Player performance

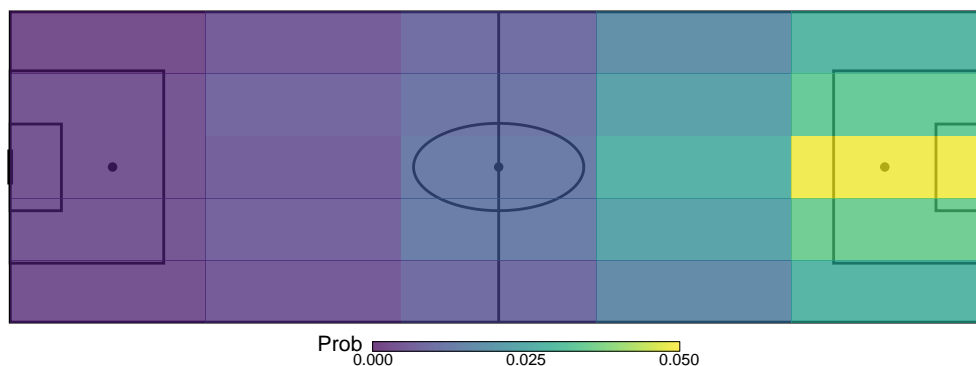*Gustav Sternelöv*

Contents

Pass impact

Combining pass impact and pass probability

Pass probability: Probability that the pass will be accurate

Pass impact: Impact of pass on probability to create a goal scoring opportunity

The value of a pass is calculated by looking at the location of passes to shots.

Location of passes to shots

The expected value of a pass from a zone is calculated by looking at the probability for each zone given the location - times the value of the respective zone.

Location of footed passes from red zone
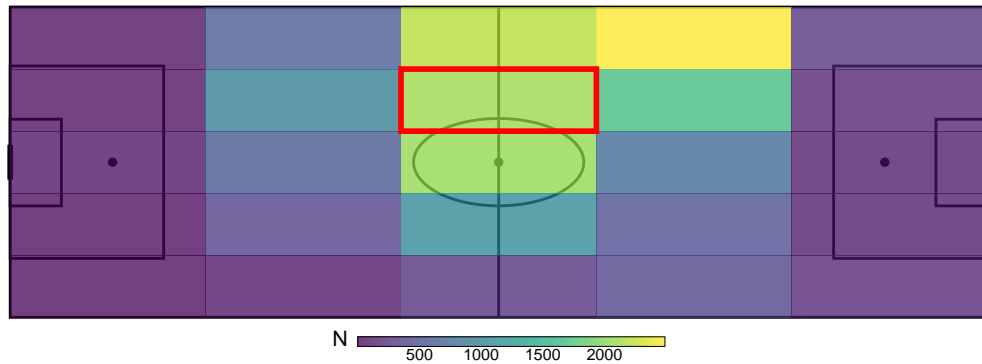
So, the expected value of a pass from the red zone is 0.015
The value of making a vertical pass forward to the next zone is 0.022
Hence, that pass would be 0.007 better/more valuable than expected from that position on the pitch

Next plot, using my pass probability model to get the average probability of making a pass from one zone to all other zones. The method I have used for predicting the outcome of a pass utilizes three pieces of information from every pass. The location of the pass, the end location of the pass and the type of pass. From the first two pieces of information, it is possible to extract a lot of data about a pass. In my method, I use the location of a pass, the length of the pass and the distance from the center of the pitch before and after the pass together with the angle toward the goal and the angle toward the midpoint of the goal line. The last piece of information, pass type, consists of four categories, foot passes, head passes, hand passes and crosses. These features are used together to predict if a pass will be accurate or not.

### Pass probability of footed passes from red zone
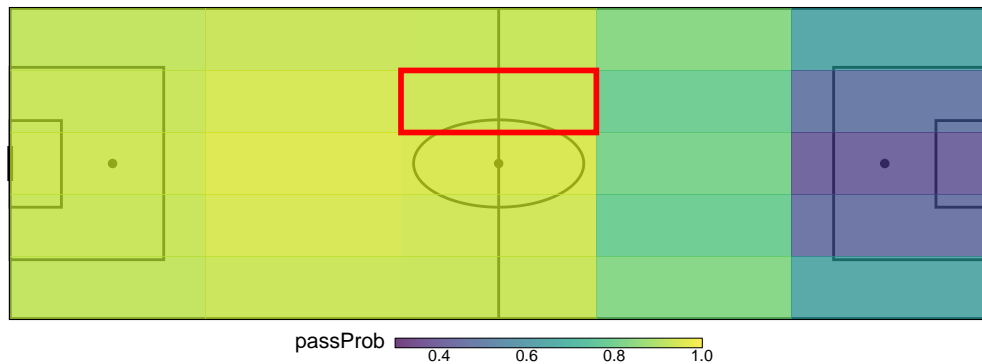
So, each pass now has an expected
- Value, defined as the probability that the pass will lead to pass that assists a shot
- Probability of being accurate

The vertical pass mentioned above had an expected value if 0.007 above average. The expected pass probability for that pass is 0.788.
Taking the pass value times the pass probability gives that the estimated impact of the pass is 0.6 %.

Uses the above calculations to calculate the total and average impact for each player, and comparing that against the expected impact. The plot below shows the difference of expected and actual impact against total impact.
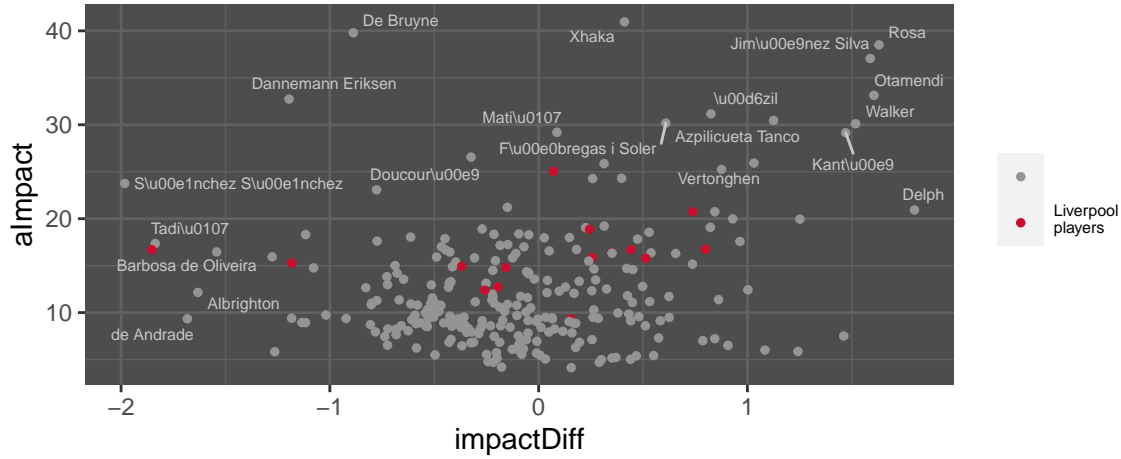
The plot below shows the mean difference of expected and actual impact against mean impact.
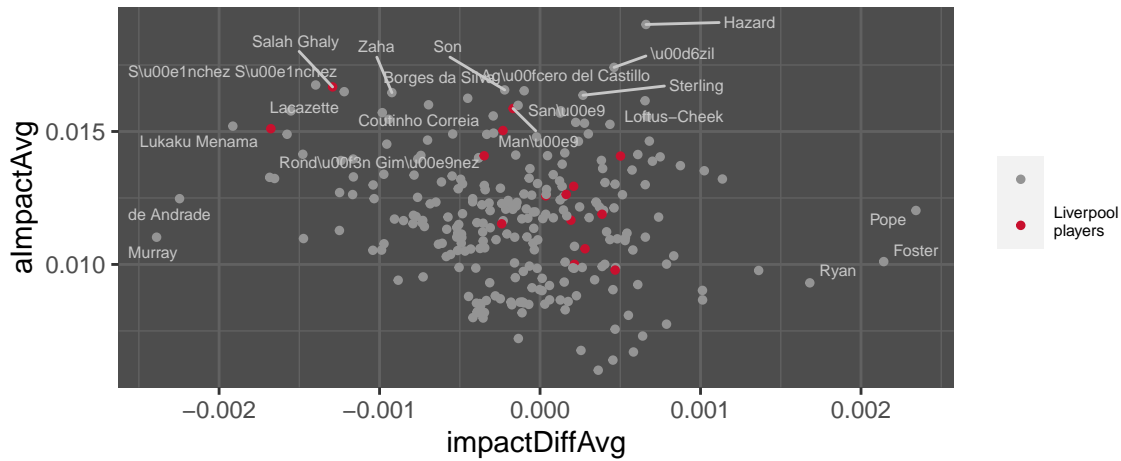
The tables shows the top 10 for total pass impact and mean pass impact, respectively.

Name	Impact	Passes
Granit Xhaka	40.95	2974
Kevin De Bruyne	39.79	2672
Fernando Luiz Rosa	38.51	2842
David Josu\u00e9 Jim\u00e9nez Silva	37.06	2382
Nicol\u00e1s Hern\u00e1n Otamendi	33.13	2964
Christian Dannemann Eriksen	32.73	2196
Mesut \u00d6zil	31.17	1790
C\u00e9sar Azpilicueta Tanco	30.46	2713
Francesc F\u00e0bregas i Soler	30.18	2024
Kyle Walker	30.11	2316

Table 1: Sum of expected pass impact - top 10

Continue with a brief analysis of the players in Liverpool.
Mohamed Salah is Liverpool's number one for mean pass impact and fourth in the league.
Jordan Henderson is Liverpool's number one for total pass impact and 17th in league.

Looks at the zone from which they have the highest number of passes and compares the distribution to the average distribution.

Name	Impact	Passes
Eden Hazard	1.9 %	1327
Mesut \u00d6zil	1.74 %	1790
Alexis Alejandro S\u00e1nchez S\u00e1nchez	1.67 %	1418
Mohamed Salah Ghaly	1.67 %	915
Heung-Min Son	1.66 %	938
Sergio Leonel Ag\u00fcero del Castillo	1.65 %	609
Wilfried Zaha	1.65 %	663
Alexandre Lacazette	1.65 %	657
Raheem Shaquille Sterling	1.64 %	1174
Willian Borges da Silva	1.62 %	916

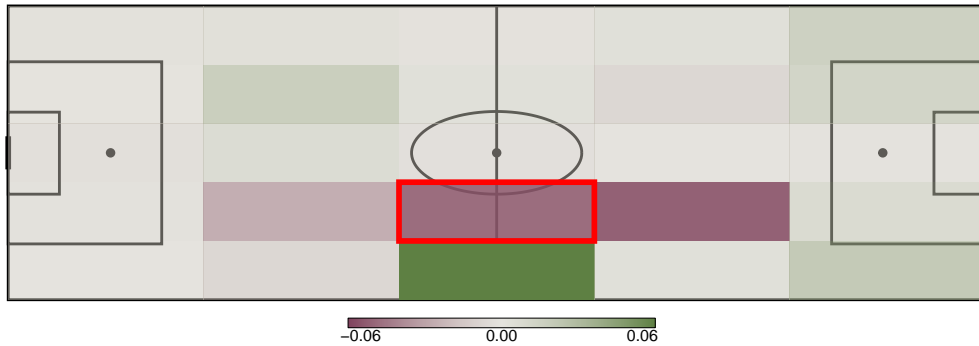Table 2: Mean expected pass impact - top 10

Location of footed passes from red zone
Mohamed Salah – Compared to average location of passes from same zone
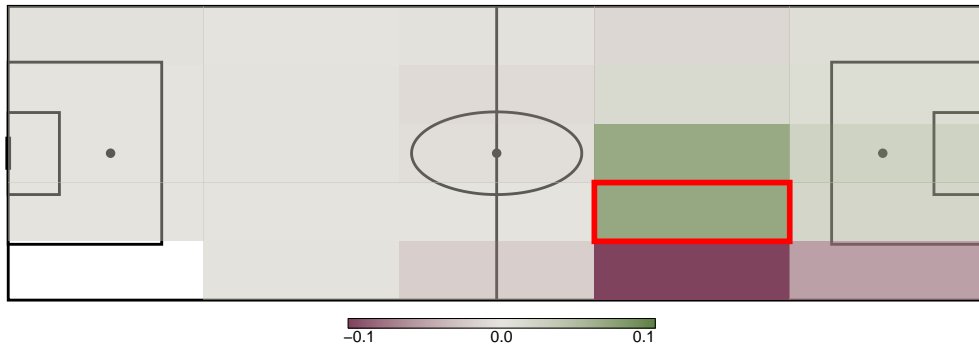
Location of footed passes from red zone
Jordan Henderson – Compared to average location of passes from same zone
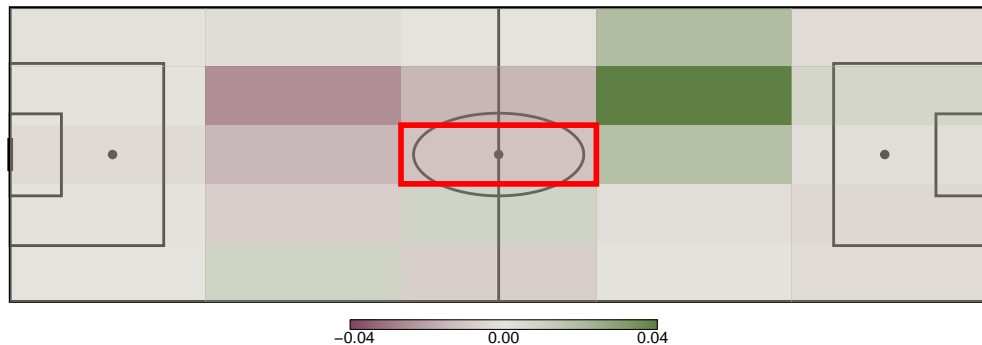

Salah is good - keeps the ball in valuable zones

Henderson often plays the ball out the right or to the left centre back, compared to the average distribution
n that zone.

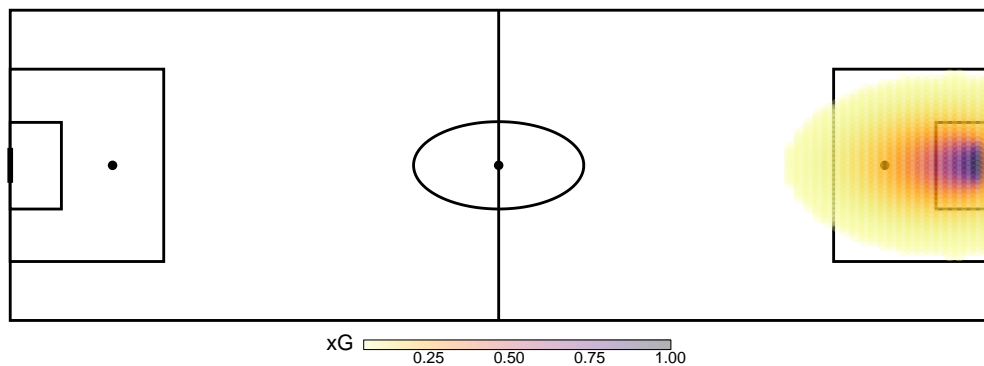Might think that Liverpool could use some more creativity from midfield

Adding Granit Xhaka as comparison to Henderson. Plays the ball forward more than average and to valuable
zones.

Location of footed passes from red zone
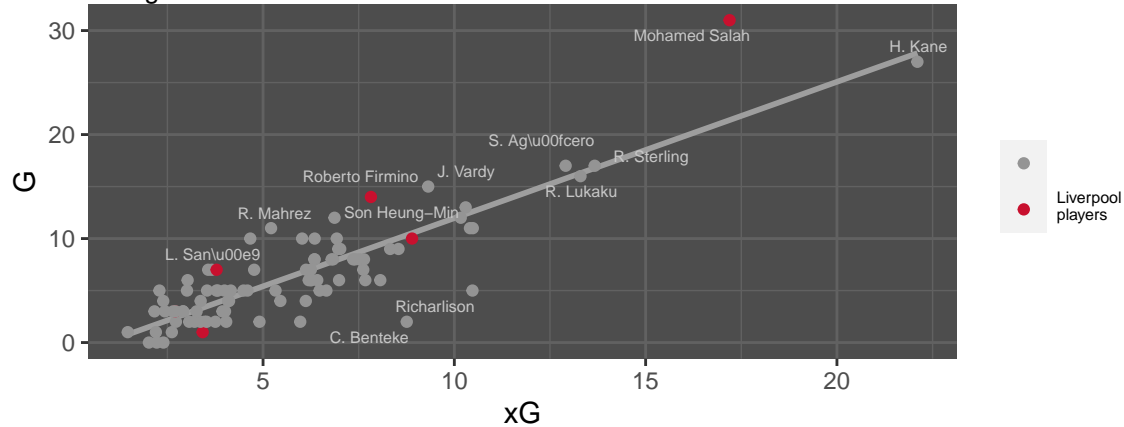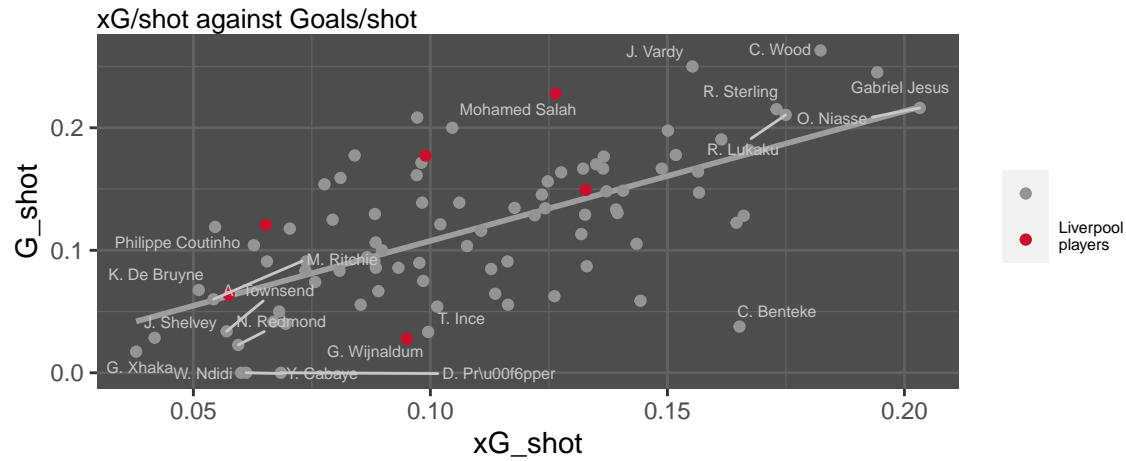Granit Xhaka – Compared to average location of passes from same zone

−0.04   0.00   0.04

Expected goals

xG model probabilities. Cut−off at 5 %

xG   0.25   0.50   0.75   1.00

xG against Goals

xG/shot against Goals/shot

Expected assists

xA against assists

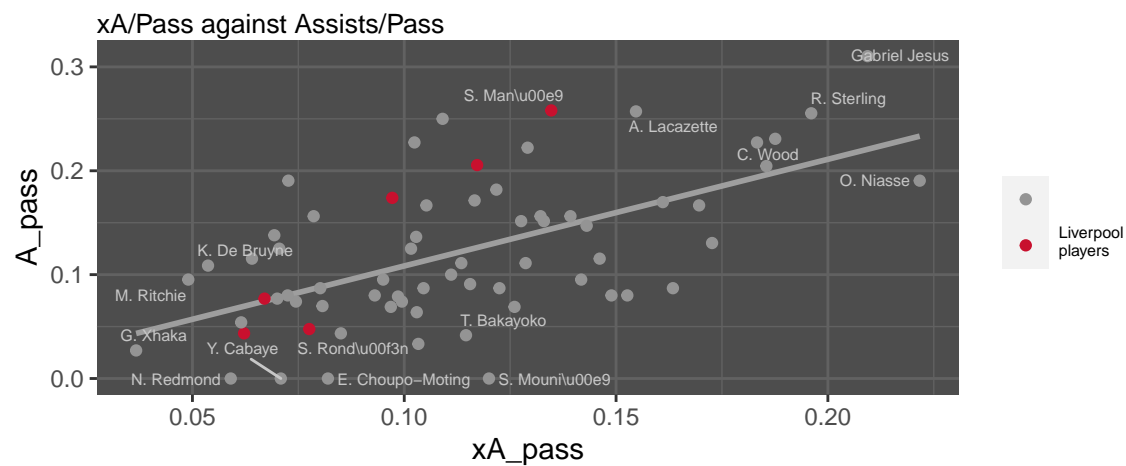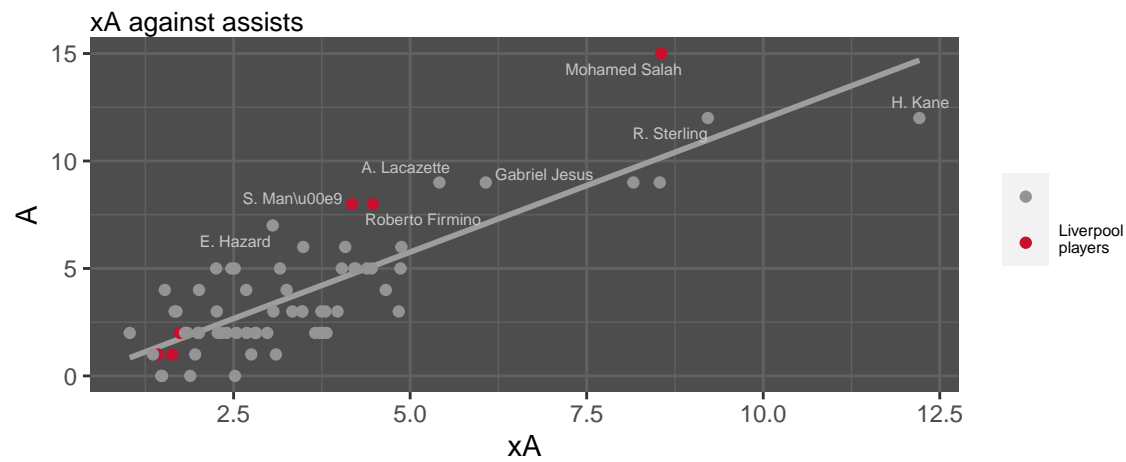### xA/Pass against Assists/Pass

Creativity from the front three - Mané, Firmino and Salah
Mentioned earlier that Liverpool's midfield might lack a bit of creativity

Seem like creativity is a less important piece of contribution for a midfielder in Liverpool compared to the average team

Radars

To do

Do a short report with Radars, using passing model and xG model

Would like to make some of the values per 90, i.e. get number of minutes played for each player and divide the value by the number of 90s played. For example, xG per 90 instead of total xG and shots per 90 instead of total number of shots

Clean up code a bit Add radars Upload to Github