Beth Mead Passing Report: An analysis of chance creation via one-two passes

Maia Trower

June 2023

1 Problem Introduction

A one-two pass, also known as a give-and-go or wall pass, is a combination passing technique that involves player A passing the ball to a teammate, player B, who then returns the ball to player A. Player A uses the time off the ball to reposition, typically moving up the pitch and past a defender to receive the closing pass. This is a very effective method of chance creation, as it can allow a player to find space behind a defender and progress up the pitch without the risk of directly taking on the opposition with a dribble. We suggest that analysing the effectiveness of a given player's one-two passes, and acting on the insights, could lead to more shots and goals for the player.

This report and the attached presentation detail a brief analysis of the one-two passing ability of Beth Mead, a key offensive player for both Arsenal WFC and England Women, and compares how effective they are with another notable player, Fran Kirby. We consider the following questions, and attempt to answer these with freely available statsbomb data.

- What does it mean to be effective with one-two passes?
- What factors influence the effectiveness of the combination?
- How does effectiveness vary amongst top WSL players?

[Note: the figures referenced in this report are contained within the presentation slides attached to this submission.]

1.1 Definitions and Data

We first provide a definition of the one-two event and describe how "effectiveness" of the exchange is quantified in this context.

One-two: A one-two pass is defined here to be a pass from player A to player B, who then passes back to player A. Specifically, one-twos must decrease the distance between the goal by at least 25%, and player B must be predominantly static. That is, we remove all one-two passes that do not progress up the pitch

by the specified amount and where player B carries the ball further than 5 metres. These thresholds are referred to as the progression threshold and the carry threshold. Additionally, since the idea of the exchange is to quickly gain ground, we require that the second pass must be made no more than 5 seconds after the first.

Opening pass: The opening pass is the first of the two passes in a one-two. That is, the opening pass goes from player A to player B, and player A is the opening player.

Closing pass: A closing pass is defined as the second of the two passes in a one-two exchange. The closing pass is initiated by player B, the closing player, and is received by player A.

Key pass: We define a key pass to be a pass that is an assist to either a shot or a goal.

We define the one-two and key pass terms this way in order to limit the scope of the analyses; in particular, key passes are in general defined in a much broader way. For example, a one-two that leads to an assist should be considered key. Due to time constraints we did not broaden the definition, but this is clearly a natural next step.

For this work we used the freely available statsbomb data, accessed via GitHub [2]. We exclusively used data from the Women's Super League (WSL) season 2020/21 and the UEFA Women's Euro 2022. All code used to stream the data, generate the plots and conduct the analysis has also been made available on GitHub (see [3]) [1].

2 Analysis

Having identified one-two passes as a chance-creating event, we begin by comparing Mead's performance to other WSL players in terms of number of one-twos completed. Across the 131 matches in the 20/21 season, Mead was either the opening player or the closing player in a one-two a total of 32 times (see slide 1 in the attached presentation). This places her at the top of the ranking for total completed, where she is joint with Fran Kirby, and she is also the leader for number of one-twos closed. Despite this, our analysis shows that Mead is able to convert a one-two into a shot or goal only 3.1% of times. This is in contrast to Kirby, who closes the one-two with a shot or goal assist in 18.8% of cases (see slide 2) . By this metric, Kirby's combination passes are more than 6 times more effective than Mead. What drives this difference in passing ability?

To answer this question, we look at the location data of the events. Heatmap plots of the origin of the opening and closing passes give an idea of where Mead typically looks to complete the combination (see slide 3), and we see that Mead's lateral position is very wide, with the most dense region starting within a yard of the touchline. We note here that, although the closing pass is received closer to the goal line (as stipulated in our definition), this pass is also typically occurring wide in the wings. Another key finding is that the closing pass is most often

[1] The code is also contained in the zip file of this submission

not received within the box. This illustrates that Mead is not able to find space behind the defenders close to the goal, where shots and goals are typically taken.

By way of comparison, we also generate a heatmap for Kirby's opening and closing passes. It is clear here that Kirby plays from a more central lateral position than Mead, and tends to open the exchange further into the attacking half. In fact, Kirby's densest region for opening passes touches the penalty area. It is also notable that the majority of Kirby's one-twos are finishing within the box, increasing the threat level and giving the best chance of a shot or goal.

These heatmaps suggest that one-twos occurring from a wider position and failing to penetrate the box pose a lesser threat and are less effective, and this is typically the profile of a one-two event involving Mead. We now consider a one-two pass completed by Mead in the Euro 22 tournament that was effective and resulted in a shot taken (see slide 4). Here, we see that the opening pass was taken several yards into the pitch laterally, and was closed very centrally in the penalty area. We also see that this one-two identified a key space behind the defenders and exploited that gap effectively. This shows that when Mead changes the profile of her one-two combination, she is able to achieve a pass that presents an attacking threat to the opposition.

From these illustrations and analyses, we suggest that effectiveness of a one-two combination is closely related to its spatial profile, and in particular the crucial factors are a central lateral position and a closing pass that is within the box. Considering these factors more strongly when making decisions could lead to combinations with a higher expected threat or expected goal metric.

3 Methodology Motivation

This methodology and analysis was chosen for a number of reasons. Firstly, assessing simple passes taken or received by players misses key information about complex chains of ball progression. This brief analysis of one-two passes could relatively simply be extended to analyse passing chains and illustrate the movement of the ball up the pitch in various phases of play, and this report makes a first step towards this complex analysis. Secondly, the one-two effectiveness metric sheds some light on a technique that is not commonly analysed in women's football and presented an opportunity to define new statistics and data sets using existing data, to go beyond what is already available. We also note that the availability of 360 data for the Euro 2022 opens up the potential to investigate these combinations more thoroughly; we are able to visualise the locations of defending players and potential recipients of a one-two opening pass.

4 Pros and Cons

4.1 Pros

As mentioned above, analysing a passing combination rather than a single pass can generate a deeper insight into player ability and performance. Choosing the

one-two pass, which by definition must move the ball up the pitch, also allows us to comment both on off-the-ball movement of the player and ball progression. Off-the-ball movement is a current area of interest, as illustrated by the demand for tracking data (e.g. statsbomb 360 data), but currently the freely available data does not track individual players when they are not involved in on-ball events. As we can extract the start and end positions of the opening player, we are able to use standard event-level data to provide a picture of the off-ball movements without directly tracking the player.

This methodology also illustrates key football IQ abilities that are more difficult to quantitatively analyse than simple events. For example, a one-two pass requires a high level of coordination with teammates, a keen spatial awareness, and strong communication and recognition of intention between both players. It is clear that a metric relating to one-twos also comments on the ability of a player to demonstrate these abilities, whereas an analysis of simple passes may fail to identify this.

4.2 Cons

One key disadvantage of this approach is that the definition of one-two passes limits the analysis to events occurring in the attacking third, performed by offensive players (although this is not explicitly included in the definition). This means that midfield or defensive players are not accounted for, despite potentially providing necessary support. As mentioned above, this could be rectified by extending this analysis to possession chains. This is being considered already in metrics such as the xGChain [1], but its application to women's football is lesser studied.

Also, the lateral positioning of the pass is potentially influenced by the formation of the attacking or defending team, which is not accounted for here. Neither is the data normalised for minutes played, although we have attempted to provide an accurate comparison by choosing players with an equal number of one-twos completed.

Finally, we note that this analysis is limited by the definition of a key pass. Looking at Mead's closing pass heatmap could suggest, for example, that her aim is to create a key pass for the following event, rather than for the closing pass to be the key pass itself. That is, the analysis presented here could be misrepresenting the effectiveness of the one-two by assuming that the one-two is effective if it is immediately followed by a goal. Extending the definition of a key pass to include the possibility of the one-two leading to an assist may impact the insights gleaned from this report.

5 Extensions

Due to time constraints a number of potential routes were not explored. These include

- A broader definition of key pass (see above)

- An analysis of longer chains of possession (see above)
- Investigate the benefit of attempting the one-two. Is a player's one-two more or less likely to be a key pass than a standard pass?
- Assess the risk associated with one-twos. How often is the closing pass intercepted? How likely is a miscommunication or loss of possession as a result of this event?
- With 360 data, use metrics to analyse the line-breaking ability in a one-two pass. Is it more likely that an opening pass breaks the line, or a closing pass? Does this impact one-two effectiveness?
- With 360 data, define metrics to analyse how well space is identified and exploited. How well does a player recognise a space and finish a one-two pass within that space? Does this impact effectiveness?
- With 360 data, investigate locations of other teammates around the box. Is the one-two pass the correct choice or is there a less risky or more effective alternative?

References

[1] Thom Lawrence. *Introducing xGChain and xGBuildup*. `https://statsbomb.com/articles/soccer/introducing-xgchain-and-xgbuildup/`. 2018.

[2] statsbomb. *statsbombpy*. `https://github.com/statsbomb/statsbombpy`. 2021.

[3] Maia Trower. *one-two analysis*. `https://github.com/maia-trower/one_two_WSL`. 2023.