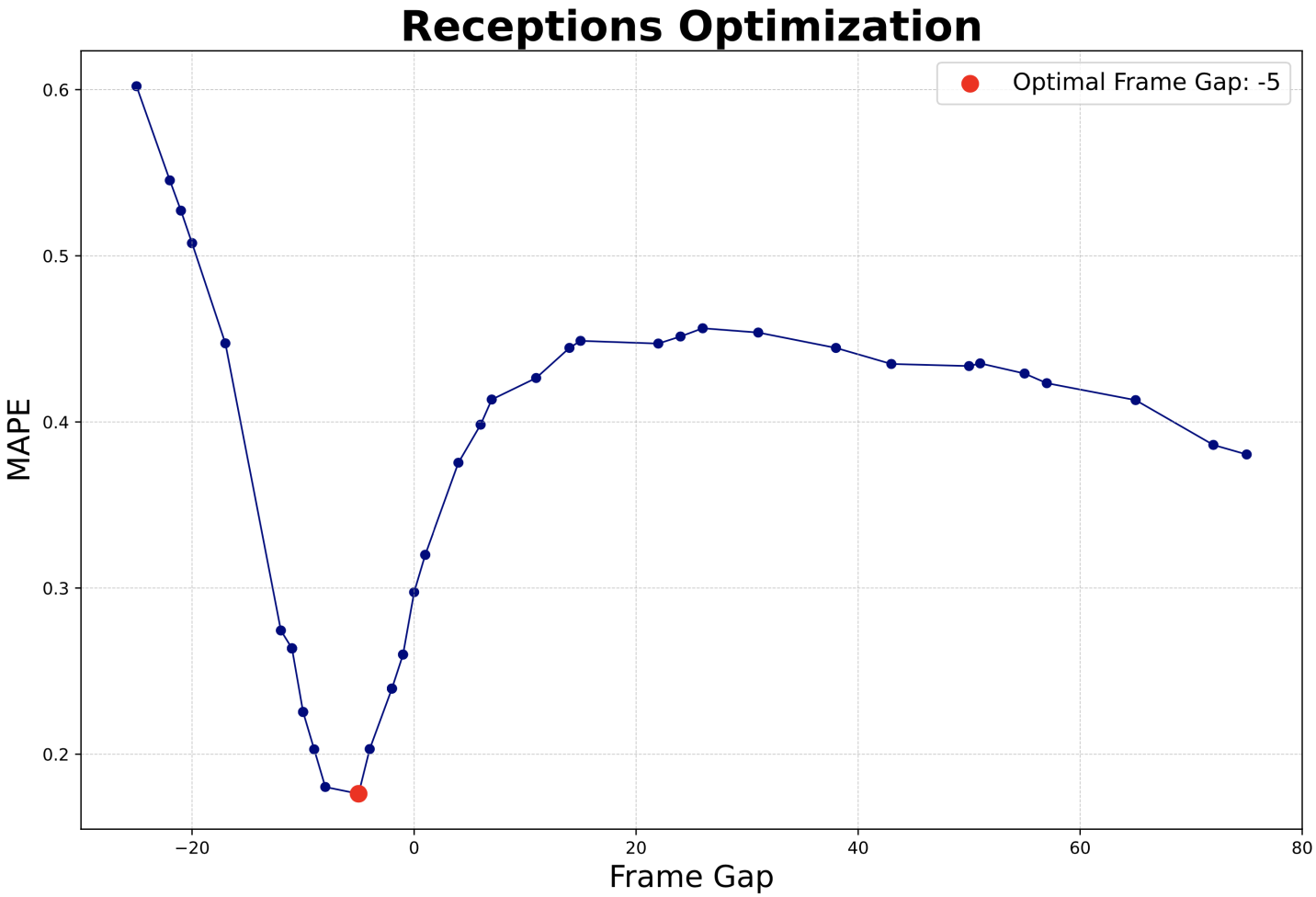


Figure A.12: Parameter tuning results for the receptions behind midfield and defensive lines.

Table A.5: Experimented values for the receptions behind midfield and defensive lines.

| **Parameter** | **Low** | **High** | **Best** |
|---|---|---|---|
| Frame Gap | -25 | 75 | -5 |

### A.3.6 Final Third Entries

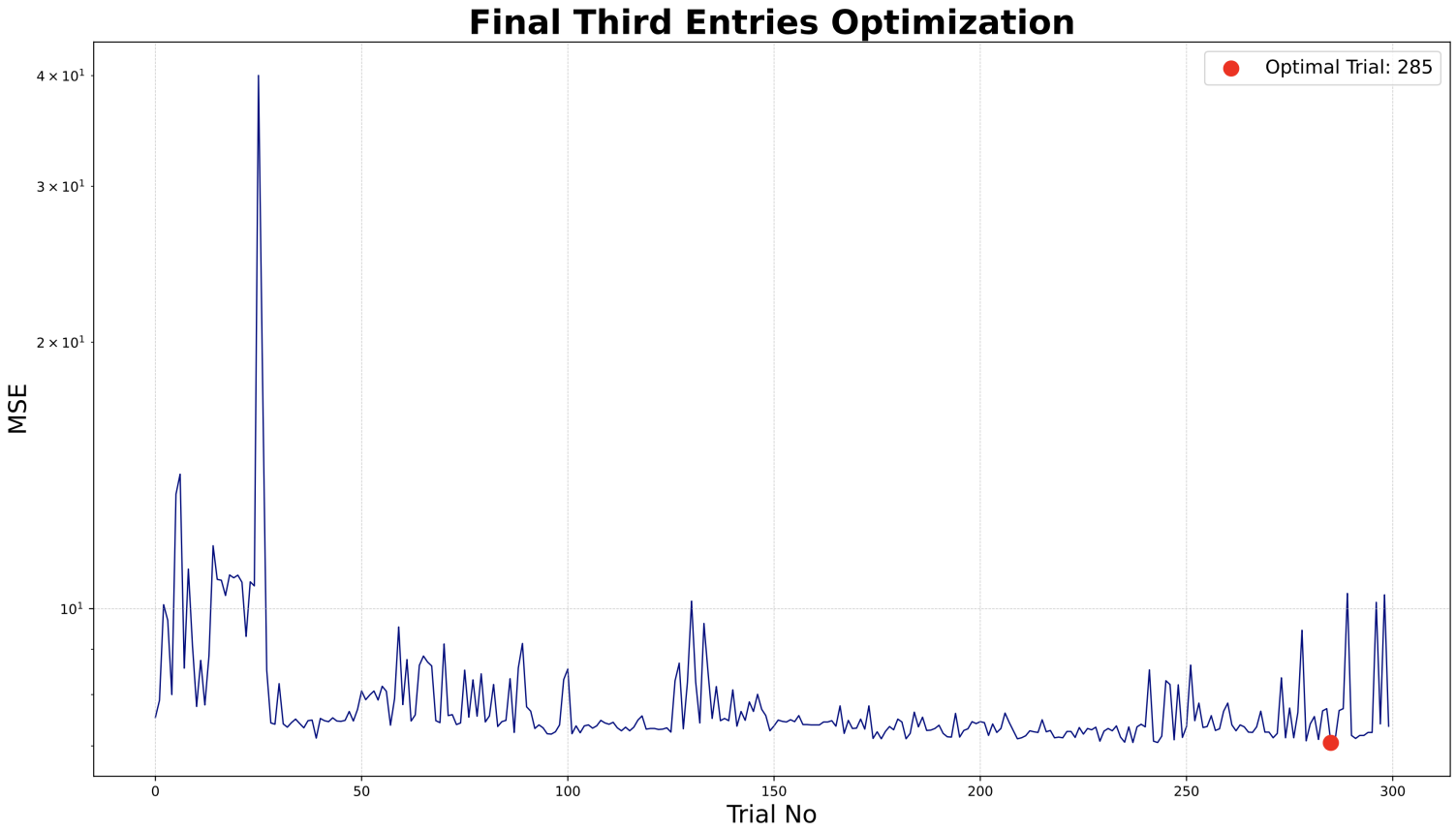


Figure A.13: Parameter tuning results for the final third entries.

Table A.6: Experimented values for the final third entries.

| **Parameter** | **Low** | **High** | **Best** |
|---|---|---|---|
| Out of Final Third Threshold | 0 | 500 | 128 |
| Possession Threshold | 0 | 125 | 107 |
| Pass Reception Duration | 0 | 125 | 14 |
| $zone_{\mathrm{r}}$ | 1 | 5 | 1.84 |

### A.3.7 Pressure on the Ball

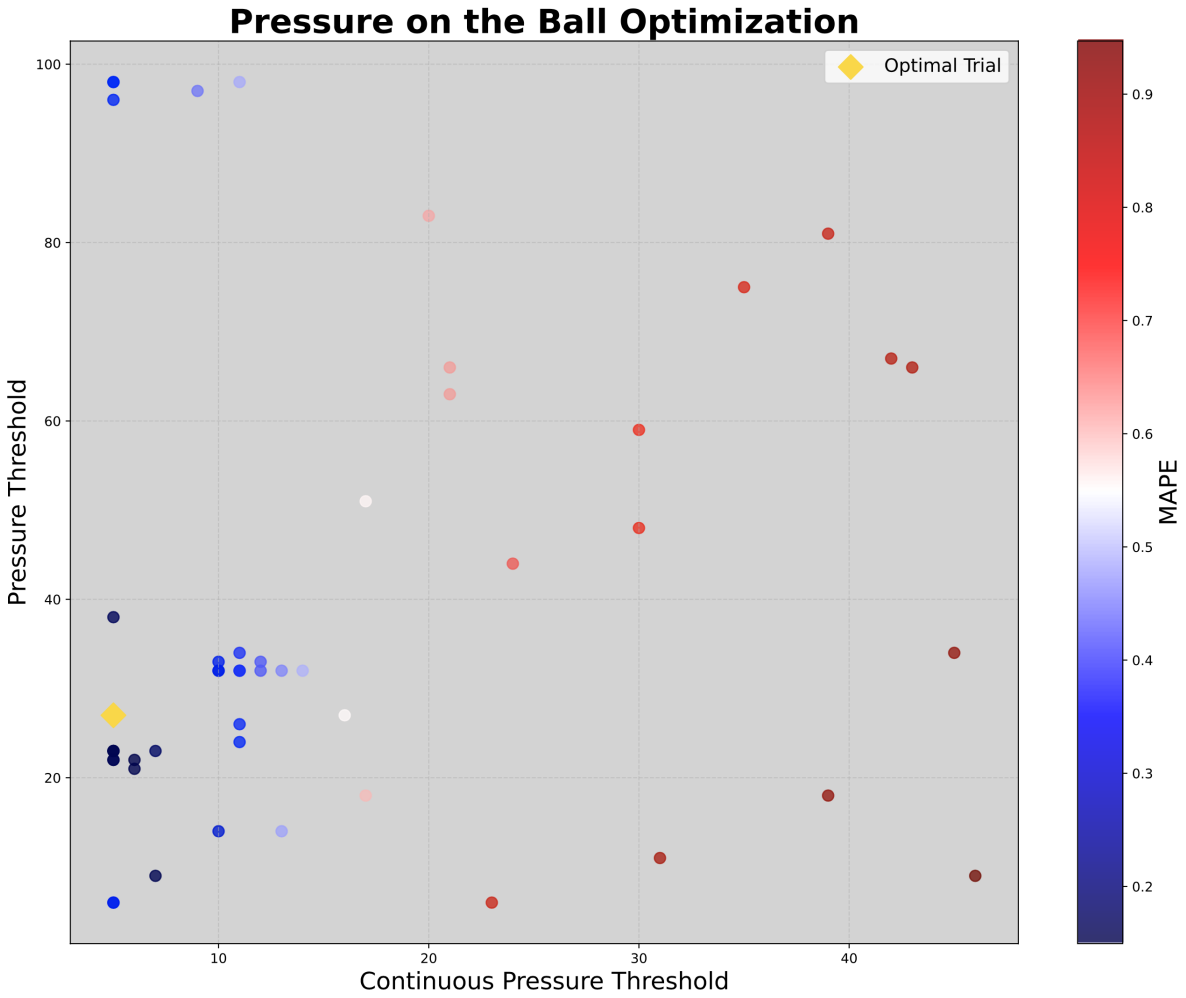


Figure A.14: Parameter tuning results for the pressure on the ball.

Table A.7: Experimented values for the pressure on the ball.

| Parameter | Low | High | Best |
|---|---|---|---|
| Pressure Threshold | 0 | 100 | 27 |
| Continuous Pressure Threshold | 0 | 50 | 5 |
| Pass Reception Duration | 0 | 125 | 14 |

### A.3.8 Forced Turnovers

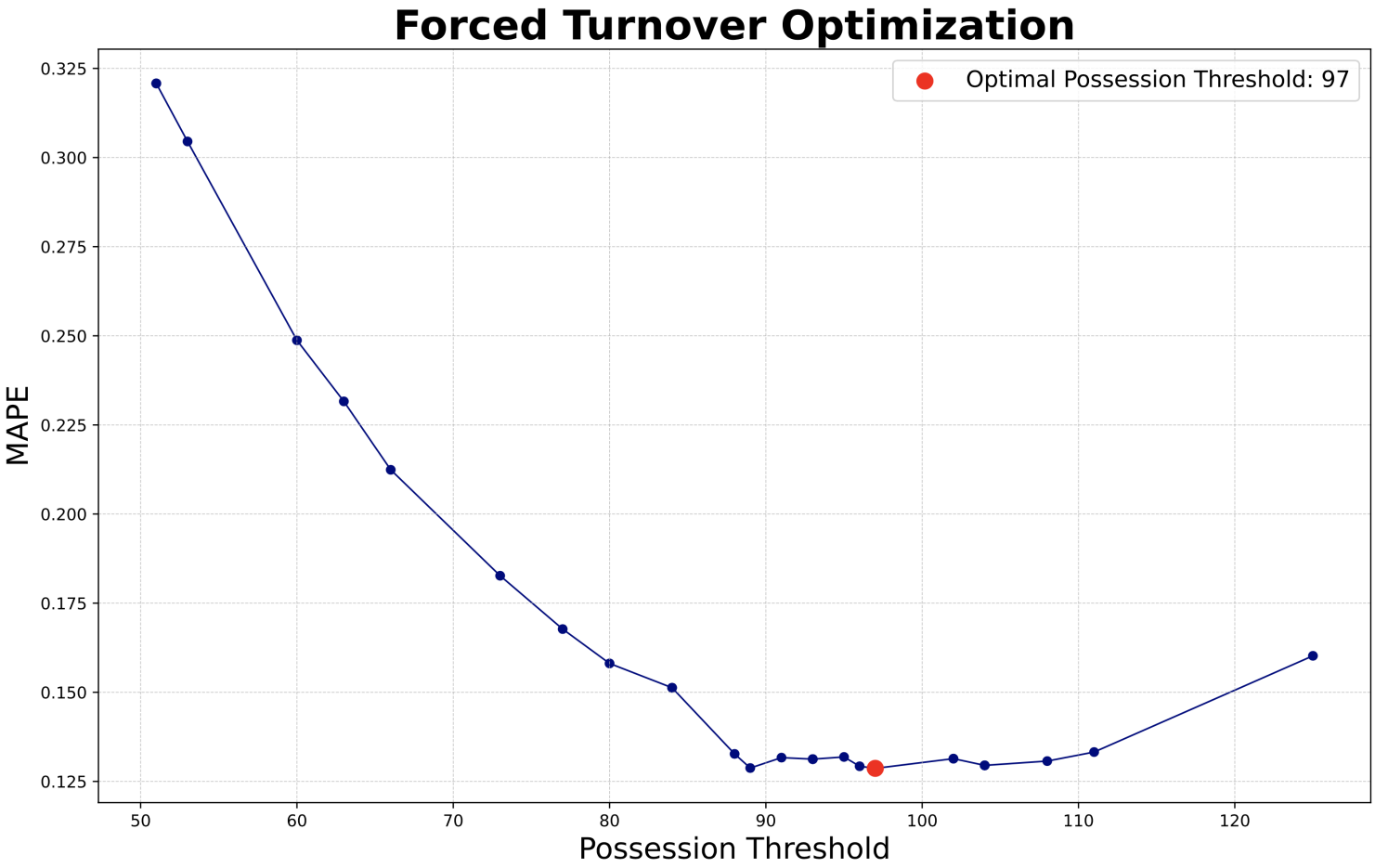


Figure A.15: Parameter tuning results for the forced turnovers.

Table A.8: Experimented values for the forced turnovers.

| Parameter | Low | High | Best |
|---|---|---|---|
| Possession Threshold | 50 | 125 | 97 |

### A.3.9 Expected Goal (xG)

For the xG model, the built models vary according to the EFI object used for the method call (Section 5.12). Therefore, the optimal values of the parameters are not constant. As a result, the parameters are provided along with the values they have been experimented with.

Table A.9: Logistic Regression

| **Parameter** | **Experimented values** |
|---|---|
| Penalty | l1, l2 |
| Regularization (C) | 0.1, 1, 10 |

Table A.10: Random Forest

| **Parameter** | **Experimented values** |
|---|---|
| Number of Estimators | 50, 100, 200 |
| Maximum Depth | 3, 5, 10 |

Table A.11: Gradient Boost Trees

| **Parameter** | **Experimented values** |
|---|---|
| Number of Estimators | 50, 100, 200 |
| Learning Rate | 0.01, 0.1, 1 |

Table A.12: Support Vector Machine

| **Parameter** | **Experimented values** |
|---|---|
| Kernel | Linear, Radial Basis Function (RBF) |
| Regularization (C) | 0.1, 1, 10 |

## A.4 Performance and Validation

The following abbreviations are common for all concepts: Match No (No), Prediction (P), True Value (T).

### A.4.1 Possession Control

The following abbreviations apply: Match No (No), Home Team In-Possession (Home), Away Team In-Possession (Away), Prediction (P), True Value (T).

Table A.13: Results for the possession control (%) (Matches 1-32).

| **No** | **Home(P)** | **In-Contest(P)** | **Away(P)** | **Home(T)** | **In-Contest(T)** | **Away(T)** |
|---|---|---|---|---|---|---|
| 1 | 42.1 | 7.3 | 50.6 | 47.0 | 5.9 | 47.1 |
| 2 | 44.1 | 9.9 | 46.0 | 45.4 | 6.6 | 48.0 |
| 3 | 72.3 | 8.0 | 19.7 | 70.6 | 5.4 | 24.0 |
| 4 | 51.2 | 9.1 | 39.6 | 54.1 | 6.0 | 39.9 |
| 5 | 56.2 | 8.6 | 35.3 | 56.0 | 5.2 | 38.8 |
| 6 | 54.5 | 11.6 | 34.0 | 55.7 | 6.0 | 38.3 |
| 7 | 54.6 | 13.8 | 31.6 | 55.7 | 7.0 | 37.3 |
| 8 | 62.0 | 12.1 | 25.9 | 61.7 | 7.4 | 30.9 |
| 9 | 46.4 | 9.7 | 43.9 | 49.6 | 6.2 | 44.2 |
| 10 | 74.6 | 7.5 | 17.9 | 73.8 | 4.4 | 21.8 |
| 11 | 65.6 | 11.7 | 22.7 | 68.5 | 5.3 | 26.2 |
| 12 | 32.1 | 10.3 | 57.7 | 35.2 | 5.8 | 59.1 |
| 13 | 43.6 | 9.6 | 46.8 | 45.6 | 6.4 | 48.0 |
| 14 | 49.7 | 11.4 | 39.0 | 52.1 | 5.3 | 42.6 |
| 15 | 55.5 | 9.3 | 35.2 | 57.5 | 6.0 | 36.5 |
| 16 | 53.9 | 11.5 | 34.7 | 54.4 | 6.1 | 39.5 |
| 17 | 51.6 | 11.4 | 33.9 | 58.0 | 6.3 | 35.7 |
| 18 | 42.6 | 9.0 | 48.4 | 44.4 | 5.1 | 50.6 |
| 19 | 48.0 | 12.7 | 39.3 | 51.3 | 7.0 | 41.7 |
| 20 | 51.5 | 8.2 | 40.2 | 51.2 | 5.9 | 42.9 |
| 21 | 50.3 | 18.2 | 31.5 | 52.8 | 7.4 | 39.9 |
| 22 | 30.4 | 11.8 | 57.8 | 33.2 | 7.5 | 59.4 |
| 23 | 44.1 | 10.9 | 45.0 | 46.6 | 4.9 | 48.5 |
| 24 | 51.0 | 12.1 | 36.9 | 56.1 | 7.0 | 36.9 |
| 25 | 48.5 | 11.5 | 39.9 | 50.6 | 6.3 | 43.0 |
| 26 | 57.0 | 10.0 | 33.0 | 59.2 | 5.7 | 35.1 |
| 27 | 41.6 | 11.5 | 46.9 | 44.1 | 7.0 | 48.8 |
| 28 | 56.1 | 10.9 | 33.0 | 56.4 | 7.2 | 36.4 |
| 29 | 38.1 | 12.9 | 49.1 | 41.1 | 6.5 | 52.5 |
| 30 | 53.9 | 13.8 | 32.3 | 54.7 | 6.4 | 38.9 |
| 31 | 51.1 | 8.8 | 40.1 | 51.1 | 6.0 | 42.9 |
| 32 | 53.2 | 11.7 | 35.2 | 58.4 | 5.9 | 35.8 |

Table A.14: Results for the possession control (%) (Matches 33-64).

| No | Home(P) | In-Contest(P) | Away(P) | Home(T) | In-Contest(T) | Away(T) |
|---|---|---|---|---|---|---|
| 33 | 33.1 | 8.2 | 58.7 | 35.5 | 5.6 | 58.9 |
| 34 | 43.0 | 11.2 | 45.8 | 44.4 | 6.7 | 48.9 |
| 35 | 51.3 | 16.3 | 32.4 | 54.5 | 7.7 | 37.9 |
| 36 | 54.1 | 7.1 | 38.7 | 57.4 | 5.1 | 37.5 |
| 37 | 24.5 | 15.0 | 60.5 | 32.9 | 6.3 | 60.7 |
| 38 | 31.0 | 12.6 | 56.4 | 33.4 | 7.8 | 58.8 |
| 39 | 24.1 | 8.4 | 67.4 | 28.4 | 4.9 | 66.7 |
| 40 | 29.2 | 15.7 | 55.1 | 36.1 | 8.7 | 55.2 |
| 41 | 43.5 | 8.5 | 48.0 | 46.8 | 5.0 | 48.2 |
| 42 | 52.2 | 10.9 | 36.8 | 55.0 | 6.9 | 38.1 |
| 43 | 14.7 | 7.1 | 78.2 | 17.4 | 4.6 | 78.0 |
| 44 | 27.6 | 11.8 | 60.6 | 30.9 | 6.1 | 63.0 |
| 45 | 46.2 | 14.1 | 39.7 | 48.1 | 7.8 | 44.1 |
| 46 | 34.5 | 9.8 | 55.8 | 37.8 | 4.9 | 57.3 |
| 47 | 45.3 | 13.5 | 41.2 | 47.6 | 6.4 | 46.0 |
| 48 | 31.6 | 12.2 | 56.2 | 37.1 | 7.2 | 55.7 |
| 49 | 33.3 | 12.3 | 54.4 | 37.5 | 6.6 | 55.9 |
| 50 | 53.2 | 11.0 | 35.8 | 57.8 | 6.3 | 35.9 |
| 51 | 55.0 | 9.3 | 35.8 | 56.4 | 5.7 | 37.9 |
| 52 | 48.7 | 8.4 | 42.8 | 49.3 | 4.7 | 46.0 |
| 53 | 35.7 | 12.4 | 51.9 | 38.9 | 6.2 | 54.9 |
| 54 | 47.7 | 7.9 | 44.4 | 49.7 | 5.0 | 45.3 |
| 55 | 22.1 | 9.5 | 68.4 | 25.4 | 5.9 | 68.6 |
| 56 | 43.6 | 7.6 | 48.8 | 45.4 | 5.5 | 49.1 |
| 57 | 45.8 | 9.5 | 44.7 | 47.7 | 6.9 | 45.5 |
| 58 | 45.2 | 9.4 | 45.4 | 48.0 | 5.9 | 46.1 |
| 59 | 54.1 | 9.8 | 36.1 | 53.9 | 5.9 | 40.2 |
| 60 | 22.9 | 11.2 | 66.0 | 27.6 | 5.4 | 67.0 |
| 61 | 34.4 | 11.6 | 54.0 | 39.9 | 7.1 | 53.0 |
| 62 | 34.1 | 10.5 | 55.5 | 37.7 | 6.6 | 55.6 |
| 63 | 45.2 | 9.7 | 45.1 | 49.1 | 6.1 | 44.8 |
| 64 | 46.5 | 12.9 | 40.6 | 48.7 | 7.7 | 43.6 |

### A.4.2 Phases of Play

The following abbreviations apply for the in-possession phases: Build Up Unopposed (B), Build Up Opposed (BO), Progression (P), Final Third (FT), Long Ball (LB), Attacking Transition (AT), Counter-Attack (CA), Set Piece (SP).

The following abbreviations apply for the out-of-possession phases: High Press (HP), Mid-Press(MP), Low Press (LP), High Block (HB), Mid-Block (MB), Low Block (LB),

Recovery (R), Defensive Transition (DT), Counter-Press (CP).

Table A.15: Results for the home team in-possession phases (%) (Matches 1-32).

| No | H-B(P) | H-BO(P) | H-P(P) | H-FT(P) | H-LB(P) | H-AT(P) | H-CA(P) | H-SP(P) |
|---|---|---|---|---|---|---|---|---|
| 1 | 37 | 17 | 17 | 9 | 2 | 12 | 2 | 6 |
| 2 | 22 | 12 | 14 | 26 | 3 | 14 | 3 | 11 |
| 3 | 35 | 12 | 24 | 17 | 2 | 7 | 2 | 3 |
| 4 | 30 | 9 | 22 | 18 | 3 | 12 | 4 | 6 |
| 5 | 28 | 8 | 30 | 23 | 1 | 7 | 2 | 3 |
| 6 | 36 | 9 | 17 | 18 | 1 | 11 | 3 | 8 |
| 7 | 32 | 8 | 19 | 21 | 1 | 13 | 2 | 7 |
| 8 | 34 | 13 | 15 | 18 | 1 | 11 | 3 | 7 |
| 9 | 38 | 19 | 12 | 10 | 4 | 12 | 2 | 6 |
| 10 | 35 | 10 | 28 | 19 | 0 | 6 | 1 | 2 |
| 11 | 34 | 12 | 21 | 19 | 0 | 7 | 1 | 7 |
| 12 | 29 | 15 | 14 | 15 | 4 | 15 | 4 | 8 |
| 13 | 27 | 14 | 23 | 17 | 2 | 11 | 4 | 6 |
| 14 | 33 | 8 | 22 | 16 | 3 | 12 | 3 | 6 |
| 15 | 30 | 11 | 20 | 20 | 1 | 11 | 2 | 6 |
| 16 | 24 | 10 | 25 | 23 | 1 | 10 | 3 | 7 |
| 17 | 32 | 13 | 16 | 20 | 1 | 12 | 4 | 7 |
| 18 | 33 | 14 | 17 | 12 | 2 | 13 | 4 | 6 |
| 19 | 39 | 14 | 17 | 10 | 2 | 11 | 3 | 7 |
| 20 | 36 | 13 | 17 | 17 | 2 | 9 | 2 | 6 |
| 21 | 21 | 10 | 20 | 17 | 6 | 16 | 3 | 10 |
| 22 | 24 | 11 | 10 | 17 | 10 | 18 | 4 | 11 |
| 23 | 31 | 11 | 17 | 20 | 4 | 9 | 3 | 6 |
| 24 | 26 | 12 | 21 | 18 | 2 | 11 | 4 | 11 |
| 25 | 27 | 5 | 33 | 19 | 1 | 11 | 2 | 5 |
| 26 | 43 | 12 | 19 | 13 | 0 | 8 | 4 | 4 |
| 27 | 25 | 14 | 16 | 22 | 4 | 14 | 4 | 4 |
| 28 | 36 | 20 | 16 | 13 | 1 | 10 | 3 | 6 |
| 29 | 25 | 13 | 11 | 21 | 8 | 16 | 4 | 6 |
| 30 | 25 | 6 | 21 | 30 | 2 | 10 | 2 | 7 |
| 31 | 28 | 7 | 23 | 21 | 2 | 12 | 3 | 7 |
| 32 | 27 | 14 | 15 | 21 | 4 | 12 | 3 | 7 |

Table A.16: Results for the home team in-possession phases (%) (Matches 33-64).

| No | H-B(P) | H-BO(P) | H-P(P) | H-FT(P) | H-LB(P) | H-AT(P) | H-CA(P) | H-SP(P) |
|---|---|---|---|---|---|---|---|---|
| 33 | 34 | 15 | 10 | 10 | 5 | 15 | 3 | 9 |
| 34 | 28 | 12 | 22 | 14 | 5 | 13 | 3 | 6 |
| 35 | 36 | 10 | 17 | 12 | 8 | 13 | 3 | 4 |
| 36 | 25 | 5 | 40 | 18 | 1 | 8 | 3 | 4 |
| 37 | 18 | 15 | 12 | 17 | 8 | 22 | 6 | 7 |
| 38 | 23 | 11 | 17 | 18 | 3 | 19 | 4 | 9 |
| 39 | 39 | 16 | 13 | 7 | 7 | 12 | 2 | 6 |
| 40 | 20 | 13 | 12 | 14 | 10 | 21 | 6 | 9 |
| 41 | 29 | 16 | 16 | 25 | 2 | 8 | 2 | 3 |
| 42 | 29 | 9 | 24 | 17 | 1 | 9 | 3 | 11 |
| 43 | 25 | 20 | 9 | 10 | 7 | 25 | 5 | 4 |
| 44 | 19 | 20 | 14 | 13 | 7 | 19 | 8 | 5 |
| 45 | 20 | 11 | 21 | 21 | 2 | 15 | 4 | 9 |
| 46 | 32 | 15 | 11 | 15 | 7 | 13 | 4 | 7 |
| 47 | 31 | 13 | 18 | 16 | 5 | 12 | 4 | 4 |
| 48 | 28 | 14 | 15 | 14 | 6 | 15 | 2 | 9 |
| 49 | 31 | 17 | 13 | 15 | 3 | 15 | 5 | 5 |
| 50 | 31 | 17 | 19 | 19 | 1 | 8 | 2 | 6 |
| 51 | 42 | 13 | 13 | 14 | 4 | 10 | 2 | 5 |
| 52 | 25 | 11 | 22 | 25 | 3 | 10 | 3 | 4 |
| 53 | 22 | 14 | 17 | 19 | 6 | 16 | 5 | 6 |
| 54 | 31 | 12 | 16 | 21 | 2 | 10 | 3 | 8 |
| 55 | 19 | 21 | 11 | 12 | 7 | 23 | 5 | 7 |
| 56 | 30 | 16 | 16 | 15 | 6 | 11 | 3 | 7 |
| 57 | 38 | 11 | 19 | 12 | 4 | 10 | 2 | 7 |
| 58 | 30 | 15 | 22 | 15 | 2 | 9 | 3 | 6 |
| 59 | 35 | 11 | 18 | 18 | 2 | 10 | 2 | 7 |
| 60 | 24 | 22 | 8 | 11 | 7 | 19 | 5 | 7 |
| 61 | 23 | 14 | 20 | 17 | 7 | 13 | 3 | 7 |
| 62 | 29 | 11 | 20 | 13 | 6 | 15 | 4 | 6 |
| 63 | 36 | 12 | 15 | 14 | 4 | 13 | 4 | 7 |
| 64 | 25 | 15 | 14 | 21 | 2 | 13 | 4 | 8 |

Table A.17: FIFA results for the home team in-possession phases (%) (Matches 1-32).

| No | H-B(T) | H-BO(T) | H-P(T) | H-FT(T) | H-LB(T) | H-AT(T) | H-CA(T) | H-SP(T) |
|---|---|---|---|---|---|---|---|---|
| 1 | 40 | 17 | 15 | 9 | 2 | 14 | 1 | 5 |
| 2 | 29 | 13 | 12 | 31 | 4 | 16 | 3 | 13 |
| 3 | 41 | 20 | 14 | 19 | 2 | 8 | 1 | 5 |
| 4 | 40 | 13 | 15 | 22 | 2 | 12 | 2 | 5 |
| 5 | 44 | 19 | 14 | 24 | 1 | 7 | 1 | 6 |
| 6 | 41 | 13 | 15 | 22 | 3 | 12 | 1 | 9 |
| 7 | 43 | 12 | 14 | 24 | 2 | 12 | 1 | 12 |
| 8 | 37 | 16 | 14 | 21 | 1 | 11 | 1 | 7 |
| 9 | 32 | 19 | 9 | 12 | 5 | 12 | 2 | 6 |
| 10 | 42 | 19 | 16 | 22 | 0 | 5 | 0 | 4 |
| 11 | 42 | 19 | 13 | 23 | 1 | 8 | 1 | 8 |
| 12 | 30 | 15 | 13 | 16 | 5 | 17 | 2 | 9 |
| 13 | 31 | 14 | 20 | 20 | 1 | 12 | 1 | 6 |
| 14 | 45 | 12 | 12 | 20 | 2 | 14 | 2 | 8 |
| 15 | 41 | 17 | 11 | 25 | 1 | 12 | 2 | 5 |
| 16 | 35 | 18 | 14 | 26 | 2 | 11 | 3 | 6 |
| 17 | 33 | 17 | 17 | 22 | 4 | 16 | 1 | 8 |
| 18 | 31 | 11 | 15 | 14 | 5 | 11 | 2 | 7 |
| 19 | 43 | 17 | 15 | 11 | 3 | 8 | 0 | 6 |
| 20 | 41 | 15 | 15 | 20 | 2 | 11 | 1 | 4 |
| 21 | 30 | 16 | 13 | 20 | 5 | 15 | 2 | 8 |
| 22 | 22 | 9 | 9 | 24 | 10 | 24 | 3 | 16 |
| 23 | 35 | 16 | 12 | 23 | 5 | 10 | 2 | 6 |
| 24 | 36 | 20 | 12 | 20 | 3 | 11 | 1 | 8 |
| 25 | 47 | 15 | 12 | 21 | 0 | 12 | 1 | 5 |
| 26 | 47 | 16 | 14 | 14 | 1 | 10 | 0 | 7 |
| 27 | 25 | 14 | 12 | 26 | 3 | 14 | 3 | 12 |
| 28 | 32 | 18 | 16 | 14 | 2 | 12 | 2 | 9 |
| 29 | 23 | 11 | 13 | 23 | 9 | 16 | 1 | 9 |
| 30 | 34 | 12 | 17 | 35 | 2 | 11 | 2 | 6 |
| 31 | 39 | 15 | 14 | 28 | 2 | 11 | 2 | 14 |
| 32 | 31 | 18 | 10 | 26 | 4 | 14 | 2 | 8 |

Table A.18: FIFA results for the home team in-possession phases (%) (Matches 33-64).

| No | H-B(T) | H-BO(T) | H-P(T) | H-FT(T) | H-LB(T) | H-AT(T) | H-CA(T) | H-SP(T) |
|---|---|---|---|---|---|---|---|---|
| 33 | 34 | 17 | 9 | 13 | 6 | 16 | 1 | 9 |
| 34 | 31 | 14 | 14 | 16 | 4 | 17 | 2 | 6 |
| 35 | 40 | 11 | 13 | 14 | 6 | 12 | 3 | 6 |
| 36 | 49 | 20 | 12 | 22 | 0 | 7 | 1 | 4 |
| 37 | 14 | 10 | 10 | 21 | 11 | 27 | 2 | 12 |
| 38 | 22 | 7 | 13 | 21 | 3 | 24 | 4 | 10 |
| 39 | 39 | 15 | 8 | 9 | 7 | 15 | 1 | 8 |
| 40 | 14 | 7 | 12 | 16 | 11 | 22 | 2 | 14 |
| 41 | 28 | 16 | 16 | 27 | 3 | 10 | 0 | 5 |
| 42 | 39 | 16 | 16 | 17 | 2 | 11 | 2 | 5 |
| 43 | 14 | 8 | 12 | 13 | 8 | 21 | 6 | 6 |
| 44 | 10 | 7 | 12 | 14 | 9 | 20 | 2 | 8 |
| 45 | 27 | 16 | 12 | 25 | 4 | 16 | 1 | 9 |
| 46 | 32 | 13 | 13 | 21 | 5 | 13 | 4 | 8 |
| 47 | 35 | 15 | 14 | 18 | 5 | 14 | 1 | 6 |
| 48 | 29 | 11 | 15 | 15 | 8 | 16 | 1 | 7 |
| 49 | 27 | 11 | 11 | 18 | 5 | 21 | 5 | 5 |
| 50 | 34 | 22 | 12 | 22 | 2 | 11 | 1 | 5 |
| 51 | 41 | 16 | 12 | 18 | 5 | 11 | 2 | 6 |
| 52 | 35 | 17 | 12 | 28 | 3 | 11 | 3 | 6 |
| 53 | 25 | 12 | 13 | 25 | 6 | 16 | 3 | 9 |
| 54 | 35 | 16 | 13 | 26 | 2 | 12 | 3 | 15 |
| 55 | 11 | 11 | 9 | 15 | 9 | 29 | 4 | 10 |
| 56 | 34 | 18 | 11 | 18 | 5 | 12 | 2 | 9 |
| 57 | 45 | 16 | 12 | 14 | 4 | 9 | 1 | 7 |
| 58 | 38 | 17 | 13 | 17 | 2 | 12 | 1 | 5 |
| 59 | 44 | 18 | 11 | 21 | 2 | 9 | 1 | 5 |
| 60 | 16 | 11 | 11 | 11 | 9 | 25 | 4 | 7 |
| 61 | 27 | 16 | 10 | 19 | 6 | 14 | 3 | 11 |
| 62 | 35 | 10 | 11 | 16 | 5 | 18 | 4 | 6 |
| 63 | 38 | 11 | 14 | 15 | 3 | 14 | 1 | 5 |
| 64 | 24 | 14 | 15 | 26 | 3 | 17 | 1 | 8 |

Table A.19: Results for the away team in-possession phases (%) (Matches 1-32).

| No | A-B(T) | A-BO(T) | A-P(T) | A-FT(T) | A-LB(T) | A-AT(T) | A-CA(T) | A-SP(T) |
|---|---|---|---|---|---|---|---|---|
| 1 | 36 | 14 | 12 | 15 | 3 | 12 | 4 | 7 |
| 2 | 34 | 11 | 17 | 20 | 3 | 9 | 2 | 6 |
| 3 | 23 | 19 | 12 | 14 | 3 | 23 | 3 | 7 |
| 4 | 28 | 16 | 12 | 16 | 5 | 15 | 3 | 8 |
| 5 | 40 | 14 | 15 | 10 | 4 | 12 | 3 | 5 |
| 6 | 30 | 20 | 13 | 10 | 4 | 13 | 4 | 9 |
| 7 | 31 | 10 | 12 | 12 | 11 | 16 | 5 | 7 |
| 8 | 24 | 14 | 12 | 16 | 6 | 22 | 4 | 9 |
| 9 | 26 | 11 | 18 | 25 | 3 | 10 | 3 | 6 |
| 10 | 22 | 18 | 14 | 13 | 7 | 18 | 5 | 8 |
| 11 | 26 | 20 | 8 | 13 | 5 | 18 | 6 | 8 |
| 12 | 38 | 13 | 18 | 12 | 1 | 9 | 2 | 9 |
| 13 | 33 | 13 | 18 | 17 | 4 | 10 | 2 | 4 |
| 14 | 26 | 8 | 17 | 20 | 9 | 14 | 4 | 5 |
| 15 | 23 | 21 | 17 | 12 | 5 | 15 | 4 | 7 |
| 16 | 30 | 15 | 18 | 13 | 5 | 12 | 2 | 6 |
| 17 | 17 | 15 | 11 | 23 | 7 | 20 | 6 | 7 |
| 18 | 29 | 7 | 24 | 20 | 4 | 10 | 2 | 5 |
| 19 | 26 | 16 | 14 | 15 | 3 | 15 | 3 | 11 |
| 20 | 35 | 13 | 14 | 17 | 3 | 12 | 3 | 7 |
| 21 | 24 | 14 | 13 | 17 | 7 | 19 | 4 | 6 |
| 22 | 26 | 9 | 21 | 28 | 0 | 8 | 2 | 8 |
| 23 | 37 | 7 | 22 | 17 | 1 | 10 | 3 | 5 |
| 24 | 32 | 9 | 21 | 15 | 5 | 14 | 2 | 6 |
| 25 | 37 | 16 | 13 | 6 | 5 | 13 | 3 | 10 |
| 26 | 30 | 16 | 14 | 16 | 3 | 13 | 4 | 8 |
| 27 | 26 | 16 | 20 | 18 | 2 | 11 | 4 | 6 |
| 28 | 27 | 20 | 12 | 17 | 2 | 16 | 5 | 5 |
| 29 | 25 | 14 | 20 | 22 | 2 | 13 | 5 | 4 |
| 30 | 24 | 15 | 17 | 15 | 5 | 15 | 3 | 9 |
| 31 | 34 | 19 | 17 | 12 | 0 | 12 | 3 | 6 |
| 32 | 27 | 11 | 17 | 18 | 5 | 14 | 3 | 8 |

Table A.20: Results for the away team in-possession phases (%) (Matches 33-64).

| No | A-B(T) | A-BO(T) | A-P(T) | A-FT(T) | A-LB(T) | A-AT(T) | A-CA(T) | A-SP(T) |
|---|---|---|---|---|---|---|---|---|
| 33 | 36 | 12 | 20 | 14 | 1 | 10 | 3 | 6 |
| 34 | 27 | 10 | 20 | 20 | 3 | 11 | 3 | 9 |
| 35 | 20 | 12 | 13 | 22 | 4 | 18 | 5 | 10 |
| 36 | 25 | 19 | 16 | 20 | 1 | 11 | 3 | 7 |
| 37 | 31 | 10 | 18 | 20 | 3 | 11 | 3 | 6 |
| 38 | 26 | 9 | 26 | 20 | 2 | 9 | 1 | 8 |
| 39 | 26 | 5 | 31 | 28 | 0 | 6 | 2 | 4 |
| 40 | 29 | 8 | 14 | 20 | 3 | 14 | 3 | 12 |
| 41 | 34 | 12 | 21 | 18 | 1 | 11 | 2 | 3 |
| 42 | 29 | 21 | 9 | 14 | 5 | 14 | 3 | 7 |
| 43 | 31 | 6 | 33 | 21 | 0 | 5 | 2 | 3 |
| 44 | 19 | 5 | 31 | 32 | 0 | 9 | 2 | 4 |
| 45 | 23 | 15 | 17 | 16 | 5 | 15 | 5 | 8 |
| 46 | 30 | 11 | 22 | 22 | 3 | 8 | 2 | 5 |
| 47 | 27 | 15 | 16 | 17 | 4 | 14 | 2 | 8 |
| 48 | 33 | 14 | 16 | 20 | 0 | 9 | 4 | 6 |
| 49 | 30 | 11 | 20 | 23 | 1 | 10 | 2 | 6 |
| 50 | 44 | 14 | 10 | 11 | 2 | 11 | 2 | 8 |
| 51 | 31 | 15 | 15 | 16 | 3 | 13 | 4 | 7 |
| 52 | 35 | 11 | 20 | 15 | 4 | 12 | 3 | 4 |
| 53 | 32 | 9 | 21 | 17 | 3 | 11 | 3 | 5 |
| 54 | 27 | 8 | 22 | 25 | 3 | 9 | 3 | 4 |
| 55 | 29 | 4 | 38 | 19 | 0 | 6 | 1 | 4 |
| 56 | 34 | 16 | 19 | 17 | 2 | 7 | 2 | 5 |
| 57 | 26 | 14 | 20 | 17 | 3 | 10 | 3 | 9 |
| 58 | 25 | 9 | 25 | 22 | 1 | 11 | 2 | 6 |
| 59 | 24 | 13 | 22 | 17 | 4 | 13 | 3 | 8 |
| 60 | 34 | 4 | 28 | 19 | 1 | 7 | 2 | 6 |
| 61 | 31 | 11 | 26 | 18 | 1 | 7 | 1 | 5 |
| 62 | 36 | 12 | 22 | 18 | 0 | 7 | 2 | 5 |
| 63 | 30 | 15 | 18 | 20 | 2 | 9 | 3 | 5 |
| 64 | 32 | 11 | 17 | 14 | 4 | 14 | 3 | 9 |

Table A.21: FIFA results for the away team in-possession phases (%) (Matches 1-32).

| No | A-B(T) | A-BO(T) | A-P(T) | A-FT(T) | A-LB(T) | A-AT(T) | A-CA(T) | A-SP(T) |
|---|---|---|---|---|---|---|---|---|
| 1 | 35 | 18 | 11 | 19 | 5 | 13 | 2 | 8 |
| 2 | 38 | 11 | 13 | 21 | 3 | 13 | 1 | 9 |
| 3 | 14 | 8 | 10 | 17 | 8 | 25 | 4 | 9 |
| 4 | 27 | 13 | 16 | 17 | 6 | 18 | 3 | 8 |
| 5 | 37 | 14 | 11 | 13 | 4 | 10 | 1 | 6 |
| 6 | 29 | 12 | 14 | 12 | 6 | 20 | 3 | 8 |
| 7 | 30 | 10 | 10 | 13 | 11 | 17 | 2 | 10 |
| 8 | 23 | 8 | 11 | 21 | 8 | 28 | 2 | 8 |
| 9 | 31 | 15 | 15 | 28 | 3 | 9 | 2 | 8 |
| 10 | 17 | 12 | 15 | 14 | 9 | 20 | 3 | 8 |
| 11 | 22 | 12 | 15 | 16 | 8 | 21 | 3 | 7 |
| 12 | 43 | 17 | 12 | 13 | 1 | 12 | 1 | 6 |
| 13 | 37 | 14 | 16 | 19 | 5 | 10 | 0 | 6 |
| 14 | 33 | 13 | 15 | 25 | 6 | 12 | 1 | 11 |
| 15 | 23 | 20 | 15 | 13 | 5 | 18 | 2 | 6 |
| 16 | 31 | 15 | 11 | 14 | 5 | 12 | 1 | 6 |
| 17 | 13 | 8 | 15 | 29 | 6 | 22 | 5 | 10 |
| 18 | 38 | 15 | 14 | 24 | 4 | 10 | 1 | 9 |
| 19 | 29 | 13 | 12 | 18 | 4 | 18 | 2 | 9 |
| 20 | 36 | 12 | 14 | 18 | 3 | 14 | 2 | 4 |
| 21 | 19 | 8 | 14 | 22 | 10 | 23 | 1 | 9 |
| 22 | 34 | 18 | 17 | 30 | 1 | 11 | 1 | 10 |
| 23 | 47 | 11 | 16 | 20 | 1 | 9 | 1 | 8 |
| 24 | 36 | 14 | 11 | 17 | 6 | 15 | 1 | 10 |
| 25 | 39 | 15 | 8 | 8 | 6 | 14 | 1 | 6 |
| 26 | 29 | 16 | 13 | 18 | 5 | 14 | 2 | 8 |
| 27 | 30 | 20 | 15 | 25 | 4 | 12 | 1 | 7 |
| 28 | 22 | 15 | 9 | 22 | 5 | 20 | 1 | 7 |
| 29 | 26 | 11 | 14 | 25 | 3 | 14 | 1 | 6 |
| 30 | 28 | 17 | 12 | 17 | 4 | 18 | 2 | 7 |
| 31 | 37 | 17 | 15 | 13 | 1 | 11 | 1 | 6 |
| 32 | 28 | 10 | 16 | 22 | 4 | 19 | 1 | 8 |

Table A.22: FIFA results for the away team in-possession phases (%) (Matches 33-64).

| No | A-B(T) | A-BO(T) | A-P(T) | A-FT(T) | A-LB(T) | A-AT(T) | A-CA(T) | A-SP(T) |
|---|---|---|---|---|---|---|---|---|
| 33 | 40 | 20 | 11 | 19 | 2 | 12 | 2 | 5 |
| 34 | 34 | 15 | 14 | 26 | 3 | 15 | 1 | 10 |
| 35 | 21 | 10 | 2 | 25 | 7 | 26 | 2 | 10 |
| 36 | 28 | 20 | 12 | 21 | 4 | 13 | 1 | 9 |
| 37 | 38 | 13 | 17 | 24 | 3 | 11 | 1 | 5 |
| 38 | 42 | 20 | 13 | 22 | 2 | 9 | 1 | 9 |
| 39 | 49 | 20 | 11 | 32 | 0 | 7 | 2 | 10 |
| 40 | 29 | 11 | 18 | 25 | 3 | 20 | 2 | 9 |
| 41 | 41 | 19 | 11 | 19 | 2 | 10 | 2 | 3 |
| 42 | 26 | 15 | 12 | 16 | 6 | 21 | 3 | 7 |
| 43 | 52 | 23 | 11 | 22 | 0 | 5 | 0 | 3 |
| 44 | 43 | 15 | 15 | 36 | 0 | 10 | 2 | 5 |
| 45 | 25 | 15 | 14 | 20 | 4 | 16 | 4 | 8 |
| 46 | 38 | 17 | 13 | 26 | 3 | 9 | 1 | 5 |
| 47 | 30 | 11 | 15 | 19 | 4 | 15 | 1 | 6 |
| 48 | 33 | 12 | 16 | 25 | 1 | 13 | 2 | 6 |
| 49 | 38 | 17 | 13 | 27 | 2 | 10 | 1 | 8 |
| 50 | 43 | 14 | 11 | 13 | 5 | 12 | 1 | 8 |
| 51 | 31 | 17 | 14 | 19 | 4 | 18 | 2 | 8 |
| 52 | 39 | 14 | 14 | 17 | 3 | 10 | 1 | 8 |
| 53 | 43 | 14 | 14 | 21 | 3 | 13 | 1 | 5 |
| 54 | 38 | 16 | 16 | 28 | 2 | 8 | 1 | 5 |
| 55 | 53 | 15 | 15 | 20 | 0 | 7 | 1 | 6 |
| 56 | 35 | 19 | 17 | 19 | 2 | 9 | 1 | 11 |
| 57 | 33 | 21 | 12 | 21 | 4 | 13 | 1 | 10 |
| 58 | 41 | 19 | 11 | 25 | 1 | 11 | 2 | 7 |
| 59 | 30 | 14 | 11 | 22 | 5 | 19 | 5 | 6 |
| 60 | 47 | 17 | 13 | 23 | 1 | 7 | 0 | 8 |
| 61 | 39 | 20 | 14 | 21 | 1 | 8 | 1 | 6 |
| 62 | 45 | 17 | 14 | 19 | 1 | 9 | 1 | 4 |
| 63 | 33 | 18 | 13 | 20 | 2 | 14 | 2 | 7 |
| 64 | 36 | 14 | 10 | 18 | 5 | 16 | 2 | 8 |

Table A.23: Results for the home team out-of-possession phases (%) (Matches 1-32).

| No | H-HP(P) | H-MP(P) | H-LP(P) | H-HB(P) | H-MB(P) | H-LB(P) | H-R(P) | H-DT(P) | H-CP(P) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 7 | 2 | 6 | 28 | 13 | 4 | 12 | 8 |
| 2 | 5 | 6 | 2 | 9 | 28 | 22 | 1 | 9 | 8 |
| 3 | 11 | 8 | 2 | 7 | 16 | 7 | 6 | 23 | 17 |
| 4 | 8 | 7 | 3 | 11 | 23 | 13 | 5 | 15 | 10 |
| 5 | 7 | 8 | 2 | 9 | 30 | 5 | 6 | 12 | 6 |
| 6 | 12 | 8 | 2 | 11 | 19 | 10 | 3 | 13 | 10 |
| 7 | 7 | 8 | 2 | 7 | 22 | 9 | 6 | 16 | 10 |
| 8 | 8 | 7 | 2 | 7 | 21 | 9 | 6 | 22 | 15 |
| 9 | 5 | 6 | 2 | 6 | 26 | 16 | 4 | 10 | 7 |
| 10 | 11 | 10 | 2 | 12 | 17 | 10 | 4 | 18 | 14 |
| 11 | 15 | 5 | 1 | 11 | 14 | 8 | 6 | 18 | 12 |
| 12 | 4 | 7 | 2 | 5 | 42 | 14 | 3 | 9 | 6 |
| 13 | 7 | 6 | 3 | 11 | 24 | 13 | 3 | 10 | 7 |
| 14 | 4 | 5 | 2 | 5 | 25 | 20 | 4 | 14 | 10 |
| 15 | 10 | 9 | 1 | 10 | 25 | 8 | 4 | 15 | 10 |
| 16 | 9 | 7 | 2 | 12 | 24 | 14 | 3 | 12 | 9 |
| 17 | 9 | 7 | 3 | 4 | 15 | 9 | 7 | 20 | 13 |
| 18 | 4 | 5 | 2 | 7 | 24 | 30 | 4 | 10 | 6 |
| 19 | 5 | 10 | 2 | 8 | 26 | 11 | 6 | 15 | 9 |
| 20 | 6 | 6 | 1 | 6 | 28 | 15 | 5 | 12 | 7 |
| 21 | 9 | 7 | 3 | 6 | 17 | 10 | 4 | 19 | 16 |
| 22 | 3 | 6 | 3 | 8 | 32 | 22 | 2 | 8 | 6 |
| 23 | 2 | 5 | 2 | 7 | 39 | 21 | 3 | 10 | 7 |
| 24 | 4 | 7 | 2 | 6 | 26 | 17 | 5 | 14 | 8 |
| 25 | 7 | 9 | 1 | 15 | 26 | 7 | 5 | 13 | 8 |
| 26 | 8 | 8 | 2 | 9 | 25 | 6 | 3 | 13 | 10 |
| 27 | 8 | 8 | 2 | 9 | 22 | 19 | 4 | 11 | 7 |
| 28 | 11 | 7 | 3 | 14 | 17 | 13 | 3 | 16 | 13 |
| 29 | 6 | 6 | 2 | 6 | 23 | 13 | 4 | 13 | 9 |
| 30 | 8 | 8 | 2 | 9 | 23 | 15 | 3 | 15 | 12 |
| 31 | 10 | 6 | 2 | 10 | 26 | 11 | 4 | 12 | 8 |
| 32 | 5 | 9 | 2 | 9 | 20 | 16 | 3 | 14 | 12 |

Table A.24: Results for the home team out-of-possession phases (%) (Matches 33-64).

| No | H-HP(P) | H-MP(P) | H-LP(P) | H-HB(P) | H-MB(P) | H-LB(P) | H-R(P) | H-DT(P) | H-CP(P) |
|---|---|---|---|---|---|---|---|---|---|
| 33 | 4 | 7 | 2 | 8 | 32 | 17 | 4 | 10 | 6 |
| 34 | 5 | 7 | 3 | 3 | 26 | 17 | 3 | 11 | 7 |
| 35 | 8 | 8 | 3 | 6 | 18 | 9 | 5 | 18 | 13 |
| 36 | 9 | 8 | 2 | 8 | 20 | 17 | 4 | 11 | 6 |
| 37 | 4 | 5 | 2 | 7 | 27 | 26 | 3 | 11 | 8 |
| 38 | 4 | 6 | 2 | 7 | 27 | 31 | 3 | 9 | 6 |
| 39 | 2 | 4 | 2 | 3 | 37 | 34 | 3 | 6 | 4 |
| 40 | 3 | 7 | 3 | 10 | 26 | 13 | 5 | 14 | 10 |
| 41 | 6 | 5 | 2 | 10 | 27 | 22 | 5 | 11 | 6 |
| 42 | 13 | 7 | 2 | 15 | 16 | 6 | 5 | 14 | 9 |
| 43 | 2 | 4 | 2 | 3 | 38 | 36 | 1 | 5 | 3 |
| 44 | 2 | 3 | 3 | 2 | 25 | 39 | 2 | 9 | 7 |
| 45 | 9 | 7 | 2 | 6 | 20 | 13 | 3 | 15 | 12 |
| 46 | 4 | 5 | 2 | 5 | 28 | 26 | 2 | 8 | 6 |
| 47 | 8 | 7 | 2 | 6 | 22 | 9 | 5 | 14 | 9 |
| 48 | 5 | 7 | 2 | 10 | 27 | 15 | 3 | 9 | 6 |
| 49 | 4 | 5 | 3 | 4 | 33 | 22 | 4 | 10 | 6 |
| 50 | 8 | 5 | 2 | 17 | 16 | 7 | 4 | 11 | 7 |
| 51 | 8 | 7 | 2 | 10 | 23 | 17 | 5 | 13 | 8 |
| 52 | 5 | 5 | 2 | 6 | 34 | 14 | 5 | 12 | 7 |
| 53 | 5 | 6 | 2 | 7 | 28 | 26 | 3 | 11 | 7 |
| 54 | 4 | 4 | 2 | 10 | 25 | 26 | 4 | 9 | 5 |
| 55 | 2 | 4 | 2 | 3 | 36 | 37 | 2 | 6 | 4 |
| 56 | 7 | 7 | 2 | 10 | 29 | 17 | 2 | 7 | 5 |
| 57 | 6 | 9 | 2 | 5 | 34 | 19 | 4 | 10 | 7 |
| 58 | 4 | 6 | 3 | 5 | 26 | 31 | 5 | 11 | 6 |
| 59 | 8 | 8 | 2 | 6 | 22 | 22 | 6 | 13 | 8 |
| 60 | 1 | 5 | 3 | 4 | 40 | 31 | 1 | 7 | 5 |
| 61 | 6 | 7 | 2 | 9 | 29 | 18 | 2 | 7 | 5 |
| 62 | 4 | 7 | 3 | 8 | 33 | 18 | 1 | 7 | 6 |
| 63 | 8 | 7 | 3 | 11 | 23 | 18 | 4 | 9 | 5 |
| 64 | 5 | 7 | 2 | 4 | 36 | 15 | 5 | 14 | 9 |

Table A.25: FIFA results for the home team out-of-possession phases (%) (Matches 1-32).

| No | H-HP(T) | H-MP(T) | H-LP(T) | H-HB(T) | H-MB(T) | H-LB(T) | H-R(T) | H-DT(T) | H-CP(T) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 4 | 0 | 3 | 33 | 13 | 4 | 13 | 10 |
| 2 | 4 | 4 | 1 | 5 | 26 | 20 | 3 | 13 | 8 |
| 3 | 7 | 3 | 0 | 6 | 8 | 8 | 7 | 25 | 16 |
| 4 | 7 | 4 | 0 | 9 | 21 | 10 | 7 | 18 | 10 |
| 5 | 6 | 8 | 0 | 4 | 31 | 8 | 2 | 10 | 6 |
| 6 | 9 | 6 | 0 | 7 | 11 | 9 | 6 | 20 | 14 |
| 7 | 5 | 5 | 1 | 5 | 20 | 10 | 4 | 17 | 11 |
| 8 | 4 | 4 | 1 | 6 | 20 | 10 | 2 | 28 | 17 |
| 9 | 6 | 4 | 1 | 6 | 17 | 24 | 5 | 9 | 7 |
| 10 | 11 | 6 | 2 | 6 | 8 | 7 | 7 | 20 | 15 |
| 11 | 11 | 2 | 0 | 11 | 8 | 7 | 4 | 21 | 13 |
| 12 | 3 | 6 | 0 | 2 | 42 | 15 | 3 | 12 | 8 |
| 13 | 6 | 5 | 1 | 9 | 23 | 17 | 4 | 10 | 7 |
| 14 | 4 | 4 | 1 | 4 | 20 | 21 | 4 | 12 | 10 |
| 15 | 9 | 8 | 0 | 5 | 18 | 11 | 6 | 18 | 13 |
| 16 | 11 | 6 | 1 | 5 | 19 | 15 | 4 | 12 | 9 |
| 17 | 4 | 5 | 0 | 2 | 6 | 15 | 6 | 22 | 13 |
| 18 | 4 | 4 | 1 | 3 | 19 | 34 | 4 | 10 | 8 |
| 19 | 4 | 10 | 0 | 3 | 21 | 14 | 5 | 18 | 11 |
| 20 | 6 | 5 | 0 | 5 | 28 | 13 | 6 | 14 | 8 |
| 21 | 5 | 3 | 0 | 8 | 11 | 10 | 4 | 23 | 15 |
| 22 | 3 | 4 | 0 | 4 | 22 | 34 | 7 | 11 | 7 |
| 23 | 1 | 4 | 1 | 3 | 37 | 23 | 2 | 9 | 7 |
| 24 | 4 | 5 | 1 | 3 | 22 | 22 | 1 | 15 | 11 |
| 25 | 7 | 8 | 1 | 9 | 33 | 5 | 2 | 14 | 11 |
| 26 | 6 | 4 | 1 | 11 | 17 | 12 | 5 | 14 | 10 |
| 27 | 9 | 8 | 1 | 6 | 19 | 20 | 5 | 12 | 8 |
| 28 | 16 | 5 | 1 | 8 | 8 | 11 | 7 | 20 | 13 |
| 29 | 6 | 5 | 1 | 6 | 12 | 19 | 5 | 14 | 10 |
| 30 | 5 | 7 | 2 | 5 | 20 | 13 | 5 | 18 | 10 |
| 31 | 10 | 7 | 1 | 4 | 26 | 11 | 4 | 11 | 9 |
| 32 | 3 | 5 | 1 | 5 | 18 | 16 | 5 | 19 | 13 |

Table A.26: FIFA results for the home team out-of-possession phases (%) (Matches 33-64)

| No | H-HP(T) | H-MP(T) | H-LP(T) | H-HB(T) | H-MB(T) | H-LB(T) | H-R(T) | H-DT(T) | H-CP(T) |
|---|---|---|---|---|---|---|---|---|---|
| 33 | 8 | 7 | 2 | 4 | 33 | 17 | 3 | 12 | 7 |
| 34 | 4 | 6 | 1 | 2 | 21 | 22 | 5 | 15 | 9 |
| 35 | 4 | 4 | 1 | 7 | 11 | 13 | 3 | 26 | 17 |
| 36 | 8 | 9 | 0 | 3 | 16 | 20 | 5 | 13 | 10 |
| 37 | 3 | 4 | 0 | 5 | 27 | 25 | 6 | 11 | 8 |
| 38 | 3 | 5 | 1 | 3 | 24 | 36 | 3 | 9 | 7 |
| 39 | 1 | 2 | 1 | 1 | 31 | 43 | 3 | 7 | 4 |
| 40 | 3 | 6 | 1 | 5 | 20 | 12 | 4 | 20 | 11 |
| 41 | 5 | 4 | 0 | 5 | 27 | 24 | 5 | 10 | 6 |
| 42 | 13 | 4 | 1 | 9 | 19 | 8 | 5 | 21 | 14 |
| 43 | 3 | 7 | 0 | 1 | 29 | 46 | 2 | 5 | 4 |
| 44 | 1 | 2 | 2 | 1 | 17 | 50 | 5 | 10 | 7 |
| 45 | 6 | 5 | 0 | 7 | 13 | 14 | 7 | 16 | 10 |
| 46 | 4 | 6 | 0 | 3 | 28 | 30 | 4 | 9 | 6 |
| 47 | 6 | 6 | 1 | 6 | 17 | 14 | 5 | 15 | 9 |
| 48 | 5 | 4 | 1 | 9 | 28 | 16 | 6 | 13 | 9 |
| 49 | 3 | 4 | 1 | 3 | 25 | 27 | 3 | 10 | 7 |
| 50 | 10 | 4 | 0 | 7 | 27 | 12 | 1 | 12 | 9 |
| 51 | 8 | 7 | 1 | 8 | 21 | 18 | 2 | 18 | 11 |
| 52 | 3 | 3 | 0 | 4 | 38 | 16 | 3 | 10 | 8 |
| 53 | 2 | 4 | 1 | 4 | 21 | 36 | 3 | 13 | 9 |
| 54 | 3 | 3 | 1 | 6 | 22 | 29 | 3 | 8 | 7 |
| 55 | 1 | 4 | 1 | 1 | 33 | 39 | 1 | 7 | 6 |
| 56 | 9 | 7 | 1 | 6 | 23 | 16 | 4 | 9 | 7 |
| 57 | 5 | 10 | 1 | 4 | 22 | 21 | 3 | 13 | 9 |
| 58 | 4 | 6 | 1 | 5 | 24 | 34 | 3 | 11 | 6 |
| 59 | 5 | 7 | 1 | 3 | 15 | 24 | 7 | 19 | 11 |
| 60 | 1 | 3 | 0 | 1 | 31 | 34 | 3 | 7 | 5 |
| 61 | 6 | 5 | 1 | 4 | 29 | 26 | 2 | 8 | 8 |
| 62 | 3 | 5 | 1 | 3 | 38 | 20 | 3 | 9 | 7 |
| 63 | 6 | 5 | 0 | 6 | 25 | 20 | 5 | 14 | 11 |
| 64 | 3 | 6 | 1 | 1 | 35 | 15 | 3 | 16 | 11 |

Table A.27: Results for the away team out-of-possession phases (%) (Matches 1-32).

| No | A-HP(T) | A-MP(T) | A-LP(T) | A-HB(T) | A-MB(T) | A-LB(T) | A-R(T) | A-DT(T) | H-CP(T) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | 7 | 1 | 11 | 33 | 9 | 3 | 12 | 9 |
| 2 | 6 | 5 | 2 | 8 | 21 | 20 | 5 | 14 | 9 |
| 3 | 5 | 5 | 2 | 4 | 38 | 23 | 2 | 7 | 5 |
| 4 | 3 | 7 | 2 | 5 | 31 | 20 | 4 | 12 | 8 |
| 5 | 3 | 5 | 2 | 3 | 33 | 35 | 2 | 7 | 5 |
| 6 | 4 | 4 | 3 | 7 | 32 | 21 | 3 | 11 | 8 |
| 7 | 3 | 4 | 2 | 7 | 30 | 19 | 4 | 13 | 9 |
| 8 | 4 | 7 | 2 | 7 | 35 | 18 | 3 | 11 | 8 |
| 9 | 10 | 7 | 2 | 13 | 22 | 6 | 3 | 12 | 8 |
| 10 | 3 | 5 | 1 | 6 | 43 | 21 | 2 | 6 | 4 |
| 11 | 6 | 6 | 2 | 9 | 29 | 24 | 2 | 7 | 6 |
| 12 | 8 | 7 | 2 | 7 | 29 | 14 | 6 | 15 | 9 |
| 13 | 6 | 6 | 2 | 6 | 27 | 16 | 5 | 11 | 6 |
| 14 | 5 | 4 | 1 | 4 | 31 | 24 | 3 | 12 | 10 |
| 15 | 4 | 4 | 2 | 8 | 34 | 21 | 3 | 11 | 8 |
| 16 | 5 | 7 | 2 | 4 | 27 | 25 | 4 | 10 | 6 |
| 17 | 6 | 5 | 3 | 6 | 28 | 9 | 3 | 12 | 9 |
| 18 | 7 | 6 | 2 | 11 | 30 | 9 | 4 | 13 | 9 |
| 19 | 6 | 7 | 2 | 13 | 31 | 7 | 2 | 11 | 8 |
| 20 | 5 | 7 | 2 | 11 | 29 | 19 | 4 | 9 | 5 |
| 21 | 6 | 8 | 2 | 4 | 25 | 21 | 4 | 16 | 12 |
| 22 | 7 | 8 | 4 | 11 | 19 | 9 | 6 | 18 | 12 |
| 23 | 6 | 6 | 2 | 8 | 31 | 21 | 4 | 9 | 5 |
| 24 | 4 | 9 | 2 | 10 | 28 | 23 | 4 | 11 | 8 |
| 25 | 2 | 5 | 2 | 2 | 32 | 34 | 4 | 11 | 7 |
| 26 | 4 | 6 | 1 | 8 | 38 | 16 | 3 | 8 | 5 |
| 27 | 6 | 7 | 2 | 9 | 20 | 16 | 6 | 14 | 9 |
| 28 | 10 | 7 | 2 | 13 | 28 | 9 | 2 | 10 | 8 |
| 29 | 7 | 7 | 2 | 10 | 17 | 8 | 4 | 16 | 11 |
| 30 | 2 | 4 | 3 | 5 | 27 | 30 | 3 | 10 | 7 |
| 31 | 3 | 5 | 3 | 3 | 32 | 26 | 5 | 12 | 7 |
| 32 | 7 | 7 | 2 | 9 | 23 | 18 | 5 | 12 | 7 |

Table A.28: Results for the away team out-of-possession phases (%) (Matches 33-64).

| No | A-HP(T) | A-MP(T) | A-LP(T) | A-HB(T) | A-MB(T) | A-LB(T) | A-R(T) | A-DT(T) | H-CP(T) |
|---|---|---|---|---|---|---|---|---|---|
| 33 | 7 | 6 | 1 | 10 | 31 | 7 | 5 | 15 | 10 |
| 34 | 6 | 8 | 2 | 9 | 23 | 18 | 6 | 13 | 7 |
| 35 | 4 | 7 | 2 | 11 | 25 | 17 | 4 | 13 | 9 |
| 36 | 2 | 4 | 2 | 3 | 31 | 41 | 3 | 8 | 5 |
| 37 | 8 | 9 | 3 | 8 | 16 | 9 | 6 | 22 | 16 |
| 38 | 6 | 9 | 3 | 6 | 26 | 13 | 7 | 19 | 13 |
| 39 | 9 | 8 | 1 | 9 | 24 | 7 | 3 | 12 | 9 |
| 40 | 7 | 10 | 2 | 6 | 19 | 6 | 6 | 21 | 15 |
| 41 | 7 | 6 | 2 | 8 | 28 | 12 | 2 | 8 | 6 |
| 42 | 4 | 7 | 3 | 4 | 33 | 26 | 2 | 9 | 7 |
| 43 | 12 | 8 | 2 | 11 | 18 | 7 | 8 | 25 | 17 |
| 44 | 10 | 10 | 2 | 9 | 20 | 4 | 7 | 19 | 12 |
| 45 | 7 | 7 | 3 | 7 | 23 | 23 | 5 | 15 | 10 |
| 46 | 8 | 6 | 2 | 12 | 23 | 9 | 4 | 13 | 9 |
| 47 | 6 | 6 | 3 | 4 | 29 | 10 | 4 | 12 | 8 |
| 48 | 7 | 9 | 2 | 11 | 21 | 13 | 6 | 15 | 9 |
| 49 | 8 | 9 | 2 | 12 | 22 | 6 | 5 | 15 | 10 |
| 50 | 8 | 7 | 3 | 8 | 31 | 18 | 3 | 8 | 5 |
| 51 | 5 | 6 | 2 | 11 | 31 | 13 | 4 | 10 | 6 |
| 52 | 4 | 5 | 2 | 7 | 28 | 24 | 3 | 10 | 8 |
| 53 | 9 | 7 | 2 | 8 | 21 | 19 | 5 | 16 | 11 |
| 54 | 6 | 5 | 2 | 7 | 34 | 17 | 5 | 10 | 5 |
| 55 | 12 | 10 | 3 | 9 | 20 | 6 | 7 | 23 | 17 |
| 56 | 6 | 7 | 2 | 10 | 26 | 9 | 4 | 11 | 7 |
| 57 | 4 | 7 | 2 | 8 | 31 | 15 | 4 | 10 | 6 |
| 58 | 8 | 7 | 2 | 11 | 29 | 18 | 3 | 9 | 6 |
| 59 | 4 | 5 | 2 | 6 | 39 | 19 | 3 | 10 | 6 |
| 60 | 14 | 9 | 2 | 12 | 15 | 3 | 9 | 19 | 10 |
| 61 | 6 | 11 | 3 | 10 | 27 | 13 | 5 | 13 | 8 |
| 62 | 6 | 7 | 3 | 6 | 29 | 13 | 6 | 15 | 9 |
| 63 | 5 | 7 | 3 | 7 | 34 | 11 | 6 | 13 | 7 |
| 64 | 7 | 9 | 3 | 8 | 27 | 12 | 3 | 13 | 10 |

Table A.29: FIFA results for the away team out-of-possession phases (%) (Matches 1-32).

| No | A-HP(T) | A-MP(T) | A-LP(T) | A-HB(T) | A-MB(T) | A-LB(T) | A-R(T) | A-DT(T) | H-CP(T) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 6 | 0 | 6 | 35 | 13 | 2 | 14 | 11 |
| 2 | 5 | 4 | 0 | 4 | 14 | 28 | 5 | 16 | 10 |
| 3 | 6 | 7 | 1 | 2 | 26 | 28 | 5 | 8 | 7 |
| 4 | 3 | 5 | 1 | 2 | 28 | 25 | 6 | 12 | 9 |
| 5 | 2 | 4 | 1 | 1 | 37 | 32 | 4 | 7 | 5 |
| 6 | 4 | 4 | 2 | 5 | 29 | 24 | 4 | 12 | 8 |
| 7 | 2 | 3 | 1 | 3 | 29 | 28 | 5 | 12 | 8 |
| 8 | 4 | 6 | 1 | 3 | 36 | 18 | 5 | 11 | 8 |
| 9 | 14 | 6 | 1 | 9 | 17 | 6 | 5 | 12 | 7 |
| 10 | 5 | 6 | 1 | 3 | 39 | 26 | 4 | 5 | 4 |
| 11 | 7 | 5 | 1 | 5 | 27 | 28 | 3 | 8 | 6 |
| 12 | 5 | 4 | 1 | 4 | 27 | 15 | 5 | 17 | 10 |
| 13 | 5 | 5 | 0 | 5 | 18 | 18 | 6 | 12 | 8 |
| 14 | 3 | 2 | 0 | 1 | 40 | 27 | 4 | 14 | 10 |
| 15 | 3 | 4 | 1 | 5 | 29 | 25 | 3 | 12 | 9 |
| 16 | 4 | 6 | 1 | 4 | 17 | 32 | 6 | 11 | 7 |
| 17 | 4 | 4 | 1 | 3 | 23 | 19 | 3 | 16 | 10 |
| 18 | 8 | 5 | 0 | 7 | 25 | 10 | 5 | 11 | 8 |
| 19 | 5 | 5 | 1 | 9 | 30 | 12 | 1 | 8 | 9 |
| 20 | 4 | 6 | 1 | 5 | 37 | 15 | 5 | 11 | 8 |
| 21 | 5 | 5 | 1 | 2 | 22 | 24 | 6 | 15 | 11 |
| 22 | 7 | 5 | 2 | 5 | 14 | 11 | 6 | 24 | 15 |
| 23 | 7 | 5 | 1 | 4 | 26 | 24 | 6 | 10 | 6 |
| 24 | 5 | 10 | 2 | 4 | 23 | 27 | 3 | 11 | 7 |
| 25 | 1 | 5 | 1 | 0 | 19 | 45 | 3 | 12 | 8 |
| 26 | 5 | 4 | 1 | 4 | 37 | 18 | 3 | 10 | 7 |
| 27 | 6 | 8 | 1 | 6 | 17 | 15 | 4 | 14 | 9 |
| 28 | 13 | 8 | 1 | 7 | 27 | 10 | 6 | 12 | 8 |
| 29 | 7 | 5 | 0 | 8 | 9 | 15 | 5 | 16 | 11 |
| 30 | 2 | 4 | 1 | 1 | 21 | 35 | 4 | 11 | 8 |
| 31 | 2 | 5 | 1 | 3 | 29 | 29 | 5 | 11 | 8 |
| 32 | 6 | 7 | 0 | 5 | 18 | 22 | 4 | 14 | 9 |

Table A.30: FIFA results for the away team out-of-possession phases (%) (Matches 33-64).

| No | A-HP(T) | A-MP(T) | A-LP(T) | A-HB(T) | A-MB(T) | A-LB(T) | A-R(T) | A-DT(T) | H-CP(T) |
|---|---|---|---|---|---|---|---|---|---|
| 33 | 8 | 8 | 0 | 4 | 30 | 8 | 3 | 16 | 13 |
| 34 | 3 | 4 | 0 | 5 | 25 | 16 | 6 | 17 | 11 |
| 35 | 2 | 5 | 1 | 8 | 27 | 15 | 5 | 12 | 9 |
| 36 | 2 | 3 | 2 | 1 | 24 | 45 | 1 | 7 | 4 |
| 37 | 7 | 5 | 0 | 6 | 9 | 10 | 5 | 27 | 16 |
| 38 | 2 | 4 | 0 | 3 | 22 | 11 | 7 | 24 | 17 |
| 39 | 6 | 7 | 0 | 10 | 30 | 6 | 1 | 15 | 9 |
| 40 | 7 | 5 | 1 | 6 | 11 | 6 | 1 | 22 | 16 |
| 41 | 7 | 5 | 1 | 7 | 20 | 19 | 4 | 10 | 8 |
| 42 | 4 | 6 | 2 | 1 | 27 | 26 | 4 | 11 | 9 |
| 43 | 11 | 6 | 0 | 5 | 9 | 6 | 10 | 21 | 15 |
| 44 | 5 | 8 | 1 | 9 | 9 | 6 | 5 | 20 | 13 |
| 45 | 5 | 6 | 2 | 7 | 15 | 23 | 2 | 16 | 12 |
| 46 | 8 | 4 | 0 | 8 | 21 | 14 | 5 | 13 | 11 |
| 47 | 5 | 4 | 1 | 4 | 23 | 18 | 5 | 14 | 9 |
| 48 | 6 | 7 | 1 | 6 | 20 | 9 | 4 | 16 | 13 |
| 49 | 9 | 7 | 1 | 9 | 13 | 8 | 9 | 21 | 12 |
| 50 | 10 | 7 | 1 | 5 | 26 | 22 | 2 | 11 | 7 |
| 51 | 6 | 6 | 0 | 5 | 31 | 14 | 3 | 11 | 8 |
| 52 | 4 | 5 | 1 | 4 | 26 | 30 | 6 | 11 | 8 |
| 53 | 6 | 5 | 1 | 4 | 15 | 19 | 7 | 16 | 12 |
| 54 | 6 | 3 | 1 | 6 | 30 | 18 | 5 | 12 | 7 |
| 55 | 9 | 10 | 1 | 6 | 6 | 2 | 7 | 29 | 19 |
| 56 | 8 | 7 | 1 | 4 | 23 | 14 | 4 | 12 | 8 |
| 57 | 5 | 6 | 1 | 5 | 26 | 20 | 3 | 9 | 6 |
| 58 | 6 | 6 | 1 | 7 | 24 | 22 | 3 | 12 | 8 |
| 59 | 4 | 4 | 1 | 2 | 36 | 23 | 2 | 9 | 6 |
| 60 | 10 | 5 | 1 | 10 | 7 | 3 | 8 | 25 | 16 |
| 61 | 4 | 10 | 2 | 6 | 20 | 17 | 7 | 14 | 10 |
| 62 | 4 | 4 | 1 | 3 | 29 | 15 | 6 | 18 | 11 |
| 63 | 4 | 6 | 1 | 4 | 36 | 12 | 3 | 14 | 9 |
| 64 | 6 | 8 | 1 | 4 | 19 | 15 | 3 | 17 | 11 |

### A.4.3 Ball Recovery Time

The following abbreviations apply: Home Team Recovery Time (Home), Away Team Recovery Time (Away).

Table A.31: Results for the ball recovery time (sec) (Matches 1-32).

| **No** | **Home(P)** | **Away(P)** | **Home(T)** | **Away(T)** |
|---|---|---|---|---|
| 1 | 12.54 | 12.34 | 15.40 | 11.92 |
| 2 | 11.93 | 11.66 | 12.38 | 11.59 |
| 3 | 6.14 | 17.46 | 7.51 | 21.48 |
| 4 | 10.43 | 13.67 | 11.05 | 13.05 |
| 5 | 12.94 | 18.14 | 11.18 | 17.66 |
| 6 | 10.22 | 14.49 | 10.05 | 11.56 |
| 7 | 8.51 | 12.23 | 9.34 | 12.49 |
| 8 | 6.66 | 12.68 | 7.19 | 12.94 |
| 9 | 12.03 | 12.86 | 13.25 | 12.95 |
| 10 | 7.16 | 22.54 | 7.62 | 22.61 |
| 11 | 7.95 | 20.08 | 5.64 | 18.70 |
| 12 | 17.09 | 10.75 | 13.38 | 10.20 |
| 13 | 14.60 | 13.79 | 16.89 | 11.20 |
| 14 | 10.06 | 12.00 | 10.75 | 11.11 |
| 15 | 10.09 | 15.37 | 11.54 | 12.78 |
| 16 | 11.12 | 14.69 | 8.33 | 14.87 |
| 17 | 7.44 | 11.94 | 7.82 | 10.08 |
| 18 | 12.86 | 11.40 | 14.91 | 9.30 |
| 19 | 11.44 | 13.56 | 10.63 | 9.75 |
| 20 | 14.25 | 16.55 | 13.29 | 16.36 |
| 21 | 7.24 | 9.91 | 8.15 | 11.05 |
| 22 | 14.81 | 8.71 | 12.99 | 7.01 |
| 23 | 15.84 | 15.78 | 12.49 | 14.22 |
| 24 | 10.09 | 16.05 | 10.00 | 13.62 |
| 25 | 12.58 | 14.92 | 11.09 | 11.84 |
| 26 | 11.22 | 17.82 | 10.19 | 16.91 |
| 27 | 12.32 | 10.92 | 12.39 | 10.24 |
| 28 | 9.48 | 13.38 | 9.66 | 11.00 |
| 29 | 10.65 | 8.62 | 9.76 | 10.83 |
| 30 | 9.90 | 13.27 | 6.74 | 15.31 |
| 31 | 13.02 | 15.38 | 12.97 | 13.07 |
| 32 | 9.20 | 14.49 | 8.67 | 11.33 |

Table A.32: Results for the ball recovery time (sec) (Matches 33-64).

| No | Home(P) | Away(P) | Home(T) | Away(T) |
|---|---|---|---|---|
| 33 | 16.48 | 9.98 | 16.55 | 8.37 |
| 34 | 13.47 | 12.33 | 11.79 | 10.65 |
| 35 | 7.83 | 10.95 | 8.34 | 11.45 |
| 36 | 12.94 | 18.86 | 11.54 | 19.88 |
| 37 | 13.06 | 7.60 | 14.03 | 8.30 |
| 38 | 14.15 | 8.24 | 12.57 | 7.48 |
| 39 | 23.27 | 10.71 | 23.20 | 8.87 |
| 40 | 9.53 | 6.29 | 11.61 | 7.36 |
| 41 | 14.82 | 14.56 | 15.49 | 11.55 |
| 42 | 10.56 | 14.93 | 8.51 | 15.86 |
| 43 | 27.87 | 6.67 | 29.76 | 6.34 |
| 44 | 15.50 | 7.79 | 16.27 | 7.89 |
| 45 | 9.45 | 10.23 | 7.80 | 9.75 |
| 46 | 16.49 | 10.86 | 12.21 | 10.45 |
| 47 | 10.57 | 10.51 | 11.50 | 12.87 |
| 48 | 14.44 | 10.12 | 13.89 | 10.06 |
| 49 | 15.16 | 10.27 | 17.29 | 9.46 |
| 50 | 12.60 | 20.53 | 10.16 | 13.19 |
| 51 | 11.98 | 16.51 | 9.66 | 15.82 |
| 52 | 12.89 | 13.16 | 10.58 | 12.92 |
| 53 | 13.05 | 9.71 | 13.87 | 8.66 |
| 54 | 15.77 | 17.38 | 13.68 | 12.34 |
| 55 | 18.56 | 7.08 | 15.63 | 7.61 |
| 56 | 15.08 | 13.72 | 12.00 | 12.91 |
| 57 | 14.94 | 15.29 | 11.22 | 13.23 |
| 58 | 15.94 | 16.93 | 13.42 | 14.98 |
| 59 | 12.80 | 17.39 | 10.92 | 18.21 |
| 60 | 17.72 | 7.48 | 13.80 | 6.75 |
| 61 | 15.95 | 12.90 | 14.69 | 9.71 |
| 62 | 17.31 | 12.03 | 16.99 | 9.06 |
| 63 | 13.96 | 15.48 | 13.62 | 10.88 |
| 64 | 10.67 | 12.37 | 8.22 | 8.61 |

### A.4.4 Line Breaks

The following abbreviations apply: Home Team Total Line Breaks (H), Away Team Total Line Breaks (A), Pass (PA), Cross (C), Ball Progression (PR), Through (T), Around (A), Over (O).

Table A.33: Results for the home team line breaks (Matches 1-32).

| No | H(P) | H-PA(P) | H-C(P) | H-PR(P) | H-T(P) | H-A(P) | H-O(P) |
|---|---|---|---|---|---|---|---|
| 1 | 68 | 66 | 2 | 0 | 23 | 31 | 14 |
| 2 | 58 | 54 | 4 | 0 | 14 | 21 | 23 |
| 3 | 131 | 129 | 0 | 2 | 43 | 66 | 22 |
| 4 | 107 | 105 | 1 | 1 | 23 | 57 | 27 |
| 5 | 96 | 92 | 3 | 1 | 21 | 49 | 26 |
| 6 | 109 | 104 | 2 | 3 | 35 | 57 | 17 |
| 7 | 75 | 71 | 3 | 1 | 15 | 37 | 23 |
| 8 | 108 | 103 | 4 | 1 | 32 | 53 | 23 |
| 9 | 85 | 83 | 1 | 1 | 24 | 35 | 26 |
| 10 | 220 | 215 | 0 | 5 | 73 | 122 | 25 |
| 11 | 136 | 134 | 0 | 2 | 37 | 73 | 26 |
| 12 | 52 | 48 | 1 | 3 | 15 | 20 | 17 |
| 13 | 104 | 103 | 0 | 1 | 34 | 51 | 19 |
| 14 | 68 | 66 | 1 | 1 | 11 | 34 | 23 |
| 15 | 126 | 118 | 2 | 6 | 39 | 67 | 20 |
| 16 | 111 | 109 | 0 | 2 | 35 | 66 | 10 |
| 17 | 78 | 76 | 0 | 2 | 15 | 33 | 30 |
| 18 | 88 | 83 | 4 | 1 | 23 | 29 | 36 |
| 19 | 79 | 79 | 0 | 0 | 27 | 41 | 11 |
| 20 | 115 | 112 | 1 | 2 | 33 | 56 | 26 |
| 21 | 85 | 82 | 2 | 1 | 18 | 39 | 28 |
| 22 | 62 | 59 | 0 | 3 | 11 | 18 | 33 |
| 23 | 99 | 93 | 4 | 2 | 16 | 57 | 26 |
| 24 | 89 | 88 | 1 | 0 | 22 | 57 | 10 |
| 25 | 91 | 86 | 0 | 5 | 28 | 53 | 10 |
| 26 | 104 | 102 | 0 | 2 | 38 | 51 | 15 |
| 27 | 101 | 93 | 0 | 8 | 36 | 46 | 19 |
| 28 | 133 | 128 | 0 | 5 | 43 | 70 | 20 |
| 29 | 64 | 63 | 0 | 1 | 11 | 30 | 23 |
| 30 | 120 | 116 | 4 | 0 | 20 | 69 | 31 |
| 31 | 100 | 95 | 3 | 2 | 30 | 53 | 17 |
| 32 | 104 | 101 | 2 | 1 | 27 | 56 | 21 |

Table A.34: Results for the home team line breaks (Matches 33-64).

| No | H(P) | H-PA(P) | H-C(P) | H-PR(P) | H-T(P) | H-A(P) | H-O(P) |
|---|---|---|---|---|---|---|---|
| 33 | 51 | 50 | 0 | 1 | 16 | 16 | 19 |
| 34 | 88 | 84 | 2 | 2 | 17 | 43 | 28 |
| 35 | 74 | 67 | 4 | 3 | 20 | 32 | 22 |
| 36 | 97 | 95 | 0 | 2 | 23 | 66 | 8 |
| 37 | 61 | 58 | 0 | 3 | 11 | 17 | 33 |
| 38 | 70 | 66 | 1 | 3 | 22 | 36 | 12 |
| 39 | 49 | 46 | 2 | 1 | 9 | 17 | 23 |
| 40 | 61 | 58 | 1 | 2 | 15 | 17 | 29 |
| 41 | 121 | 121 | 0 | 0 | 35 | 58 | 28 |
| 42 | 91 | 86 | 0 | 5 | 35 | 46 | 10 |
| 43 | 57 | 56 | 1 | 0 | 18 | 22 | 17 |
| 44 | 85 | 82 | 2 | 1 | 30 | 24 | 31 |
| 45 | 90 | 86 | 1 | 3 | 30 | 45 | 15 |
| 46 | 66 | 63 | 1 | 2 | 17 | 24 | 25 |
| 47 | 72 | 71 | 0 | 1 | 24 | 23 | 25 |
| 48 | 79 | 74 | 1 | 4 | 23 | 29 | 27 |
| 49 | 83 | 81 | 1 | 1 | 29 | 33 | 21 |
| 50 | 111 | 106 | 1 | 4 | 39 | 48 | 24 |
| 51 | 101 | 98 | 0 | 3 | 20 | 48 | 33 |
| 52 | 94 | 91 | 1 | 2 | 25 | 54 | 15 |
| 53 | 89 | 85 | 3 | 1 | 29 | 38 | 22 |
| 54 | 116 | 115 | 0 | 1 | 35 | 56 | 25 |
| 55 | 79 | 76 | 0 | 3 | 26 | 28 | 25 |
| 56 | 82 | 80 | 0 | 2 | 32 | 32 | 18 |
| 57 | 114 | 106 | 3 | 5 | 31 | 51 | 32 |
| 58 | 144 | 143 | 0 | 1 | 35 | 71 | 38 |
| 59 | 86 | 84 | 1 | 1 | 20 | 42 | 24 |
| 60 | 50 | 45 | 1 | 4 | 15 | 17 | 18 |
| 61 | 81 | 76 | 0 | 5 | 33 | 30 | 18 |
| 62 | 76 | 72 | 0 | 4 | 28 | 27 | 21 |
| 63 | 94 | 92 | 0 | 2 | 32 | 26 | 36 |
| 64 | 136 | 132 | 0 | 4 | 40 | 59 | 37 |

Table A.35: Results for the away team line breaks (Matches 1-32).

| No | A(P) | A-PA(P) | A-C(P) | A-PR(P) | A-T(P) | A-A(P) | A-O(P) |
|---|---|---|---|---|---|---|---|
| 1 | 79 | 75 | 2 | 2 | 23 | 40 | 16 |
| 2 | 84 | 78 | 1 | 5 | 23 | 42 | 19 |
| 3 | 39 | 39 | 0 | 0 | 8 | 18 | 13 |
| 4 | 85 | 78 | 3 | 4 | 32 | 21 | 32 |
| 5 | 68 | 68 | 0 | 0 | 18 | 30 | 20 |
| 6 | 64 | 63 | 0 | 1 | 21 | 25 | 18 |
| 7 | 66 | 65 | 0 | 1 | 10 | 22 | 34 |
| 8 | 52 | 48 | 1 | 3 | 12 | 19 | 21 |
| 9 | 103 | 98 | 3 | 2 | 20 | 50 | 33 |
| 10 | 50 | 46 | 0 | 4 | 15 | 16 | 19 |
| 11 | 49 | 48 | 0 | 1 | 9 | 21 | 19 |
| 12 | 93 | 89 | 1 | 3 | 20 | 51 | 22 |
| 13 | 98 | 95 | 2 | 1 | 35 | 41 | 22 |
| 14 | 69 | 68 | 0 | 1 | 14 | 35 | 20 |
| 15 | 81 | 78 | 0 | 3 | 29 | 35 | 17 |
| 16 | 75 | 74 | 0 | 1 | 20 | 30 | 25 |
| 17 | 63 | 58 | 1 | 4 | 17 | 20 | 26 |
| 18 | 90 | 86 | 2 | 2 | 14 | 53 | 23 |
| 19 | 82 | 79 | 2 | 1 | 41 | 24 | 17 |
| 20 | 74 | 70 | 1 | 3 | 20 | 44 | 10 |
| 21 | 75 | 68 | 2 | 5 | 14 | 29 | 32 |
| 22 | 109 | 104 | 1 | 4 | 21 | 67 | 21 |
| 23 | 110 | 109 | 0 | 1 | 30 | 52 | 28 |
| 24 | 54 | 52 | 1 | 1 | 8 | 33 | 13 |
| 25 | 75 | 72 | 0 | 3 | 23 | 37 | 15 |
| 26 | 71 | 66 | 2 | 3 | 24 | 26 | 21 |
| 27 | 101 | 94 | 0 | 7 | 24 | 51 | 26 |
| 28 | 76 | 70 | 0 | 6 | 25 | 29 | 22 |
| 29 | 102 | 99 | 1 | 2 | 34 | 47 | 21 |
| 30 | 53 | 50 | 1 | 2 | 23 | 19 | 11 |
| 31 | 77 | 77 | 0 | 0 | 23 | 39 | 15 |
| 32 | 71 | 67 | 2 | 2 | 24 | 24 | 23 |

Table A.36: Results for the away team line breaks (Matches 33-64).

| No | A(P) | A-PA(P) | A-C(P) | A-PR(P) | A-T(P) | A-A(P) | A-O(P) |
|---|---|---|---|---|---|---|---|
| 33 | 94 | 93 | 1 | 0 | 25 | 44 | 25 |
| 34 | 91 | 87 | 0 | 4 | 26 | 40 | 25 |
| 35 | 68 | 59 | 3 | 6 | 10 | 34 | 24 |
| 36 | 60 | 58 | 1 | 1 | 22 | 22 | 16 |
| 37 | 129 | 124 | 1 | 4 | 25 | 68 | 36 |
| 38 | 100 | 96 | 1 | 3 | 26 | 58 | 16 |
| 39 | 145 | 144 | 0 | 1 | 25 | 101 | 19 |
| 40 | 83 | 79 | 2 | 2 | 19 | 37 | 27 |
| 41 | 95 | 93 | 0 | 2 | 19 | 55 | 21 |
| 42 | 68 | 63 | 0 | 5 | 23 | 27 | 18 |
| 43 | 145 | 141 | 1 | 3 | 26 | 105 | 14 |
| 44 | 91 | 84 | 3 | 4 | 19 | 52 | 20 |
| 45 | 92 | 90 | 0 | 2 | 22 | 52 | 18 |
| 46 | 108 | 100 | 1 | 7 | 23 | 53 | 32 |
| 47 | 82 | 78 | 2 | 2 | 22 | 40 | 20 |
| 48 | 126 | 124 | 0 | 2 | 38 | 66 | 22 |
| 49 | 110 | 108 | 0 | 2 | 24 | 59 | 27 |
| 50 | 79 | 77 | 1 | 1 | 17 | 30 | 32 |
| 51 | 57 | 55 | 1 | 1 | 14 | 21 | 22 |
| 52 | 84 | 79 | 2 | 3 | 22 | 42 | 20 |
| 53 | 113 | 107 | 6 | 0 | 14 | 58 | 41 |
| 54 | 112 | 111 | 0 | 1 | 37 | 55 | 20 |
| 55 | 150 | 147 | 2 | 1 | 29 | 96 | 25 |
| 56 | 89 | 89 | 0 | 0 | 24 | 47 | 18 |
| 57 | 102 | 100 | 0 | 2 | 33 | 52 | 17 |
| 58 | 114 | 105 | 3 | 6 | 24 | 70 | 20 |
| 59 | 67 | 65 | 1 | 1 | 9 | 33 | 25 |
| 60 | 81 | 76 | 3 | 2 | 17 | 42 | 22 |
| 61 | 103 | 98 | 1 | 4 | 26 | 70 | 7 |
| 62 | 83 | 77 | 1 | 5 | 15 | 54 | 14 |
| 63 | 76 | 76 | 0 | 0 | 19 | 39 | 18 |
| 64 | 74 | 70 | 1 | 3 | 9 | 43 | 22 |

Table A.37: FIFA results for the line breaks (Matches 1-32).

| No | H(T) | A(T) | H-T(T) | H-AR(T) | H-O(T) | A-T(T) | A-AR(T) | A-O(T) |
|---|---|---|---|---|---|---|---|---|
| 1 | 75 | 86 | 24 | 34 | 17 | 23 | 47 | 16 |
| 2 | 70 | 87 | 20 | 28 | 22 | 25 | 43 | 19 |
| 3 | 158 | 37 | 63 | 68 | 27 | 10 | 10 | 17 |
| 4 | 125 | 83 | 42 | 56 | 27 | 26 | 22 | 35 |
| 5 | 110 | 71 | 39 | 45 | 26 | 21 | 28 | 22 |
| 6 | 111 | 73 | 36 | 56 | 19 | 25 | 27 | 21 |
| 7 | 91 | 64 | 20 | 45 | 26 | 16 | 15 | 33 |
| 8 | 96 | 56 | 32 | 43 | 21 | 14 | 19 | 23 |
| 9 | 98 | 102 | 32 | 41 | 25 | 22 | 46 | 34 |
| 10 | 206 | 51 | 77 | 107 | 22 | 14 | 15 | 22 |
| 11 | 160 | 58 | 48 | 82 | 30 | 19 | 21 | 18 |
| 12 | 67 | 95 | 18 | 25 | 24 | 32 | 44 | 19 |
| 13 | 113 | 88 | 47 | 47 | 19 | 36 | 30 | 22 |
| 14 | 78 | 82 | 18 | 30 | 30 | 27 | 31 | 24 |
| 15 | 125 | 72 | 38 | 67 | 20 | 37 | 21 | 14 |
| 16 | 126 | 73 | 45 | 66 | 15 | 26 | 23 | 24 |
| 17 | 110 | 78 | 37 | 36 | 37 | 18 | 33 | 27 |
| 18 | 95 | 94 | 32 | 30 | 33 | 19 | 51 | 24 |
| 19 | 103 | 73 | 36 | 55 | 12 | 36 | 22 | 15 |
| 20 | 120 | 83 | 29 | 62 | 29 | 27 | 41 | 15 |
| 21 | 87 | 76 | 27 | 32 | 28 | 10 | 29 | 37 |
| 22 | 63 | 122 | 13 | 17 | 33 | 34 | 67 | 21 |
| 23 | 87 | 104 | 21 | 42 | 24 | 31 | 47 | 26 |
| 24 | 91 | 62 | 22 | 60 | 9 | 14 | 34 | 14 |
| 25 | 87 | 76 | 22 | 52 | 13 | 26 | 34 | 16 |
| 26 | 93 | 76 | 40 | 41 | 12 | 21 | 31 | 24 |
| 27 | 107 | 106 | 23 | 59 | 25 | 39 | 39 | 28 |
| 28 | 128 | 71 | 46 | 61 | 21 | 20 | 28 | 23 |
| 29 | 64 | 107 | 13 | 29 | 22 | 48 | 34 | 25 |
| 30 | 118 | 55 | 20 | 61 | 37 | 21 | 21 | 13 |
| 31 | 96 | 84 | 32 | 46 | 18 | 30 | 41 | 13 |
| 32 | 96 | 80 | 37 | 41 | 18 | 34 | 22 | 24 |

Table A.38: FIFA results for the line breaks (Matches 33-64).

| No | H(T) | A(T) | H-T(T) | H-AR(T) | H-O(T) | A-T(T) | A-AR(T) | A-O(T) |
|---|---|---|---|---|---|---|---|---|
| 33 | 49 | 117 | 16 | 15 | 18 | 33 | 59 | 25 |
| 34 | 85 | 108 | 22 | 37 | 26 | 35 | 42 | 31 |
| 35 | 71 | 69 | 22 | 29 | 20 | 17 | 28 | 24 |
| 36 | 148 | 89 | 38 | 97 | 13 | 36 | 33 | 20 |
| 37 | 64 | 140 | 18 | 8 | 38 | 37 | 66 | 37 |
| 38 | 83 | 93 | 24 | 36 | 23 | 33 | 46 | 14 |
| 39 | 54 | 163 | 11 | 16 | 27 | 55 | 89 | 19 |
| 40 | 72 | 92 | 21 | 21 | 30 | 21 | 40 | 31 |
| 41 | 139 | 91 | 38 | 75 | 26 | 21 | 48 | 22 |
| 42 | 86 | 74 | 24 | 50 | 12 | 19 | 33 | 22 |
| 43 | 51 | 132 | 20 | 17 | 14 | 35 | 86 | 11 |
| 44 | 83 | 128 | 31 | 22 | 30 | 47 | 56 | 25 |
| 45 | 103 | 98 | 31 | 54 | 18 | 32 | 44 | 22 |
| 46 | 77 | 100 | 22 | 23 | 32 | 19 | 51 | 30 |
| 47 | 83 | 84 | 27 | 28 | 28 | 24 | 40 | 20 |
| 48 | 74 | 122 | 17 | 30 | 27 | 40 | 60 | 22 |
| 49 | 85 | 105 | 30 | 37 | 18 | 43 | 35 | 27 |
| 50 | 121 | 75 | 48 | 49 | 24 | 13 | 32 | 30 |
| 51 | 106 | 71 | 20 | 55 | 31 | 18 | 27 | 26 |
| 52 | 98 | 81 | 19 | 57 | 22 | 28 | 36 | 17 |
| 53 | 100 | 112 | 41 | 35 | 24 | 22 | 48 | 42 |
| 54 | 122 | 115 | 37 | 61 | 24 | 43 | 50 | 22 |
| 55 | 75 | 134 | 17 | 26 | 32 | 47 | 62 | 25 |
| 56 | 86 | 95 | 28 | 38 | 20 | 29 | 48 | 18 |
| 57 | 116 | 101 | 39 | 47 | 30 | 42 | 39 | 20 |
| 58 | 153 | 107 | 42 | 74 | 37 | 32 | 56 | 19 |
| 59 | 95 | 75 | 26 | 47 | 22 | 20 | 24 | 31 |
| 60 | 58 | 92 | 18 | 16 | 24 | 30 | 39 | 23 |
| 61 | 80 | 124 | 26 | 33 | 21 | 51 | 66 | 7 |
| 62 | 74 | 82 | 29 | 24 | 21 | 25 | 44 | 13 |
| 63 | 89 | 85 | 28 | 29 | 32 | 26 | 39 | 20 |
| 64 | 146 | 94 | 50 | 61 | 35 | 27 | 42 | 25 |

### A.4.5 Receptions Behind Midfield and Defensive Lines

The following abbreviations apply: Home Team (H), Away Team (A), Between Midfield and Defensive Lines (MD), Behind Defensive Lines (D).

Table A.39: Results for the receptions behind midfield and defensive lines (Matches 1-32).

| No | H-MD(P) | H-D(P) | A-MD(P) | A-D(P) | H-MD(T) | H-D(T) | A-MD(T) | A-D(T) |
|---|---|---|---|---|---|---|---|---|
| 1 | 59 | 1 | 68 | 2 | 52 | 5 | 58 | 8 |
| 2 | 117 | 5 | 85 | 7 | 107 | 15 | 87 | 14 |
| 3 | 121 | 15 | 58 | 3 | 120 | 16 | 57 | 4 |
| 4 | 111 | 12 | 78 | 10 | 101 | 12 | 73 | 9 |
| 5 | 111 | 27 | 67 | 11 | 106 | 26 | 66 | 7 |
| 6 | 117 | 6 | 66 | 5 | 114 | 14 | 64 | 7 |
| 7 | 99 | 19 | 80 | 5 | 80 | 20 | 82 | 3 |
| 8 | 100 | 24 | 80 | 8 | 105 | 26 | 78 | 9 |
| 9 | 98 | 8 | 123 | 20 | 93 | 8 | 117 | 15 |
| 10 | 161 | 18 | 47 | 1 | 174 | 23 | 47 | 1 |
| 11 | 177 | 18 | 55 | 15 | 164 | 19 | 54 | 10 |
| 12 | 60 | 6 | 102 | 13 | 55 | 4 | 102 | 9 |
| 13 | 110 | 12 | 114 | 8 | 112 | 13 | 103 | 5 |
| 14 | 82 | 5 | 91 | 8 | 81 | 4 | 91 | 8 |
| 15 | 131 | 11 | 73 | 3 | 125 | 20 | 69 | 5 |
| 16 | 146 | 11 | 75 | 4 | 125 | 11 | 69 | 4 |
| 17 | 114 | 10 | 82 | 7 | 101 | 13 | 103 | 9 |
| 18 | 78 | 8 | 93 | 11 | 79 | 9 | 95 | 12 |
| 19 | 111 | 3 | 99 | 7 | 93 | 4 | 89 | 12 |
| 20 | 105 | 11 | 85 | 6 | 102 | 10 | 74 | 6 |
| 21 | 90 | 12 | 112 | 10 | 89 | 13 | 111 | 8 |
| 22 | 96 | 20 | 145 | 27 | 95 | 14 | 119 | 22 |
| 23 | 102 | 6 | 95 | 9 | 105 | 11 | 105 | 17 |
| 24 | 87 | 2 | 61 | 5 | 89 | 2 | 52 | 5 |
| 25 | 103 | 6 | 56 | 1 | 106 | 5 | 58 | 1 |
| 26 | 112 | 5 | 64 | 10 | 102 | 4 | 54 | 7 |
| 27 | 124 | 15 | 114 | 7 | 119 | 15 | 96 | 6 |
| 28 | 129 | 15 | 105 | 8 | 115 | 16 | 95 | 9 |
| 29 | 96 | 12 | 144 | 5 | 80 | 15 | 140 | 11 |
| 30 | 130 | 25 | 55 | 10 | 119 | 19 | 56 | 5 |
| 31 | 99 | 18 | 85 | 6 | 99 | 16 | 86 | 4 |
| 32 | 133 | 11 | 97 | 8 | 127 | 11 | 94 | 6 |

Table A.40: Results for the receptions behind midfield and defensive lines (Matches 33-64).

| No | H-MD(P) | H-D(P) | A-MD(P) | A-D(P) | H-MD(T) | H-D(T) | A-MD(T) | A-D(T) |
|---|---|---|---|---|---|---|---|---|
| 33 | 42 | 2 | 111 | 10 | 46 | 1 | 97 | 9 |
| 34 | 81 | 13 | 124 | 24 | 77 | 9 | 117 | 17 |
| 35 | 85 | 3 | 91 | 13 | 82 | 2 | 80 | 12 |
| 36 | 92 | 13 | 62 | 6 | 142 | 16 | 92 | 11 |
| 37 | 100 | 10 | 132 | 16 | 93 | 8 | 130 | 17 |
| 38 | 95 | 10 | 85 | 9 | 95 | 9 | 101 | 11 |
| 39 | 48 | 2 | 170 | 24 | 44 | 2 | 153 | 21 |
| 40 | 110 | 5 | 118 | 18 | 95 | 6 | 119 | 17 |
| 41 | 155 | 16 | 101 | 11 | 124 | 17 | 94 | 12 |
| 42 | 86 | 8 | 63 | 8 | 86 | 8 | 58 | 8 |
| 43 | 45 | 10 | 139 | 10 | 50 | 10 | 151 | 17 |
| 44 | 129 | 8 | 209 | 24 | 118 | 10 | 167 | 28 |
| 45 | 103 | 8 | 102 | 16 | 93 | 8 | 99 | 14 |
| 46 | 82 | 7 | 107 | 11 | 68 | 8 | 109 | 12 |
| 47 | 100 | 7 | 119 | 13 | 86 | 7 | 111 | 10 |
| 48 | 81 | 6 | 137 | 7 | 73 | 9 | 156 | 9 |
| 49 | 96 | 10 | 137 | 18 | 97 | 8 | 135 | 17 |
| 50 | 126 | 9 | 66 | 12 | 127 | 8 | 60 | 8 |
| 51 | 109 | 15 | 73 | 8 | 114 | 11 | 67 | 7 |
| 52 | 135 | 15 | 104 | 13 | 113 | 14 | 85 | 11 |
| 53 | 109 | 7 | 107 | 16 | 106 | 8 | 116 | 14 |
| 54 | 121 | 19 | 129 | 15 | 112 | 17 | 126 | 15 |
| 55 | 76 | 9 | 126 | 24 | 74 | 10 | 147 | 27 |
| 56 | 98 | 8 | 99 | 7 | 86 | 9 | 94 | 8 |
| 57 | 112 | 8 | 102 | 9 | 112 | 5 | 104 | 7 |
| 58 | 132 | 18 | 142 | 15 | 131 | 10 | 111 | 11 |
| 59 | 83 | 4 | 80 | 7 | 88 | 8 | 79 | 7 |
| 60 | 51 | 4 | 89 | 19 | 48 | 6 | 104 | 19 |
| 61 | 116 | 7 | 121 | 4 | 121 | 7 | 108 | 3 |
| 62 | 66 | 8 | 95 | 10 | 64 | 8 | 74 | 15 |
| 63 | 110 | 17 | 85 | 10 | 106 | 15 | 75 | 10 |
| 64 | 176 | 22 | 85 | 6 | 163 | 28 | 69 | 9 |

### A.4.6 Defensive Line Height and Team Length

The following abbreviations apply: Defensive Line Height (DLH), Defensive Team Length (DTL), Defensive Team Width (DTW). Offensive Line Height (OLH), Offensive Team Length (OTL), Offensive Team Width (OTW).

Each column corresponds to the analysis of a specific measurement for the ball's

location at the first, second, and final third of the pitch, respectively, relative to the team being analyzed. Additionally, the term "defensive" indicates that the corresponding team is out-of-possession, while "offensive" indicates that the corresponding team is in-possession.

Table A.41: Results for the home team defensive measurements (meters) (Matches 1-32).

| No | H-DLH(P) | H-DTL(P) | H-DTW(P) | H-DLH(T) | H-DTL(T) | H-DTW(T) |
|---|---|---|---|---|---|---|
| 1 | [14, 36, 45] | [29, 26, 30] | [32, 41, 41] | [16, 40, 46] | [23, 25, 33] | [35, 42, 43] |
| 2 | [14, 32, 48] | [28, 26, 33] | [32, 36, 38] | [18, 38, 47] | [23, 26, 37] | [35, 37, 38] |
| 3 | [16, 37, 50] | [34, 31, 36] | [34, 36, 36] | [15, 37, 48] | [27, 29, 36] | [34, 39, 38] |
| 4 | [15, 35, 49] | [27, 28, 32] | [33, 37, 38] | [15, 37, 48] | [23, 26, 33] | [33, 38, 39] |
| 5 | [17, 36, 49] | [36, 29, 33] | [37, 38, 38] | [18, 39, 48] | [32, 28, 37] | [37, 39, 41] |
| 6 | [15, 36, 50] | [31, 29, 35] | [33, 39, 41] | [19, 39, 46] | [23, 28, 37] | [35, 43, 44] |
| 7 | [17, 32, 47] | [30, 29, 36] | [35, 38, 39] | [19, 36, 46] | [26, 29, 38] | [37, 40, 40] |
| 8 | [15, 35, 51] | [34, 29, 36] | [38, 40, 38] | [13, 37, 52] | [31, 30, 39] | [38, 39, 39] |
| 9 | [15, 33, 47] | [34, 29, 36] | [32, 40, 42] | [19, 38, 47] | [29, 30, 38] | [35, 43, 44] |
| 10 | [19, 40, 52] | [27, 27, 34] | [36, 37, 37] | [18, 40, 50] | [23, 24, 33] | [37, 36, 38] |
| 11 | [16, 39, 51] | [34, 30, 36] | [35, 38, 38] | [16, 39, 49] | [29, 27, 37] | [35, 37, 40] |
| 12 | [15, 34, 47] | [30, 24, 32] | [35, 39, 39] | [19, 37, 48] | [24, 24, 36] | [37, 40, 40] |
| 13 | [15, 33, 47] | [32, 29, 34] | [32, 37, 39] | [18, 37, 49] | [27, 28, 36] | [36, 40, 40] |
| 14 | [15, 30, 46] | [31, 29, 37] | [36, 38, 39] | [17, 35, 46] | [26, 29, 41] | [38, 42, 41] |
| 15 | [18, 36, 51] | [34, 29, 35] | [34, 37, 39] | [19, 37, 48] | [31, 28, 36] | [35, 38, 40] |
| 16 | [16, 35, 50] | [30, 28, 35] | [37, 40, 39] | [19, 38, 49] | [23, 27, 35] | [39, 42, 41] |
| 17 | [14, 37, 48] | [36, 33, 38] | [34, 40, 41] | [10, 38, 45] | [30, 33, 39] | [31, 42, 41] |
| 18 | [16, 31, 48] | [28, 26, 34] | [36, 40, 43] | [19, 38, 47] | [23, 27, 38] | [37, 43, 44] |
| 19 | [15, 35, 45] | [31, 29, 33] | [32, 38, 41] | [16, 38, 45] | [26, 29, 35] | [35, 43, 42] |
| 20 | [14, 34, 47] | [29, 28, 35] | [30, 37, 36] | [16, 37, 47] | [26, 26, 38] | [33, 39, 37] |
| 21 | [16, 35, 49] | [33, 30, 37] | [34, 38, 39] | [17, 37, 46] | [29, 36, 39] | [36, 41, 41] |
| 22 | [15, 33, 48] | [31, 26, 34] | [31, 36, 38] | [18, 37, 49] | [26, 27, 36] | [34, 38, 41] |
| 23 | [15, 33, 49] | [27, 24, 32] | [35, 37, 37] | [18, 36, 50] | [22, 25, 36] | [36, 38, 37] |
| 24 | [16, 31, 45] | [30, 29, 33] | [36, 39, 42] | [20, 35, 44] | [27, 29, 37] | [36, 43, 44] |
| 25 | [18, 37, 48] | [31, 26, 31] | [36, 39, 41] | [21, 40, 48] | [26, 25, 34] | [37, 41, 43] |
| 26 | [16, 36, 49] | [36, 30, 35] | [34, 40, 40] | [16, 38, 49] | [32, 29, 38] | [36, 41, 41] |
| 27 | [16, 33, 50] | [31, 28, 34] | [33, 39, 40] | [17, 38, 49] | [25, 27, 36] | [34, 42, 41] |
| 28 | [16, 38, 52] | [28, 27, 34] | [36, 39, 39] | [17, 38, 51] | [23, 24, 35] | [34, 38, 40] |
| 29 | [14, 33, 47] | [35, 31, 38] | [36, 40, 40] | [17, 34, 45] | [29, 30, 38] | [39, 41, 42] |
| 30 | [16, 35, 51] | [29, 28, 34] | [30, 35, 37] | [18, 39, 47] | [25, 25, 36] | [33, 36, 36] |
| 31 | [16, 36, 49] | [30, 27, 35] | [35, 37, 38] | [18, 38, 49] | [24, 26, 37] | [37, 39, 40] |
| 32 | [16, 34, 48] | [31, 29, 35] | [33, 38, 39] | [18, 38, 47] | [24, 29, 36] | [36, 39, 39] |

Table A.42: Results for the home team defensive measurements (meters) (Matches 33-64).

| No | H-DLH(P) | H-DTL(P) | H-DTW(P) | H-DLH(T) | H-DTL(T) | H-DTW(T) |
|---|---|---|---|---|---|---|
| 33 | [14, 32, 45] | [28, 26, 33] | [34, 38, 40] | [18, 36, 45] | [23, 27, 36] | [36, 40, 42] |
| 34 | [14, 32, 46] | [35, 29, 37] | [32, 37, 39] | [19, 35, 46] | [27, 29, 40] | [38, 38, 41] |
| 35 | [15, 34, 47] | [33, 31, 36] | [35, 38, 38] | [15, 36, 46] | [30, 30, 40] | [35, 39, 39] |
| 36 | [15, 36, 48] | [32, 29, 35] | [36, 41, 42] | [19, 37, 46] | [27, 28, 36] | [39, 45, 46] |
| 37 | [15, 32, 47] | [26, 25, 32] | [34, 37, 39] | [19, 37, 48] | [22, 25, 37] | [37, 40, 40] |
| 38 | [15, 31, 48] | [22, 23, 33] | [34, 39, 40] | [20, 38, 48] | [19, 26, 35] | [37, 41, 42] |
| 39 | [15, 31, 48] | [27, 23, 30] | [30, 34, 36] | [20, 35, 44] | [24, 26, 33] | [32, 37, 42] |
| 40 | [16, 36, 48] | [32, 26, 31] | [34, 39, 38] | [18, 39, 49] | [26, 24, 33] | [36, 39, 40] |
| 41 | [14, 33, 50] | [28, 25, 33] | [33, 39, 40] | [19, 38, 50] | [23, 24, 35] | [37, 41, 42] |
| 42 | [16, 38, 49] | [33, 31, 35] | [34, 41, 42] | [15, 40, 48] | [28, 31, 37] | [35, 44, 43] |
| 43 | [16, 32, 47] | [20, 19, 30] | [36, 43, 43] | [21, 38, 50] | [17, 20, 35] | [40, 45, 45] |
| 44 | [15, 29, 46] | [31, 24, 35] | [32, 39, 40] | [20, 38, 50] | [25, 26, 41] | [36, 42, 41] |
| 45 | [15, 33, 49] | [34, 31, 36] | [32, 34, 35] | [17, 36, 47] | [28, 30, 38] | [35, 36, 36] |
| 46 | [14, 33, 47] | [29, 25, 32] | [32, 36, 36] | [18, 39, 48] | [24, 24, 37] | [34, 37, 37] |
| 47 | [17, 35, 48] | [38, 31, 37] | [37, 41, 41] | [19, 37, 47] | [30, 30, 39] | [39, 43, 41] |
| 48 | [15, 35, 47] | [30, 27, 33] | [32, 37, 39] | [15, 37, 47] | [23, 27, 37] | [33, 38, 41] |
| 49 | [15, 32, 45] | [29, 26, 34] | [31, 39, 40] | [18, 37, 49] | [24, 26, 39] | [35, 42, 40] |
| 50 | [14, 34, 46] | [32, 32, 35] | [36, 40, 41] | [17, 40, 46] | [28, 30, 38] | [36, 42, 41] |
| 51 | [15, 34, 48] | [28, 27, 35] | [34, 37, 37] | [16, 38, 48] | [24, 26, 38] | [34, 37, 39] |
| 52 | [15, 34, 49] | [33, 27, 33] | [36, 38, 38] | [17, 38, 48] | [27, 27, 37] | [37, 39, 39] |
| 53 | [14, 31, 47] | [25, 24, 33] | [33, 39, 40] | [21, 38, 48] | [22, 25, 36] | [37, 42, 42] |
| 54 | [15, 32, 51] | [31, 27, 34] | [36, 38, 38] | [18, 38, 50] | [25, 26, 37] | [37, 40, 38] |
| 55 | [16, 31, 47] | [19, 18, 31] | [37, 40, 41] | [21, 36, 49] | [16, 19, 37] | [39, 42, 40] |
| 56 | [15, 34, 47] | [28, 28, 35] | [33, 37, 38] | [17, 38, 47] | [24, 27, 36] | [34, 38, 40] |
| 57 | [15, 33, 47] | [26, 26, 35] | [32, 40, 41] | [17, 36, 47] | [23, 27, 37] | [36, 43, 43] |
| 58 | [15, 31, 49] | [26, 25, 33] | [31, 39, 42] | [18, 37, 50] | [23, 25, 38] | [35, 42, 44] |
| 59 | [15, 32, 50] | [30, 27, 35] | [36, 40, 38] | [18, 36, 49] | [24, 25, 35] | [38, 42, 40] |
| 60 | [14, 30, 46] | [23, 21, 30] | [36, 39, 40] | [20, 35, 47] | [19, 22, 35] | [38, 41, 40] |
| 61 | [15, 31, 47] | [31, 28, 35] | [32, 37, 38] | [19, 36, 47] | [29, 27, 38] | [35, 39, 40] |
| 62 | [14, 31, 44] | [31, 26, 31] | [36, 39, 39] | [17, 36, 45] | [22, 27, 36] | [38, 40, 40] |
| 63 | [15, 34, 49] | [29, 27, 34] | [33, 38, 39] | [18, 39, 49] | [26, 27, 36] | [36, 40, 41] |
| 64 | [15, 32, 45] | [29, 27, 35] | [34, 39, 39] | [17, 33, 45] | [23, 28, 36] | [35, 40, 40] |

Table A.43: Results for the home team offensive measurements (meters) (Matches 1-32).

| No | H-OLH(P) | H-OTL(P) | H-OTW(P) | H-OLH(T) | H-OTL(T) | H-OTW(T) |
|---|---|---|---|---|---|---|
| 1 | [18, 37, 49] | [36, 33, 38] | [50, 54, 49] | [19, 39, 51] | [38, 34, 38] | [56, 58, 50] |
| 2 | [14, 36, 55] | [37, 33, 37] | [47, 48, 43] | [15, 39, 55] | [42, 35, 37] | [56, 55, 44] |
| 3 | [19, 40, 54] | [39, 32, 35] | [47, 49, 40] | [21, 41, 55] | [40, 33, 35] | [51, 52, 41] |
| 4 | [19, 39, 54] | [37, 33, 36] | [48, 50, 42] | [22, 41, 54] | [40, 33, 36] | [55, 54, 43] |
| 5 | [21, 44, 58] | [38, 29, 32] | [50, 54, 45] | [23, 45, 58] | [40, 30, 32] | [54, 57, 47] |
| 6 | [20, 40, 55] | [39, 33, 35] | [53, 54, 43] | [21, 41, 55] | [41, 34, 36] | [58, 59, 45] |
| 7 | [19, 40, 54] | [37, 32, 37] | [47, 53, 45] | [20, 41, 55] | [40, 33, 37] | [52, 57, 46] |
| 8 | [20, 39, 56] | [34, 29, 34] | [52, 54, 44] | [22, 39, 56] | [35, 29, 34] | [58, 58, 45] |
| 9 | [17, 33, 49] | [40, 35, 38] | [52, 51, 41] | [18, 36, 49] | [42, 37, 39] | [60, 58, 41] |
| 10 | [21, 42, 54] | [36, 29, 33] | [55, 56, 45] | [23, 42, 52] | [37, 30, 33] | [58, 59, 47] |
| 11 | [19, 41, 56] | [38, 31, 34] | [55, 52, 42] | [21, 43, 57] | [40, 32, 34] | [59, 56, 43] |
| 12 | [16, 36, 53] | [38, 33, 36] | [48, 51, 43] | [17, 39, 53] | [43, 34, 37] | [54, 57, 43] |
| 13 | [17, 39, 52] | [36, 32, 37] | [45, 48, 41] | [19, 44, 52] | [40, 32, 37] | [53, 53, 43] |
| 14 | [18, 41, 53] | [36, 32, 36] | [48, 53, 43] | [22, 43, 54] | [39, 33, 36] | [58, 58, 44] |
| 15 | [20, 39, 55] | [37, 30, 35] | [51, 50, 42] | [21, 41, 55] | [39, 31, 35] | [56, 54, 43] |
| 16 | [16, 41, 54] | [39, 33, 36] | [50, 51, 41] | [17, 44, 54] | [42, 33, 35] | [56, 55, 42] |
| 17 | [18, 37, 52] | [39, 34, 38] | [50, 54, 45] | [20, 38, 53] | [41, 34, 38] | [55, 58, 46] |
| 18 | [17, 35, 51] | [37, 33, 38] | [54, 55, 49] | [18, 38, 51] | [40, 34, 40] | [61, 60, 50] |
| 19 | [18, 36, 50] | [39, 34, 37] | [50, 50, 41] | [19, 37, 51] | [41, 35, 38] | [55, 55, 42] |
| 20 | [20, 36, 52] | [37, 34, 37] | [51, 49, 41] | [22, 38, 53] | [39, 35, 37] | [57, 53, 42] |
| 21 | [18, 40, 54] | [37, 31, 35] | [45, 49, 41] | [23, 44, 55] | [38, 32, 35] | [54, 53, 42] |
| 22 | [18, 36, 51] | [35, 30, 39] | [45, 41, 39] | [20, 42, 51] | [38, 32, 39] | [54, 49, 41] |
| 23 | [19, 39, 56] | [36, 31, 33] | [49, 53, 45] | [20, 41, 56] | [39, 31, 34] | [54, 57, 46] |
| 24 | [18, 40, 55] | [36, 31, 33] | [51, 52, 44] | [19, 42, 55] | [39, 32, 33] | [57, 57, 45] |
| 25 | [20, 45, 54] | [36, 30, 35] | [49, 53, 45] | [23, 46, 55] | [38, 30, 35] | [54, 56, 46] |
| 26 | [20, 39, 54] | [38, 32, 35] | [52, 53, 42] | [21, 40, 55] | [39, 33, 35] | [55, 58, 42] |
| 27 | [19, 37, 54] | [36, 32, 36] | [46, 49, 41] | [21, 42, 55] | [39, 33, 36] | [53, 54, 42] |
| 28 | [17, 37, 55] | [36, 29, 34] | [55, 54, 42] | [18, 41, 56] | [38, 29, 34] | [60, 58, 43] |
| 29 | [18, 34, 49] | [38, 33, 39] | [44, 45, 43] | [19, 40, 49] | [40, 36, 40] | [49, 53, 44] |
| 30 | [19, 41, 55] | [37, 33, 37] | [48, 50, 44] | [20, 42, 55] | [41, 35, 37] | [54, 54, 45] |
| 31 | [19, 42, 56] | [37, 31, 34] | [49, 52, 42] | [20, 44, 56] | [39, 32, 34] | [53, 56, 43] |
| 32 | [19, 36, 54] | [37, 33, 36] | [49, 47, 43] | [19, 39, 54] | [40, 35, 37] | [54, 52, 45] |

Table A.44: Results for the home team offensive measurements (meters) (Matches 33-64).

| No | H-OLH(P) | H-OTL(P) | H-OTW(P) | H-OLH(T) | H-OTL(T) | H-OTW(T) |
|---|---|---|---|---|---|---|
| 33 | [20, 36, 52] | [35, 33, 37] | [50, 51, 40] | [22, 38, 53] | [38, 34, 38] | [58, 58, 41] |
| 34 | [16, 37, 52] | [39, 32, 36] | [44, 48, 45] | [19, 41, 53] | [41, 33, 35] | [51, 55, 47] |
| 35 | [20, 39, 52] | [37, 33, 35] | [47, 49, 42] | [21, 41, 53] | [39, 34, 35] | [52, 55, 45] |
| 36 | [18, 45, 53] | [37, 30, 33] | [50, 54, 43] | [20, 44, 54] | [40, 31, 33] | [55, 56, 45] |
| 37 | [18, 35, 50] | [33, 30, 37] | [41, 40, 39] | [19, 37, 50] | [38, 36, 38] | [47, 53, 40] |
| 38 | [17, 37, 51] | [30, 30, 37] | [43, 48, 42] | [20, 40, 51] | [35, 31, 37] | [55, 58, 44] |
| 39 | [17, 34, 51] | [37, 33, 35] | [41, 47, 41] | [22, 33, 49] | [38, 36, 33] | [44, 52, 42] |
| 40 | [16, 37, 52] | [36, 30, 35] | [42, 43, 40] | [16, 42, 53] | [40, 31, 36] | [49, 49, 41] |
| 41 | [15, 37, 52] | [38, 32, 38] | [48, 50, 43] | [15, 38, 52] | [41, 33, 38] | [52, 55, 45] |
| 42 | [21, 41, 53] | [37, 32, 35] | [48, 53, 47] | [23, 42, 54] | [39, 32, 35] | [54, 56, 48] |
| 43 | [16, 32, 54] | [30, 28, 34] | [41, 46, 43] | [19, 36, 55] | [33, 31, 34] | [45, 57, 44] |
| 44 | [15, 31, 48] | [34, 29, 38] | [40, 44, 42] | [17, 39, 48] | [38, 30, 39] | [52, 52, 43] |
| 45 | [17, 40, 55] | [37, 32, 34] | [43, 45, 40] | [17, 44, 55] | [39, 32, 35] | [50, 51, 42] |
| 46 | [17, 35, 52] | [39, 34, 37] | [49, 47, 41] | [18, 38, 52] | [42, 35, 37] | [55, 55, 43] |
| 47 | [20, 39, 52] | [40, 33, 37] | [51, 54, 46] | [21, 40, 53] | [42, 34, 38] | [56, 59, 48] |
| 48 | [17, 37, 52] | [37, 32, 37] | [46, 47, 44] | [18, 41, 52] | [40, 33, 37] | [53, 54, 44] |
| 49 | [15, 32, 48] | [37, 34, 40] | [47, 46, 36] | [17, 38, 48] | [40, 34, 40] | [55, 57, 37] |
| 50 | [17, 39, 51] | [37, 31, 36] | [50, 54, 44] | [19, 41, 52] | [40, 31, 36] | [55, 58, 45] |
| 51 | [20, 37, 51] | [38, 34, 37] | [53, 50, 41] | [21, 38, 51] | [39, 35, 37] | [57, 54, 42] |
| 52 | [20, 40, 56] | [37, 30, 33] | [48, 50, 46] | [21, 44, 56] | [38, 30, 33] | [53, 55, 47] |
| 53 | [17, 37, 53] | [33, 32, 36] | [45, 50, 45] | [20, 42, 54] | [37, 33, 36] | [54, 56, 46] |
| 54 | [16, 37, 52] | [39, 33, 37] | [50, 53, 41] | [17, 39, 53] | [41, 33, 38] | [54, 57, 42] |
| 55 | [14, 32, 48] | [31, 31, 38] | [44, 47, 44] | [15, 37, 50] | [39, 36, 39] | [55, 53, 45] |
| 56 | [18, 35, 50] | [37, 34, 40] | [49, 47, 39] | [20, 37, 50] | [39, 36, 40] | [55, 51, 40] |
| 57 | [20, 39, 51] | [38, 33, 37] | [53, 53, 42] | [21, 39, 53] | [39, 34, 37] | [57, 58, 42] |
| 58 | [14, 38, 53] | [38, 31, 34] | [46, 53, 47] | [14, 41, 54] | [41, 32, 34] | [53, 58, 48] |
| 59 | [19, 40, 53] | [38, 32, 36] | [49, 52, 42] | [21, 41, 54] | [40, 33, 35] | [54, 55, 43] |
| 60 | [13, 29, 49] | [34, 32, 38] | [48, 48, 43] | [13, 27, 49] | [42, 37, 40] | [57, 61, 44] |
| 61 | [19, 37, 49] | [33, 31, 37] | [41, 48, 41] | [22, 41, 50] | [35, 32, 38] | [47, 55, 42] |
| 62 | [19, 38, 49] | [34, 31, 39] | [47, 51, 43] | [23, 43, 49] | [38, 31, 40] | [56, 60, 44] |
| 63 | [18, 38, 52] | [36, 31, 37] | [47, 52, 41] | [20, 40, 51] | [39, 32, 38] | [54, 58, 42] |
| 64 | [18, 35, 52] | [34, 31, 39] | [45, 48, 41] | [19, 38, 52] | [54, 55, 41] | [54, 58, 42] |

Table A.45: Results for the away team defensive measurements (meters) (Matches 1-32).

| No | A-DLH(P) | A-DTL(P) | A-DTW(P) | A-DLH(T) | A-DTL(T) | A-DTW(T) |
|---|---|---|---|---|---|---|
| 1 | [17, 34, 48] | [33, 27, 33] | [32, 41, 41] | [21, 37, 49] | [26, 25, 37] | [35, 42, 43] |
| 2 | [13, 34, 50] | [31, 28, 36] | [32, 36, 38] | [14, 38, 47] | [28, 28, 38] | [35, 37, 38] |
| 3 | [15, 32, 46] | [28, 25, 33] | [34, 36, 36] | [21, 37, 46] | [23, 25, 37] | [34, 39, 38] |
| 4 | [14, 32, 46] | [31, 27, 34] | [33, 37, 38] | [18, 37, 45] | [24, 26, 39] | [33, 38, 39] |
| 5 | [15, 31, 46] | [24, 21, 32] | [37, 38, 38] | [19, 36, 48] | [20, 23, 38] | [37, 39, 41] |
| 6 | [14, 31, 44] | [26, 26, 33] | [33, 39, 41] | [19, 36, 45] | [23, 26, 36] | [35, 43, 44] |
| 7 | [14, 32, 47] | [31, 26, 33] | [35, 38, 39] | [19, 37, 50] | [26, 27, 38] | [37, 40, 40] |
| 8 | [15, 38, 51] | [25, 20, 26] | [38, 40, 38] | [19, 43, 51] | [21, 19, 29] | [38, 39, 39] |
| 9 | [17, 37, 49] | [35, 29, 35] | [32, 40, 42] | [21, 39, 48] | [25, 26, 37] | [35, 43, 44] |
| 10 | [17, 33, 47] | [29, 24, 32] | [36, 37, 37] | [21, 37, 48] | [23, 25, 37] | [37, 36, 38] |
| 11 | [14, 31, 47] | [27, 25, 33] | [35, 38, 38] | [19, 37, 48] | [23, 26, 36] | [35, 37, 40] |
| 12 | [15, 34, 49] | [30, 28, 36] | [35, 39, 39] | [17, 36, 49] | [26, 28, 39] | [37, 40, 40] |
| 13 | [15, 33, 48] | [35, 30, 37] | [32, 37, 39] | [19, 35, 47] | [27, 29, 39] | [36, 40, 40] |
| 14 | [15, 31, 47] | [27, 24, 33] | [36, 38, 39] | [19, 37, 49] | [23, 24, 36] | [38, 42, 41] |
| 15 | [15, 34, 48] | [30, 26, 33] | [34, 37, 39] | [18, 39, 49] | [24, 26, 37] | [35, 38, 40] |
| 16 | [15, 31, 48] | [31, 28, 37] | [37, 40, 39] | [19, 34, 49] | [26, 29, 39] | [39, 42, 41] |
| 17 | [14, 32, 46] | [35, 31, 38] | [34, 40, 41] | [16, 36, 45] | [32, 31, 40] | [31, 42, 41] |
| 18 | [15, 35, 48] | [30, 29, 34] | [36, 40, 43] | [17, 38, 47] | [26, 26, 37] | [37, 43, 44] |
| 19 | [17, 34, 46] | [33, 29, 35] | [32, 38, 41] | [16, 38, 45] | [26, 29, 35] | [35, 43, 42] |
| 20 | [15, 34, 47] | [25, 25, 30] | [30, 37, 36] | [18, 40, 46] | [21, 26, 31] | [33, 39, 37] |
| 21 | [15, 33, 47] | [28, 26, 35] | [34, 38, 39] | [18, 36, 46] | [21, 26, 36] | [36, 41, 41] |
| 22 | [15, 38, 50] | [34, 27, 33] | [31, 36, 38] | [13, 43, 49] | [32, 26, 36] | [34, 38, 41] |
| 23 | [15, 35, 49] | [26, 23, 33] | [35, 37, 37] | [21, 39, 49] | [20, 23, 36] | [36, 38, 37] |
| 24 | [16, 33, 48] | [26, 26, 33] | [36, 39, 42] | [20, 39, 49] | [22, 28, 35] | [36, 43, 44] |
| 25 | [15, 29, 46] | [28, 23, 30] | [36, 39, 41] | [22, 37, 47] | [23, 24, 36] | [37, 41, 43] |
| 26 | [16, 34, 47] | [27, 24, 32] | [34, 40, 40] | [20, 38, 48] | [22, 23, 36] | [36, 41, 41] |
| 27 | [14, 34, 49] | [32, 29, 34] | [33, 39, 40] | [14, 39, 47] | [25, 28, 35] | [34, 42, 41] |
| 28 | [16, 37, 51] | [30, 26, 33] | [36, 39, 39] | [17, 41, 50] | [22, 24, 37] | [34, 38, 40] |
| 29 | [16, 36, 48] | [36, 32, 36] | [36, 40, 40] | [14, 40, 48] | [29, 31, 39] | [39, 41, 42] |
| 30 | [13, 30, 47] | [29, 27, 35] | [30, 35, 37] | [15, 36, 47] | [26, 29, 39] | [33, 36, 36] |
| 31 | [15, 31, 48] | [27, 25, 33] | [35, 37, 38] | [18, 37, 49] | [22, 25, 38] | [37, 39, 40] |
| 32 | [15, 34, 47] | [30, 29, 35] | [33, 38, 39] | [16, 40, 46] | [26, 29, 39] | [36, 39, 39] |

Table A.46: Results for the away team defensive measurements (meters) (Matches 33-64).

| No | A-DLH(P) | A-DTL(P) | A-DTW(P) | A-DLH(T) | A-DTL(T) | A-DTW(T) |
|---|---|---|---|---|---|---|
| 33 | [14, 35, 48] | [31, 28, 34] | [34, 38, 40] | [14, 38, 46] | [25, 28, 36] | [36, 40, 42] |
| 34 | [16, 34, 48] | [27, 28, 35] | [32, 37, 39] | [20, 38, 50] | [21, 29, 39] | [38, 38, 41] |
| 35 | [16, 32, 46] | [28, 26, 33] | [35, 38, 38] | [20, 37, 47] | [23, 27, 34] | [35, 39, 39] |
| 36 | [18, 30, 47] | [24, 21, 33] | [36, 41, 42] | [23, 38, 49] | [20, 24, 38] | [39, 45, 46] |
| 37 | [17, 37, 51] | [32, 31, 37] | [34, 37, 39] | [16, 39, 48] | [29, 33, 38] | [37, 40, 40] |
| 38 | [16, 36, 51] | [31, 27, 31] | [34, 39, 40] | [16, 37, 54] | [26, 26, 33] | [37, 41, 42] |
| 39 | [17, 35, 47] | [33, 31, 37] | [30, 34, 36] | [24, 35, 42] | [30, 31, 36] | [32, 37, 42] |
| 40 | [17, 36, 50] | [34, 31, 39] | [34, 39, 38] | [16, 37, 48] | [31, 31, 39] | [36, 39, 40] |
| 41 | [14, 35, 50] | [34, 29, 37] | [33, 39, 40] | [14, 37, 49] | [32, 28, 40] | [37, 41, 42] |
| 42 | [16, 32, 46] | [26, 23, 32] | [34, 41, 42] | [21, 37, 44] | [19, 24, 38] | [35, 44, 43] |
| 43 | [16, 42, 54] | [28, 28, 33] | [36, 43, 43] | [16, 41, 51] | [20, 30, 34] | [40, 45, 45] |
| 44 | [18, 42, 53] | [37, 30, 35] | [32, 39, 40] | [14, 39, 49] | [32, 27, 33] | [36, 42, 41] |
| 45 | [15, 32, 48] | [29, 28, 37] | [32, 34, 35] | [17, 35, 47] | [25, 27, 37] | [35, 36, 36] |
| 46 | [15, 34, 47] | [34, 30, 36] | [32, 36, 36] | [15, 38, 47] | [30, 29, 38] | [34, 37, 37] |
| 47 | [15, 32, 45] | [36, 31, 37] | [37, 41, 41] | [17, 36, 45] | [32, 30, 40] | [39, 43, 41] |
| 48 | [15, 34, 48] | [32, 29, 36] | [32, 37, 39] | [18, 39, 47] | [25, 30, 38] | [33, 38, 41] |
| 49 | [16, 37, 50] | [34, 30, 35] | [31, 39, 40] | [17, 37, 48] | [28, 26, 36] | [35, 42, 40] |
| 50 | [17, 34, 49] | [29, 23, 33] | [36, 40, 41] | [19, 37, 49] | [22, 22, 35] | [36, 42, 41] |
| 51 | [16, 33, 45] | [31, 27, 33] | [34, 37, 37] | [17, 39, 45] | [25, 27, 37] | [34, 37, 39] |
| 52 | [15, 34, 48] | [29, 26, 32] | [36, 38, 38] | [17, 38, 48] | [26, 26, 35] | [37, 39, 39] |
| 53 | [15, 34, 51] | [30, 30, 35] | [33, 39, 40] | [16, 37, 49] | [26, 29, 37] | [37, 42, 42] |
| 54 | [15, 34, 49] | [31, 26, 34] | [36, 38, 38] | [14, 36, 49] | [25, 25, 37] | [37, 40, 38] |
| 55 | [18, 40, 55] | [31, 27, 34] | [37, 40, 41] | [12, 39, 52] | [25, 25, 35] | [39, 42, 40] |
| 56 | [15, 35, 48] | [36, 31, 35] | [33, 37, 38] | [16, 38, 47] | [29, 29, 36] | [34, 38, 40] |
| 57 | [15, 32, 45] | [30, 27, 34] | [32, 40, 41] | [22, 37, 47] | [24, 28, 37] | [36, 43, 43] |
| 58 | [16, 34, 51] | [28, 26, 35] | [31, 39, 42] | [20, 38, 52] | [24, 27, 37] | [35, 42, 44] |
| 59 | [15, 32, 46] | [28, 26, 33] | [36, 40, 38] | [18, 36, 45] | [24, 27, 36] | [38, 42, 40] |
| 60 | [16, 41, 53] | [37, 31, 35] | [36, 39, 40] | [11, 41, 50] | [28, 29, 36] | [38, 41, 40] |
| 61 | [17, 36, 51] | [33, 27, 34] | [32, 37, 38] | [20, 38, 51] | [25, 28, 37] | [35, 39, 40] |
| 62 | [16, 35, 49] | [34, 25, 33] | [36, 39, 39] | [22, 38, 49] | [22, 25, 36] | [38, 40, 40] |
| 63 | [16, 35, 49] | [31, 24, 32] | [33, 38, 39] | [19, 38, 50] | [24, 24, 36] | [36, 40, 41] |
| 64 | [14, 36, 50] | [34, 28, 33] | [34, 39, 39] | [13, 38, 49] | [30, 27, 35] | [35, 40, 40] |

Table A.47: Results for the away team offensive measurements (meters) (Matches 1-32).

| No | H-DLH(P) | H-DTL(P) | H-DTW(P) | H-DLH(T) | H-DTL(T) | H-DTW(T) |
|---|---|---|---|---|---|---|
| 1 | [23, 36, 53] | [36, 32, 37] | [52, 50, 40] | [24, 36, 54] | [37, 33, 37] | [56, 56, 41] |
| 2 | [18, 39, 54] | [38, 33, 36] | [49, 52, 40] | [20, 41, 55] | [40, 34, 35] | [55, 58, 41] |
| 3 | [17, 32, 49] | [33, 31, 37] | [42, 45, 44] | [20, 38, 50] | [36, 32, 39] | [50, 54, 45] |
| 4 | [18, 35, 52] | [36, 33, 37] | [51, 50, 41] | [20, 40, 53] | [38, 34, 37] | [60, 57, 42] |
| 5 | [18, 34, 49] | [35, 32, 38] | [50, 52, 44] | [20, 35, 50] | [39, 35, 39] | [57, 57, 45] |
| 6 | [15, 33, 50] | [36, 33, 38] | [46, 49, 42] | [17, 39, 51] | [40, 35, 39] | [54, 56, 42] |
| 7 | [20, 39, 52] | [35, 32, 34] | [42, 43, 39] | [22, 41, 54] | [38, 34, 34] | [47, 50, 41] |
| 8 | [16, 38, 54] | [33, 29, 34] | [40, 46, 41] | [16, 39, 56] | [38, 33, 36] | [48, 53, 42] |
| 9 | [18, 37, 51] | [39, 35, 38] | [50, 49, 41] | [19, 38, 51] | [41, 36, 39] | [54, 54, 42] |
| 10 | [16, 33, 51] | [36, 31, 34] | [44, 46, 47] | [18, 38, 53] | [38, 31, 35] | [52, 40, 48] |
| 11 | [15, 33, 51] | [37, 31, 38] | [46, 44, 42] | [15, 41, 52] | [41, 34, 37] | [54, 52, 45] |
| 12 | [20, 39, 53] | [37, 31, 36] | [49, 54, 44] | [22, 40, 54] | [38, 31, 36] | [55, 58, 45] |
| 13 | [20, 37, 51] | [37, 33, 38] | [50, 52, 45] | [21, 39, 51] | [39, 35, 38] | [55, 56, 46] |
| 14 | [16, 39, 51] | [39, 34, 38] | [48, 49, 42] | [17, 42, 52] | [42, 34, 38] | [55, 55, 43] |
| 15 | [16, 36, 51] | [36, 31, 35] | [44, 48, 44] | [17, 39, 50] | [37, 32, 37] | [50, 53, 46] |
| 16 | [18, 38, 52] | [35, 31, 36] | [49, 53, 44] | [20, 42, 53] | [38, 32, 36] | [58, 60, 45] |
| 17 | [15, 31, 50] | [39, 35, 40] | [39, 41, 40] | [17, 35, 51] | [44, 37, 40] | [49, 49, 41] |
| 18 | [17, 40, 52] | [37, 33, 36] | [49, 52, 48] | [18, 43, 53] | [40, 33, 36] | [55, 55, 49] |
| 19 | [21, 36, 52] | [36, 32, 38] | [47, 45, 38] | [19, 37, 51] | [41, 35, 38] | [55, 55, 42] |
| 20 | [18, 36, 54] | [35, 33, 36] | [46, 48, 39] | [20, 38, 53] | [39, 34, 37] | [53, 54, 41] |
| 21 | [18, 36, 50] | [34, 32, 38] | [42, 42, 41] | [20, 40, 50] | [39, 35, 39] | [49, 55, 42] |
| 22 | [17, 40, 54] | [38, 31, 36] | [50, 51, 45] | [18, 42, 55] | [40, 32, 36] | [56, 55, 47] |
| 23 | [18, 40, 56] | [36, 31, 33] | [49, 54, 45] | [19, 42, 57] | [40, 32, 33] | [56, 58, 46] |
| 24 | [21, 39, 53] | [38, 33, 35] | [49, 49, 44] | [23, 43, 55] | [41, 34, 35] | [56, 55, 46] |
| 25 | [20, 35, 50] | [34, 31, 35] | [48, 49, 42] | [21, 36, 50] | [36, 33, 36] | [54, 55, 45] |
| 26 | [15, 34, 50] | [38, 33, 39] | [50, 50, 44] | [15, 36, 50] | [42, 36, 39] | [57, 57, 45] |
| 27 | [17, 38, 53] | [36, 33, 35] | [46, 50, 42] | [19, 42, 54] | [38, 33, 35] | [52, 52, 43] |
| 28 | [16, 36, 54] | [37, 30, 34] | [51, 46, 40] | [17, 42, 54] | [39, 29, 34] | [56, 50, 42] |
| 29 | [17, 38, 53] | [38, 32, 37] | [48, 50, 43] | [19, 43, 54] | [42, 33, 37] | [55, 55, 44] |
| 30 | [17, 37, 52] | [32, 31, 35] | [42, 47, 43] | [21, 41, 53] | [35, 32, 35] | [53, 54, 45] |
| 31 | [18, 37, 54] | [36, 31, 35] | [47, 50, 43] | [19, 41, 53] | [39, 32, 36] | [55, 55, 44] |
| 32 | [19, 37, 51] | [37, 33, 37] | [48, 46, 41] | [20, 42, 51] | [39, 33, 37] | [55, 52, 42] |

Table A.48: Results for the away team offensive measurements (meters) (Matches 33-64).

| No | H-DLH(P) | H-DTL(P) | H-DTW(P) | H-DLH(T) | H-DTL(T) | H-DTW(T) |
|---|---|---|---|---|---|---|
| 33 | [21, 39, 55] | [39, 33, 34] | [54, 51, 42] | [21, 41, 55] | [40, 33, 35] | [58, 55, 43] |
| 34 | [18, 38, 52] | [37, 33, 38] | [45, 49, 43] | [20, 40, 52] | [41, 34, 38] | [53, 54, 44] |
| 35 | [18, 35, 52] | [36, 33, 37] | [44, 45, 42] | [18, 39, 53] | [40, 35, 37] | [51, 54, 43] |
| 36 | [18, 35, 52] | [35, 31, 37] | [53, 54, 48] | [19, 41, 52] | [38, 33, 37] | [59, 59, 50] |
| 37 | [19, 41, 56] | [38, 32, 34] | [50, 53, 45] | [21, 43, 56] | [39, 33, 34] | [56, 58, 47] |
| 38 | [18, 42, 57] | [36, 31, 33] | [46, 50, 45] | [20, 43, 57] | [38, 32, 33] | [52, 53, 47] |
| 39 | [19, 42, 54] | [36, 31, 34] | [52, 53, 44] | [25, 43, 51] | [36, 33, 34] | [53, 52, 48] |
| 40 | [19, 37, 52] | [38, 32, 38] | [48, 49, 42] | [22, 40, 52] | [39, 33, 38] | [54, 54, 43] |
| 41 | [17, 39, 55] | [36, 32, 35] | [50, 54, 42] | [22, 42, 55] | [38, 32, 35] | [57, 57, 44] |
| 42 | [16, 32, 52] | [37, 33, 37] | [49, 47, 39] | [17, 34, 52] | [41, 37, 38] | [57, 56, 41] |
| 43 | [20, 46, 62] | [36, 25, 27] | [54, 58, 47] | [21, 47, 63] | [37, 26, 27] | [57, 60, 48] |
| 44 | [19, 46, 56] | [38, 29, 33] | [43, 49, 42] | [21, 47, 57] | [40, 29, 33] | [48, 52, 43] |
| 45 | [18, 36, 50] | [35, 34, 39] | [41, 44, 39] | [21, 41, 50] | [38, 35, 40] | [48, 52, 41] |
| 46 | [19, 39, 53] | [38, 32, 37] | [47, 50, 43] | [21, 41, 53] | [38, 32, 37] | [53, 54, 45] |
| 47 | [16, 34, 47] | [40, 35, 40] | [45, 48, 43] | [17, 38, 48] | [43, 36, 40] | [51, 55, 45] |
| 48 | [17, 36, 54] | [39, 32, 35] | [52, 50, 39] | [19, 39, 55] | [40, 33, 35] | [57, 55, 41] |
| 49 | [19, 38, 54] | [37, 33, 35] | [46, 49, 40] | [22, 39, 55] | [39, 34, 35] | [52, 52, 41] |
| 50 | [17, 34, 53] | [40, 35, 37] | [54, 51, 44] | [17, 34, 54] | [42, 36, 37] | [57, 57, 44] |
| 51 | [16, 36, 53] | [38, 33, 35] | [48, 50, 43] | [17, 41, 54] | [40, 32, 36] | [54, 56, 45] |
| 52 | [19, 37, 52] | [34, 32, 37] | [45, 52, 44] | [20, 38, 53] | [38, 34, 37] | [51, 56, 45] |
| 53 | [18, 41, 56] | [37, 32, 34] | [44, 51, 45] | [20, 43, 57] | [40, 33, 34] | [49, 55, 46] |
| 54 | [16, 40, 53] | [37, 32, 36] | [51, 53, 47] | [16, 42, 52] | [39, 33, 36] | [57, 57, 48] |
| 55 | [18, 47, 59] | [37, 26, 30] | [47, 56, 47] | [20, 48, 59] | [39, 27, 30] | [52, 59, 49] |
| 56 | [18, 37, 54] | [39, 34, 36] | [51, 51, 45] | [19, 39, 54] | [41, 34, 36] | [55, 55, 47] |
| 57 | [19, 38, 54] | [35, 31, 34] | [47, 53, 42] | [21, 41, 55] | [38, 32, 34] | [53, 58, 43] |
| 58 | [17, 42, 56] | [37, 31, 33] | [50, 51, 41] | [18, 44, 56] | [40, 31, 33] | [56, 55, 42] |
| 59 | [17, 41, 54] | [34, 31, 34] | [43, 51, 44] | [19, 45, 55] | [37, 31, 34] | [51, 56, 45] |
| 60 | [19, 44, 57] | [38, 30, 33] | [50, 53, 45] | [21, 45, 58] | [39, 30, 33] | [53, 55, 46] |
| 61 | [18, 41, 55] | [39, 31, 34] | [49, 52, 45] | [19, 42, 56] | [40, 32, 34] | [53, 56, 46] |
| 62 | [20, 39, 53] | [39, 34, 37] | [54, 56, 47] | [21, 39, 53] | [40, 35, 37] | [57, 59, 49] |
| 63 | [17, 37, 55] | [37, 32, 34] | [52, 53, 46] | [18, 38, 56] | [40, 34, 34] | [58, 58, 47] |
| 64 | [21, 40, 55] | [36, 32, 33] | [44, 50, 43] | [24, 40, 56] | [39, 33, 34] | [52, 55, 44] |

### A.4.7 Team Shape

The following abbreviations apply: Home Team Overall Shape (H), Away Team Overall Shape (A), In-Possession (In), Out-of-Possession (Out).

Table A.49: Results of the team shape (Matches 1-32).

| No | H(P) | H-In(P) | H-Out(P) | A(P) | A-In(P) | A-Out(P) | H(T) | A(T) |
|---|---|---|---|---|---|---|---|---|
| 1 | [5, 3, 2] | [4, 2, 4] | [3, 2, 5] | [3, 3, 4] | [5, 3, 2] | [4, 3, 3] | [5, 3, 2] | [4, 4, 2] |
| 2 | [4, 2, 4] | [3, 3, 4] | [3, 3, 4] | [3, 3, 4] | [5, 2, 3] | [6, 2, 2] | [4, 2, 3, 1] | [3, 4, 1, 2] |
| 3 | [4, 2, 4] | [5, 3, 2] | [4, 2, 4] | [3, 3, 4] | [5, 2, 3] | [5, 3, 2] | [4, 1, 2, 3] | [5, 3, 2] |
| 4 | [4, 3, 3] | [5, 3, 2] | [3, 3, 4] | [3, 3, 4] | [4, 3, 3] | [5, 3, 2] | [4, 1, 2, 3] | [5, 3, 2] |
| 5 | [4, 2, 4] | [4, 3, 3] | [4, 2, 4] | [3, 2, 5] | [5, 3, 2] | [4, 3, 3] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 6 | [4, 3, 3] | [5, 2, 3] | [3, 3, 4] | [3, 2, 5] | [5, 2, 3] | [5, 2, 3] | [3, 5, 2] | [3, 4, 3] |
| 7 | [5, 2, 3] | [4, 3, 3] | [3, 3, 4] | [4, 2, 4] | [5, 2, 3] | [4, 4, 2] | [4, 1, 2, 3] | [4, 1, 4, 1] |
| 8 | [4, 2, 4] | [5, 2, 3] | [4, 2, 4] | [4, 3, 3] | [4, 3, 3] | [5, 2, 3] | [4, 4, 2] | [4, 1, 2, 3] |
| 9 | [5, 2, 3] | [4, 3, 3] | [3, 3, 4] | [3, 3, 4] | [5, 2, 3] | [5, 2, 3] | [3, 5, 2] | [3, 4, 3] |
| 10 | [3, 3, 4] | [5, 3, 2] | [3, 3, 4] | [3, 3, 4] | [5, 2, 3] | [5, 3, 2] | [4, 1, 2, 3] | [4, 4, 2] |
| 11 | [3, 2, 5] | [4, 3, 3] | [3, 2, 5] | [4, 2, 4] | [4, 3, 3] | [4, 3, 3] | [4, 2, 3, 1] | [4, 2, 3, 1] |
| 12 | [4, 3, 3] | [3, 2, 5] | [3, 3, 4] | [3, 2, 5] | [4, 3, 3] | [4, 2, 3, 1] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 13 | [5, 2, 3] | [4, 3, 3] | [3, 3, 4] | [3, 3, 4] | [5, 2, 3] | [4, 3, 3] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 14 | [3, 2, 5] | [4, 3, 3] | [3, 2, 5] | [3, 3, 4] | [5, 3, 2] | [5, 3, 2] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 15 | [3, 3, 4] | [5, 3, 2] | [3, 3, 4] | [3, 3, 4] | [5, 2, 3] | [5, 3, 2] | [4, 1, 2, 3] | [5, 3, 2] |
| 16 | [4, 2, 4] | [4, 2, 4] | [3, 3, 4] | [4, 2, 4] | [5, 3, 2] | [5, 2, 3] | [4, 1, 2, 3] | [3, 4, 3] |
| 17 | [3, 2, 5] | [5, 2, 3] | [3, 2, 5] | [3, 3, 4] | [3, 2, 3, 2] | [5, 2, 3] | [3, 4, 3] | [4, 1, 2, 3] |
| 18 | [5, 3, 2] | [4, 2, 4] | [4, 2, 4] | [3, 3, 4] | [5, 3, 2] | [4, 2, 4] | [5, 3, 2] | [4, 4, 2] |
| 19 | [5, 2, 3] | [5, 2, 3] | [3, 2, 5] | [4, 2, 4] | [5, 2, 3] | [5, 2, 3] | [3, 4, 1, 2] | [3, 4, 3] |
| 20 | [4, 3, 3] | [4, 3, 3] | [3, 3, 4] | [3, 3, 4] | [4, 3, 3] | [4, 3, 3] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 21 | [3, 2, 5] | [4, 3, 3] | [3, 2, 5] | [4, 2, 4] | [5, 2, 3] | [4, 3, 3] | [3, 4, 3] | [4, 4, 2] |
| 22 | [5, 3, 2] | [4, 2, 4] | [3, 3, 4] | [3, 2, 5] | [5, 3, 2] | [5, 3, 2] | [4, 2, 3, 1] | [4, 2, 3, 1] |
| 23 | [4, 3, 3] | [5, 2, 3] | [3, 3, 4] | [3, 3, 4] | [4, 3, 3] | [5, 2, 3] | [4, 2, 3, 1] | [3, 4, 3] |
| 24 | [5, 2, 3] | [5, 3, 2] | [3, 2, 5] | [3, 3, 4] | [5, 2, 3] | [5, 3, 2] | [4, 4, 2] | [5, 3, 2] |
| 25 | [4, 3, 3] | [5, 3, 2] | [3, 2, 5] | [3, 3, 4] | [4, 3, 3] | [5, 3, 2] | [4, 2, 3, 1] | [5, 4, 1] |
| 26 | [3, 3, 4] | [5, 3, 2] | [3, 3, 4] | [3, 2, 5] | [5, 2, 3] | [5, 3, 2] | [3, 4, 3] | [4, 1, 2, 3] |
| 27 | [4, 3, 3] | [4, 3, 3] | [3, 3, 4] | [3, 2, 5] | [4, 3, 3] | [4, 3, 3] | [4, 1, 2, 3] | [4, 4, 2] |
| 28 | [2, 2, 3, 3] | [4, 3, 3] | [2, 2, 3, 3] | [3, 2, 5] | [5, 2, 3] | [5, 2, 3] | [4, 1, 2, 3] | [4, 2, 3, 1] |
| 29 | [5, 2, 3] | [4, 3, 3] | [3, 3, 4] | [4, 2, 4] | [5, 2, 3] | [6, 2, 2] | [4, 1, 2, 3] | [3, 4, 3] |
| 30 | [3, 2, 5] | [5, 3, 2] | [3, 2, 5] | [3, 3, 4] | [5, 3, 2] | [5, 3, 2] | [4, 2, 3, 1] | [4, 2, 3, 1] |
| 31 | [3, 3, 4] | [3, 3, 4] | [3, 3, 4] | [3, 3, 4] | [4, 4, 2] | [5, 3, 2] | [4, 1, 2, 3] | [4, 2, 3, 1] |
| 32 | [5, 2, 3] | [5, 3, 2] | [3, 3, 4] | [3, 3, 4] | [5, 2, 3] | [5, 3, 2] | [4, 1, 2, 3] | [5, 3, 2] |

Table A.50: Results of the team shape (Matches 33-64).

| No | H(P) | H-In(P) | H-Out(P) | A(P) | A-In(P) | A-Out(P) | H(T) | A(T) |
|---|---|---|---|---|---|---|---|---|
| 33 | [4, 3, 3] | [4, 2, 4] | [3, 3, 4] | [3, 2, 5] | [4, 3, 3] | [4, 3, 3] | [4, 2, 3, 1] | [4, 1, 2, 3] |
| 34 | [4, 3, 3] | [5, 3, 2] | [2, 3, 5] | [2, 3, 5] | [5, 3, 2] | [5, 3, 2] | [4, 2, 3, 1] | [4, 1, 2, 3] |
| 35 | [4, 3, 3] | [5, 2, 3] | [3, 3, 4] | [3, 2, 5] | [5, 2, 3] | [5, 2, 3] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 36 | [3, 2, 5] | [5, 3, 2] | [3, 2, 5] | [3, 3, 4] | [5, 2, 3] | [5, 3, 2] | [3, 4, 1, 2] | [5, 3, 2] |
| 37 | [4, 3, 3] | [3, 2, 5] | [4, 2, 4] | [3, 2, 5] | [4, 3, 3] | [5, 3, 2] | [4, 4, 2] | [4, 1, 2, 3] |
| 38 | [5, 2, 3] | [5, 3, 2] | [3, 3, 4] | [3, 3, 4] | [5, 2, 3] | [4, 4, 2] | [3, 4, 3] | [4, 1, 2, 3] |
| 39 | [5, 3, 2] | [3, 2, 5] | [3, 3, 4] | [3, 2, 5] | [5, 3, 2] | [5, 2, 3] | [NA] | [NA] |
| 40 | [5, 2, 3] | [4, 2, 4] | [4, 2, 4] | [3, 3, 4] | [6, 2, 2] | [5, 2, 3] | [4, 4, 1, 1] | [4, 2, 3, 1] |
| 41 | [4, 3, 3] | [4, 3, 3] | [3, 3, 4] | [3, 3, 4] | [4, 3, 3] | [4, 3, 3] | [4, 1, 2, 3] | [3, 4, 3] |
| 42 | [3, 3, 4] | [4, 3, 3] | [3, 2, 5] | [3, 3, 4] | [5, 3, 2] | [5, 3, 2] | [4, 4, 2] | [4, 1, 2, 3] |
| 43 | [5, 3, 2] | [3, 3, 4] | [4, 3, 3] | [3, 3, 4] | [5, 3, 2] | [5, 2, 3] | [3, 4, 3] | [4, 1, 2, 3] |
| 44 | [5, 4, 1] | [3, 2, 5] | [4, 3, 3] | [3, 2, 5] | [5, 4, 1] | [5, 2, 3] | [5, 4, 1] | [4, 1, 2, 3] |
| 45 | [3, 3, 4] | [4, 3, 3] | [3, 3, 4] | [3, 3, 4] | [5, 2, 3] | [4, 3, 3] | [4, 2, 3, 1] | [4, 1, 2, 3] |
| 46 | [4, 3, 3] | [3, 2, 5] | [2, 3, 5] | [3, 2, 5] | [5, 3, 2] | [5, 3, 2] | [4, 1, 2, 3] | [4, 1, 4, 1] |
| 47 | [3, 3, 4] | [3, 3, 4] | [3, 3, 4] | [3, 3, 4] | [5, 3, 2] | [5, 3, 2] | [3, 4, 1, 2] | [4, 2, 3, 1] |
| 48 | [4, 2, 4] | [3, 3, 4] | [3, 3, 4] | [3, 3, 4] | [4, 3, 3] | [5, 3, 2] | [4, 4, 2] | [4, 4, 2] |
| 49 | [5, 2, 3] | [2, 3, 5] | [3, 3, 4] | [2, 3, 5] | [5, 3, 2] | [4, 3, 3] | [3, 4, 1, 2] | [4, 1, 2, 3] |
| 50 | [5, 3, 2] | [4, 3, 3] | [3, 3, 4] | [3, 3, 4] | [5, 3, 2] | [4, 3, 3] | [4, 1, 2, 3] | [4, 4, 2] |
| 51 | [4, 2, 4] | [4, 3, 3] | [3, 2, 5] | [3, 3, 4] | [4, 2, 4] | [4, 3, 3] | [4, 1, 2, 3] | [4, 4, 1, 1] |
| 52 | [4, 3, 3] | [3, 3, 4] | [3, 2, 5] | [3, 3, 4] | [5, 3, 2] | [6, 3, 1] | [4, 2, 3, 1] | [4, 1, 4, 1] |
| 53 | [5, 2, 3] | [4, 3, 3] | [4, 3, 3] | [3, 3, 4] | [5, 2, 3] | [4, 3, 3] | [3, 4, 3] | [4, 1, 2, 3] |
| 54 | [4, 2, 4] | [4, 3, 3] | [3, 2, 5] | [3, 3, 4] | [4, 3, 3] | [4, 3, 3] | [4, 1, 2, 3] | [4, 4, 2] |
| 55 | [4, 3, 3] | [3, 2, 5] | [4, 3, 3] | [3, 2, 5] | [4, 3, 3] | [5, 2, 3] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 56 | [4, 2, 4] | [3, 2, 5] | [3, 3, 4] | [3, 2, 5] | [5, 2, 3] | [4, 3, 3] | [4, 1, 2, 3] | [3, 5, 2] |
| 57 | [4, 2, 4] | [5, 2, 3] | [3, 3, 4] | [4, 2, 4] | [5, 2, 3] | [5, 3, 2] | [3, 4, 1, 2] | [3, 5, 2] |
| 58 | [3, 3, 4] | [3, 2, 5] | [3, 3, 4] | [3, 2, 5] | [4, 2, 3, 1] | [5, 3, 2] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 59 | [4, 2, 4] | [4, 3, 3] | [3, 2, 5] | [4, 2, 4] | [4, 3, 3] | [4, 3, 3] | [4, 1, 2, 3] | [4, 2, 3, 1] |
| 60 | [5, 2, 3] | [3, 2, 5] | [4, 2, 4] | [3, 2, 5] | [5, 2, 3] | [5, 2, 3] | [4, 1, 2, 3] | [4, 1, 2, 3] |
| 61 | [4, 3, 3] | [3, 3, 4] | [3, 3, 4] | [3, 3, 4] | [4, 4, 2] | [5, 3, 2] | [4, 4, 2] | [4, 1, 2, 3] |
| 62 | [4, 3, 3] | [3, 3, 4] | [3, 3, 4] | [3, 3, 4] | [4, 3, 3] | [5, 2, 3] | [4, 1, 2, 3] | [3, 4, 3] |
| 63 | [3, 3, 4] | [4, 2, 4] | [3, 3, 4] | [3, 2, 5] | [5, 3, 2] | [4, 3, 3] | [4, 4, 1, 1] | [4, 1, 2, 3] |
| 64 | [4, 3, 3] | [4, 2, 4] | [3, 3, 4] | [4, 2, 4] | [4, 3, 3] | [5, 3, 2] | [4, 1, 2, 3] | [4, 1, 2, 3] |

### A.4.8 Final Third Entries

The following abbreviations apply: Left Channel Entries (Left), Left In Channel Entries (Left In), Central Channel Entries (Center), Right In Channel Entries (Right In), Right Channel Entries (Right).

Table A.51: Results for the home team final third entries (Matches 1-32).

| No | Home-Left(P) | Home-Left In(P) | Home-Center(P) | Home-Right In(P) | Home-Right(P) |
|---|---|---|---|---|---|
| 1 | 10 | 3 | 3 | 2 | 8 |
| 2 | 11 | 2 | 3 | 5 | 11 |
| 3 | 17 | 6 | 4 | 8 | 18 |
| 4 | 16 | 5 | 4 | 5 | 14 |
| 5 | 29 | 9 | 5 | 9 | 19 |
| 6 | 16 | 2 | 7 | 5 | 16 |
| 7 | 17 | 4 | 1 | 2 | 18 |
| 8 | 6 | 3 | 4 | 5 | 20 |
| 9 | 6 | 3 | 3 | 3 | 4 |
| 10 | 31 | 4 | 12 | 11 | 16 |
| 11 | 19 | 10 | 9 | 4 | 17 |
| 12 | 10 | 2 | 3 | 1 | 4 |
| 13 | 13 | 3 | 11 | 4 | 10 |
| 14 | 12 | 4 | 5 | 6 | 13 |
| 15 | 23 | 7 | 6 | 5 | 9 |
| 16 | 17 | 10 | 7 | 8 | 20 |
| 17 | 14 | 3 | 6 | 4 | 10 |
| 18 | 9 | 6 | 3 | 4 | 10 |
| 19 | 10 | 5 | 3 | 1 | 9 |
| 20 | 15 | 2 | 6 | 3 | 14 |
| 21 | 10 | 3 | 11 | 6 | 11 |
| 22 | 5 | 1 | 4 | 7 | 12 |
| 23 | 15 | 6 | 3 | 1 | 16 |
| 24 | 8 | 7 | 7 | 6 | 14 |
| 25 | 23 | 7 | 9 | 5 | 11 |
| 26 | 15 | 6 | 3 | 2 | 9 |
| 27 | 15 | 5 | 3 | 4 | 6 |
| 28 | 13 | 2 | 3 | 3 | 7 |
| 29 | 6 | 3 | 4 | 2 | 16 |
| 30 | 23 | 5 | 3 | 7 | 25 |
| 31 | 15 | 12 | 8 | 4 | 11 |
| 32 | 16 | 8 | 3 | 5 | 6 |

Table A.52: Results for the home team final third entries (Matches 33-64).

| No | Home-Left(P) | Home-Left In(P) | Home-Center(P) | Home-Right In(P) | Home-Right(P) |
|---|---|---|---|---|---|
| 33 | 5 | 1 | 2 | 0 | 4 |
| 34 | 12 | 4 | 4 | 2 | 5 |
| 35 | 11 | 2 | 4 | 2 | 6 |
| 36 | 28 | 16 | 10 | 10 | 18 |
| 37 | 3 | 4 | 3 | 1 | 8 |
| 38 | 14 | 2 | 4 | 0 | 11 |
| 39 | 3 | 2 | 1 | 0 | 3 |
| 40 | 2 | 2 | 6 | 2 | 6 |
| 41 | 27 | 5 | 2 | 3 | 7 |
| 42 | 23 | 3 | 1 | 5 | 11 |
| 43 | 2 | 3 | 0 | 1 | 4 |
| 44 | 6 | 5 | 1 | 3 | 3 |
| 45 | 14 | 5 | 4 | 4 | 10 |
| 46 | 8 | 9 | 2 | 2 | 4 |
| 47 | 13 | 5 | 3 | 8 | 8 |
| 48 | 9 | 4 | 6 | 3 | 4 |
| 49 | 6 | 1 | 3 | 10 | 8 |
| 50 | 16 | 6 | 8 | 5 | 19 |
| 51 | 17 | 7 | 2 | 6 | 11 |
| 52 | 18 | 6 | 3 | 4 | 19 |
| 53 | 17 | 5 | 3 | 7 | 13 |
| 54 | 16 | 7 | 4 | 4 | 14 |
| 55 | 6 | 2 | 1 | 0 | 7 |
| 56 | 7 | 5 | 10 | 3 | 3 |
| 57 | 11 | 7 | 8 | 5 | 17 |
| 58 | 19 | 3 | 0 | 7 | 29 |
| 59 | 11 | 6 | 8 | 2 | 13 |
| 60 | 3 | 3 | 4 | 0 | 3 |
| 61 | 8 | 4 | 7 | 4 | 9 |
| 62 | 12 | 2 | 3 | 2 | 10 |
| 63 | 21 | 4 | 4 | 1 | 6 |
| 64 | 18 | 5 | 6 | 8 | 11 |

Table A.53: FIFA results for the home team final third entries (Matches 1-32).

| No | Home-Left(T) | Home-Left In(T) | Home-Center(T) | Home-Right In(T) | Home-Right(T) |
|---|---|---|---|---|---|
| 1 | 15 | 0 | 3 | 1 | 9 |
| 2 | 12 | 4 | 2 | 4 | 13 |
| 3 | 11 | 5 | 2 | 3 | 11 |
| 4 | 14 | 5 | 4 | 4 | 11 |
| 5 | 30 | 6 | 3 | 8 | 19 |
| 6 | 17 | 4 | 7 | 6 | 18 |
| 7 | 20 | 6 | 1 | 3 | 27 |
| 8 | 12 | 4 | 5 | 8 | 18 |
| 9 | 6 | 3 | 5 | 2 | 6 |
| 10 | 30 | 4 | 8 | 6 | 12 |
| 11 | 24 | 9 | 14 | 5 | 21 |
| 12 | 8 | 1 | 6 | 0 | 11 |
| 13 | 19 | 2 | 11 | 6 | 16 |
| 14 | 13 | 4 | 4 | 6 | 14 |
| 15 | 24 | 6 | 7 | 4 | 10 |
| 16 | 14 | 9 | 10 | 7 | 20 |
| 17 | 18 | 3 | 8 | 11 | 13 |
| 18 | 7 | 5 | 2 | 5 | 11 |
| 19 | 8 | 8 | 2 | 4 | 11 |
| 20 | 11 | 2 | 7 | 5 | 11 |
| 21 | 12 | 8 | 7 | 6 | 11 |
| 22 | 7 | 2 | 4 | 8 | 13 |
| 23 | 15 | 7 | 4 | 1 | 13 |
| 24 | 10 | 6 | 2 | 4 | 12 |
| 25 | 28 | 6 | 9 | 3 | 10 |
| 26 | 12 | 8 | 3 | 4 | 9 |
| 27 | 7 | 3 | 3 | 3 | 3 |
| 28 | 12 | 3 | 2 | 1 | 5 |
| 29 | 5 | 3 | 5 | 4 | 15 |
| 30 | 22 | 5 | 6 | 8 | 27 |
| 31 | 19 | 12 | 5 | 5 | 11 |
| 32 | 17 | 9 | 4 | 9 | 11 |

Table A.54: FIFA results for the home team final third entries (Matches 33-64).

| No | Home-Left(T) | Home-Left In(T) | Home-Center(T) | Home-Right In(T) | Home-Right(T) |
|---|---|---|---|---|---|
| 33 | 7 | 1 | 2 | 0 | 4 |
| 34 | 12 | 2 | 5 | 3 | 4 |
| 35 | 13 | 3 | 1 | 6 | 6 |
| 36 | 25 | 9 | 8 | 11 | 21 |
| 37 | 9 | 2 | 2 | 1 | 11 |
| 38 | 11 | 3 | 4 | 0 | 10 |
| 39 | 6 | 2 | 1 | 2 | 3 |
| 40 | 5 | 3 | 4 | 3 | 11 |
| 41 | 23 | 7 | 3 | 2 | 12 |
| 42 | 22 | 4 | 2 | 6 | 11 |
| 43 | 2 | 3 | 1 | 2 | 5 |
| 44 | 7 | 5 | 3 | 1 | 1 |
| 45 | 12 | 5 | 8 | 4 | 12 |
| 46 | 9 | 7 | 5 | 2 | 7 |
| 47 | 17 | 6 | 4 | 4 | 10 |
| 48 | 8 | 8 | 4 | 4 | 9 |
| 49 | 4 | 2 | 4 | 7 | 10 |
| 50 | 15 | 6 | 11 | 2 | 17 |
| 51 | 17 | 6 | 2 | 2 | 13 |
| 52 | 15 | 7 | 2 | 9 | 19 |
| 53 | 14 | 6 | 6 | 6 | 18 |
| 54 | 20 | 5 | 5 | 7 | 15 |
| 55 | 11 | 1 | 0 | 2 | 8 |
| 56 | 8 | 3 | 6 | 6 | 8 |
| 57 | 11 | 7 | 9 | 3 | 15 |
| 58 | 19 | 4 | 2 | 5 | 27 |
| 59 | 17 | 6 | 4 | 2 | 10 |
| 60 | 4 | 1 | 4 | 1 | 3 |
| 61 | 8 | 9 | 7 | 3 | 2 |
| 62 | 9 | 6 | 3 | 2 | 6 |
| 63 | 20 | 8 | 3 | 2 | 7 |
| 64 | 13 | 6 | 8 | 9 | 9 |

Table A.55: Results for the away team final third entries (Matches 1-32).

| No | Away-Left(P) | Away-Left In(P) | Away-Center(P) | Away-Right In(P) | Away-Right(P) |
|---|---|---|---|---|---|
| 1 | 5 | 3 | 3 | 2 | 5 |
| 2 | 9 | 1 | 3 | 3 | 18 |
| 3 | 5 | 2 | 3 | 3 | 1 |
| 4 | 10 | 1 | 4 | 4 | 6 |
| 5 | 7 | 2 | 3 | 4 | 6 |
| 6 | 7 | 1 | 3 | 3 | 3 |
| 7 | 9 | 9 | 4 | 3 | 3 |
| 8 | 3 | 2 | 3 | 5 | 6 |
| 9 | 18 | 3 | 4 | 4 | 16 |
| 10 | 7 | 0 | 0 | 2 | 4 |
| 11 | 2 | 0 | 4 | 4 | 8 |
| 12 | 14 | 3 | 4 | 4 | 10 |
| 13 | 9 | 9 | 4 | 4 | 17 |
| 14 | 9 | 1 | 5 | 3 | 13 |
| 15 | 7 | 7 | 6 | 3 | 3 |
| 16 | 7 | 3 | 5 | 1 | 9 |
| 17 | 8 | 1 | 6 | 6 | 6 |
| 18 | 19 | 3 | 2 | 6 | 17 |
| 19 | 8 | 5 | 3 | 0 | 3 |
| 20 | 12 | 1 | 2 | 4 | 13 |
| 21 | 6 | 4 | 4 | 2 | 15 |
| 22 | 23 | 5 | 3 | 10 | 16 |
| 23 | 12 | 3 | 4 | 4 | 21 |
| 24 | 5 | 3 | 4 | 1 | 7 |
| 25 | 8 | 1 | 1 | 1 | 3 |
| 26 | 9 | 2 | 0 | 3 | 6 |
| 27 | 11 | 4 | 4 | 4 | 14 |
| 28 | 7 | 4 | 1 | 3 | 6 |
| 29 | 12 | 5 | 13 | 5 | 9 |
| 30 | 7 | 3 | 4 | 4 | 3 |
| 31 | 4 | 3 | 1 | 4 | 9 |
| 32 | 6 | 6 | 4 | 8 | 9 |

Table A.56: Results for the away team final third entries (Matches 33-64).

| No | Away-Left(P) | Away-Left In(P) | Away-Center(P) | Away-Right In(P) | Away-Right(P) |
|---|---|---|---|---|---|
| 33 | 15 | 3 | 3 | 8 | 9 |
| 34 | 13 | 4 | 8 | 8 | 18 |
| 35 | 11 | 0 | 3 | 5 | 9 |
| 36 | 9 | 5 | 3 | 2 | 7 |
| 37 | 23 | 7 | 6 | 5 | 19 |
| 38 | 19 | 6 | 3 | 3 | 22 |
| 39 | 24 | 13 | 12 | 13 | 28 |
| 40 | 15 | 5 | 5 | 4 | 15 |
| 41 | 21 | 4 | 7 | 3 | 12 |
| 42 | 6 | 2 | 4 | 4 | 6 |
| 43 | 32 | 12 | 7 | 14 | 21 |
| 44 | 34 | 17 | 19 | 8 | 21 |
| 45 | 5 | 4 | 10 | 3 | 21 |
| 46 | 21 | 6 | 4 | 6 | 15 |
| 47 | 14 | 6 | 6 | 2 | 11 |
| 48 | 17 | 1 | 10 | 2 | 13 |
| 49 | 16 | 6 | 7 | 7 | 18 |
| 50 | 6 | 3 | 1 | 5 | 7 |
| 51 | 8 | 1 | 1 | 2 | 8 |
| 52 | 13 | 3 | 0 | 1 | 12 |
| 53 | 9 | 6 | 9 | 3 | 28 |
| 54 | 16 | 4 | 4 | 7 | 17 |
| 55 | 34 | 12 | 11 | 15 | 22 |
| 56 | 17 | 1 | 1 | 3 | 7 |
| 57 | 6 | 6 | 11 | 7 | 14 |
| 58 | 20 | 9 | 13 | 5 | 20 |
| 59 | 17 | 8 | 4 | 3 | 14 |
| 60 | 21 | 9 | 8 | 10 | 16 |
| 61 | 22 | 5 | 7 | 3 | 11 |
| 62 | 10 | 6 | 5 | 6 | 25 |
| 63 | 16 | 0 | 2 | 2 | 16 |
| 64 | 11 | 5 | 1 | 2 | 9 |

Table A.57: FIFA results for the away team final third entries (Matches 1-32).

| No | Away-Left(T) | Away-Left In(T) | Away-Center(T) | Away-Right In(T) | Away-Right(T) |
|---|---|---|---|---|---|
| 1 | 8 | 7 | 6 | 4 | 6 |
| 2 | 11 | 2 | 2 | 7 | 20 |
| 3 | 3 | 0 | 3 | 1 | 0 |
| 4 | 7 | 2 | 5 | 2 | 7 |
| 5 | 11 | 2 | 5 | 1 | 9 |
| 6 | 9 | 2 | 2 | 3 | 6 |
| 7 | 8 | 6 | 6 | 4 | 13 |
| 8 | 3 | 2 | 3 | 3 | 8 |
| 9 | 17 | 6 | 8 | 5 | 20 |
| 10 | 5 | 0 | 1 | 0 | 1 |
| 11 | 5 | 0 | 3 | 3 | 11 |
| 12 | 12 | 3 | 6 | 5 | 7 |
| 13 | 9 | 12 | 3 | 5 | 18 |
| 14 | 15 | 0 | 4 | 4 | 19 |
| 15 | 7 | 9 | 6 | 3 | 3 |
| 16 | 10 | 3 | 4 | 3 | 7 |
| 17 | 7 | 3 | 7 | 4 | 7 |
| 18 | 26 | 4 | 6 | 4 | 18 |
| 19 | 10 | 5 | 2 | 5 | 4 |
| 20 | 12 | 0 | 1 | 6 | 8 |
| 21 | 11 | 3 | 4 | 7 | 19 |
| 22 | 21 | 6 | 5 | 7 | 15 |
| 23 | 13 | 5 | 3 | 4 | 25 |
| 24 | 8 | 1 | 1 | 2 | 11 |
| 25 | 8 | 0 | 3 | 1 | 4 |
| 26 | 10 | 3 | 2 | 1 | 11 |
| 27 | 8 | 4 | 3 | 4 | 13 |
| 28 | 3 | 3 | 4 | 3 | 8 |
| 29 | 20 | 4 | 16 | 5 | 12 |
| 30 | 8 | 3 | 4 | 3 | 7 |
| 31 | 7 | 3 | 4 | 6 | 10 |
| 32 | 13 | 8 | 4 | 5 | 9 |

Table A.58: FIFA results for the away team final third entries (Matches 33-64).

| No | Away-Left(T) | Away-Left In(T) | Away-Center(T) | Away-Right In(T) | Away-Right(T) |
|---|---|---|---|---|---|
| 33 | 10 | 4 | 7 | 12 | 9 |
| 34 | 11 | 7 | 7 | 5 | 17 |
| 35 | 14 | 0 | 2 | 7 | 10 |
| 36 | 10 | 7 | 5 | 4 | 6 |
| 37 | 27 | 5 | 4 | 6 | 19 |
| 38 | 14 | 6 | 5 | 3 | 21 |
| 39 | 25 | 8 | 7 | 10 | 26 |
| 40 | 16 | 5 | 3 | 7 | 16 |
| 41 | 18 | 5 | 7 | 4 | 9 |
| 42 | 6 | 0 | 3 | 4 | 5 |
| 43 | 30 | 9 | 6 | 11 | 22 |
| 44 | 29 | 13 | 13 | 12 | 15 |
| 45 | 7 | 2 | 13 | 3 | 17 |
| 46 | 23 | 7 | 5 | 8 | 12 |
| 47 | 14 | 7 | 3 | 1 | 12 |
| 48 | 20 | 5 | 6 | 7 | 13 |
| 49 | 13 | 8 | 4 | 9 | 15 |
| 50 | 8 | 1 | 2 | 6 | 9 |
| 51 | 8 | 1 | 0 | 4 | 9 |
| 52 | 15 | 2 | 2 | 3 | 10 |
| 53 | 18 | 7 | 9 | 6 | 28 |
| 54 | 19 | 4 | 3 | 5 | 21 |
| 55 | 36 | 10 | 8 | 19 | 29 |
| 56 | 18 | 2 | 6 | 2 | 8 |
| 57 | 7 | 7 | 13 | 6 | 17 |
| 58 | 25 | 10 | 15 | 8 | 20 |
| 59 | 15 | 2 | 7 | 2 | 13 |
| 60 | 27 | 10 | 8 | 7 | 20 |
| 61 | 18 | 6 | 7 | 4 | 8 |
| 62 | 10 | 4 | 6 | 6 | 19 |
| 63 | 13 | 1 | 3 | 7 | 16 |
| 64 | 15 | 7 | 5 | 4 | 12 |

### A.4.9 Pressure on the Ball

The following abbreviations apply: Home Team Pressure Counts (Home), Away Team Pressure Counts (Away).

Table A.59: Results for the pressure on the ball (Matches 1-32).

| **No** | **Home(P)** | **Away(P)** | **Home(T)** | **Away(T)** |
|---|---|---|---|---|
| 1 | 252 | 240 | 256 | 279 |
| 2 | 255 | 265 | 263 | 251 |
| 3 | 210 | 309 | 139 | 416 |
| 4 | 285 | 281 | 242 | 292 |
| 5 | 227 | 294 | 250 | 316 |
| 6 | 246 | 320 | 226 | 287 |
| 7 | 268 | 303 | 193 | 290 |
| 8 | 240 | 328 | 163 | 361 |
| 9 | 287 | 270 | 284 | 320 |
| 10 | 200 | 353 | 185 | 585 |
| 11 | 204 | 354 | 164 | 487 |
| 12 | 290 | 225 | 391 | 217 |
| 13 | 289 | 258 | 313 | 316 |
| 14 | 252 | 261 | 240 | 231 |
| 15 | 269 | 306 | 286 | 326 |
| 16 | 249 | 296 | 236 | 338 |
| 17 | 256 | 285 | 161 | 276 |
| 18 | 274 | 255 | 308 | 232 |
| 19 | 271 | 250 | 254 | 279 |
| 20 | 236 | 274 | 266 | 350 |
| 21 | 306 | 369 | 217 | 273 |
| 22 | 316 | 248 | 329 | 173 |
| 23 | 254 | 245 | 269 | 282 |
| 24 | 197 | 296 | 220 | 327 |
| 25 | 254 | 249 | 300 | 294 |
| 26 | 229 | 256 | 194 | 360 |
| 27 | 301 | 302 | 347 | 316 |
| 28 | 256 | 313 | 275 | 387 |
| 29 | 315 | 283 | 285 | 234 |
| 30 | 246 | 288 | 220 | 324 |
| 31 | 222 | 268 | 282 | 344 |
| 32 | 234 | 321 | 226 | 362 |

Table A.60: Results for the pressure on the ball (Matches 33-64).

| No | Home(P) | Away(P) | Home(T) | Away(T) |
|---|---|---|---|---|
| 33 | 265 | 182 | 328 | 167 |
| 34 | 321 | 303 | 295 | 302 |
| 35 | 262 | 262 | 190 | 243 |
| 36 | 183 | 176 | 319 | 322 |
| 37 | 347 | 306 | 341 | 161 |
| 38 | 304 | 258 | 400 | 202 |
| 39 | 316 | 188 | 438 | 141 |
| 40 | 329 | 282 | 269 | 229 |
| 41 | 275 | 313 | 328 | 346 |
| 42 | 254 | 269 | 224 | 324 |
| 43 | 346 | 174 | 637 | 150 |
| 44 | 337 | 272 | 378 | 230 |
| 45 | 287 | 313 | 248 | 293 |
| 46 | 310 | 232 | 359 | 233 |
| 47 | 274 | 292 | 276 | 253 |
| 48 | 268 | 222 | 321 | 226 |
| 49 | 331 | 274 | 325 | 256 |
| 50 | 219 | 352 | 240 | 453 |
| 51 | 241 | 273 | 230 | 339 |
| 52 | 235 | 282 | 220 | 297 |
| 53 | 390 | 359 | 405 | 308 |
| 54 | 245 | 276 | 310 | 329 |
| 55 | 378 | 301 | 573 | 217 |
| 56 | 246 | 238 | 357 | 240 |
| 57 | 356 | 308 | 401 | 323 |
| 58 | 351 | 383 | 365 | 423 |
| 59 | 236 | 259 | 193 | 308 |
| 60 | 294 | 203 | 373 | 165 |
| 61 | 279 | 256 | 321 | 260 |
| 62 | 285 | 232 | 328 | 218 |
| 63 | 242 | 257 | 288 | 277 |
| 64 | 327 | 431 | 280 | 409 |

### A.4.10 Forced Turnovers

The following abbreviations apply: Home Team Forced Turnovers (Home), Away Team Forced Turnovers (Away).

Table A.61: Results for the forced turnovers (Matches 1-32).

| **No** | **Home(P)** | **Away(P)** | **Home(T)** | **Away(T)** |
|---|---|---|---|---|
| 1 | 64 | 62 | 52 | 72 |
| 2 | 65 | 60 | 63 | 73 |
| 3 | 46 | 72 | 63 | 62 |
| 4 | 69 | 74 | 81 | 72 |
| 5 | 60 | 65 | 64 | 56 |
| 6 | 75 | 66 | 76 | 73 |
| 7 | 67 | 64 | 61 | 70 |
| 8 | 59 | 70 | 65 | 80 |
| 9 | 70 | 69 | 74 | 47 |
| 10 | 53 | 67 | 46 | 76 |
| 11 | 52 | 83 | 55 | 87 |
| 12 | 66 | 68 | 87 | 58 |
| 13 | 74 | 70 | 64 | 79 |
| 14 | 70 | 60 | 65 | 54 |
| 15 | 70 | 73 | 70 | 82 |
| 16 | 62 | 84 | 72 | 71 |
| 17 | 75 | 77 | 89 | 84 |
| 18 | 71 | 67 | 67 | 67 |
| 19 | 70 | 64 | 85 | 52 |
| 20 | 47 | 68 | 52 | 61 |
| 21 | 78 | 103 | 81 | 88 |
| 22 | 60 | 54 | 69 | 53 |
| 23 | 59 | 70 | 79 | 61 |
| 24 | 55 | 54 | 63 | 79 |
| 25 | 64 | 62 | 47 | 66 |
| 26 | 48 | 76 | 38 | 78 |
| 27 | 84 | 78 | 87 | 72 |
| 28 | 61 | 79 | 79 | 101 |
| 29 | 80 | 92 | 83 | 81 |
| 30 | 66 | 79 | 53 | 75 |
| 31 | 63 | 70 | 85 | 80 |
| 32 | 66 | 82 | 68 | 81 |

Table A.62: Results for the forced turnovers (Matches 33-64).

| No | Home(P) | Away(P) | Home(T) | Away(T) |
|---|---|---|---|---|
| 33 | 67 | 54 | 49 | 56 |
| 34 | 68 | 77 | 63 | 74 |
| 35 | 72 | 84 | 59 | 62 |
| 36 | 48 | 41 | 62 | 52 |
| 37 | 85 | 84 | 90 | 74 |
| 38 | 77 | 73 | 68 | 80 |
| 39 | 65 | 52 | 67 | 48 |
| 40 | 77 | 79 | 82 | 76 |
| 41 | 73 | 76 | 70 | 68 |
| 42 | 62 | 71 | 66 | 72 |
| 43 | 82 | 48 | 85 | 49 |
| 44 | 83 | 83 | 79 | 77 |
| 45 | 72 | 85 | 92 | 84 |
| 46 | 67 | 62 | 54 | 50 |
| 47 | 76 | 89 | 74 | 82 |
| 48 | 77 | 61 | 78 | 54 |
| 49 | 82 | 69 | 101 | 77 |
| 50 | 61 | 53 | 67 | 73 |
| 51 | 61 | 68 | 60 | 74 |
| 52 | 64 | 78 | 71 | 64 |
| 53 | 109 | 91 | 100 | 100 |
| 54 | 57 | 57 | 73 | 81 |
| 55 | 95 | 81 | 100 | 66 |
| 56 | 65 | 50 | 71 | 54 |
| 57 | 81 | 78 | 91 | 79 |
| 58 | 93 | 80 | 95 | 77 |
| 59 | 57 | 61 | 49 | 54 |
| 60 | 77 | 47 | 88 | 44 |
| 61 | 76 | 58 | 85 | 63 |
| 62 | 64 | 49 | 72 | 47 |
| 63 | 74 | 61 | 75 | 72 |
| 64 | 80 | 91 | 87 | 104 |

### A.4.11 Expected Goal (xG)

The following abbreviations apply: Home Team xG (Home), Away Team xG (Away), Home Team Actual Score (Home(T)), Away Team Actual Score(Away(T)).

Table A.63: Results for the expected goal (Matches 1-32).

| **No** | **Home(P)** | **Away(P)** | **Home(T)** | **Away(T)** |
|---|---|---|---|---|
| 1 | 0.37 | 1.13 | 0 | 2 |
| 2 | 0.96 | 0.93 | 0 | 2 |
| 3 | 1.88 | 1.31 | 6 | 2 |
| 4 | 0.63 | 1.31 | 1 | 1 |
| 5 | 3.27 | 0.46 | 4 | 1 |
| 6 | 1.13 | 0.94 | 0 | 0 |
| 7 | 1.19 | 1.33 | 0 | 0 |
| 8 | 2.31 | 0.16 | 1 | 2 |
| 9 | 0.59 | 2.31 | 1 | 0 |
| 10 | 2.79 | 0.00 | 7 | 0 |
| 11 | 3.48 | 1.24 | 1 | 2 |
| 12 | 0.49 | 0.80 | 0 | 0 |
| 13 | 1.66 | 0.59 | 1 | 0 |
| 14 | 1.01 | 0.55 | 0 | 0 |
| 15 | 1.82 | 0.81 | 3 | 2 |
| 16 | 2.16 | 0.29 | 2 | 0 |
| 17 | 1.21 | 2.63 | 0 | 2 |
| 18 | 0.91 | 0.98 | 1 | 3 |
| 19 | 0.14 | 1.39 | 1 | 1 |
| 20 | 0.83 | 0.81 | 0 | 0 |
| 21 | 1.29 | 0.85 | 0 | 1 |
| 22 | 1.51 | 2.00 | 2 | 0 |
| 23 | 2.57 | 0.73 | 2 | 1 |
| 24 | 0.37 | 0.30 | 2 | 0 |
| 25 | 1.73 | 0.29 | 0 | 1 |
| 26 | 0.85 | 1.03 | 0 | 2 |
| 27 | 1.41 | 0.42 | 4 | 1 |
| 28 | 0.68 | 0.95 | 1 | 1 |
| 29 | 1.69 | 2.27 | 3 | 3 |
| 30 | 2.21 | 1.51 | 2 | 3 |
| 31 | 0.80 | 0.32 | 1 | 0 |
| 32 | 1.60 | 1.42 | 2 | 0 |

Table A.64: Results for the expected goal (Matches 33-64).

| **No** | **Home(P)** | **Away(P)** | **Home(T)** | **Away(T)** |
|---|---|---|---|---|
| 33 | 0.42 | 2.53 | 0 | 3 |
| 34 | 1.06 | 1.10 | 0 | 1 |
| 35 | 1.10 | 2.13 | 1 | 2 |
| 36 | 1.60 | 0.31 | 2 | 0 |
| 37 | 0.72 | 1.21 | 1 | 0 |
| 38 | 0.35 | 0.80 | 1 | 0 |
| 39 | 0.42 | 3.44 | 0 | 2 |
| 40 | 0.95 | 2.45 | 1 | 2 |
| 41 | 0.86 | 2.81 | 0 | 0 |
| 42 | 0.90 | 0.64 | 0 | 2 |
| 43 | 0.95 | 1.00 | 2 | 1 |
| 44 | 1.09 | 4.66 | 1 | 4 |
| 45 | 1.23 | 1.51 | 0 | 2 |
| 46 | 1.38 | 1.17 | 2 | 1 |
| 47 | 1.75 | 3.00 | 2 | 3 |
| 48 | 0.61 | 2.87 | 1 | 0 |
| 49 | 1.49 | 1.52 | 3 | 1 |
| 50 | 1.40 | 0.77 | 2 | 0 |
| 51 | 1.09 | 1.35 | 3 | 0 |
| 52 | 1.36 | 1.78 | 3 | 1 |
| 53 | 1.19 | 1.31 | 1 | 1 |
| 54 | 2.69 | 0.93 | 4 | 1 |
| 55 | 0.58 | 1.35 | 0 | 0 |
| 56 | 1.97 | 0.97 | 6 | 1 |
| 57 | 0.55 | 1.75 | 2 | 2 |
| 58 | 0.70 | 2.05 | 1 | 1 |
| 59 | 2.49 | 1.16 | 1 | 2 |
| 60 | 0.90 | 1.20 | 1 | 0 |
| 61 | 1.91 | 0.71 | 3 | 0 |
| 62 | 2.11 | 1.45 | 2 | 0 |
| 63 | 1.36 | 0.91 | 2 | 1 |
| 64 | 2.72 | 2.05 | 3 | 3 |

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