Player performance

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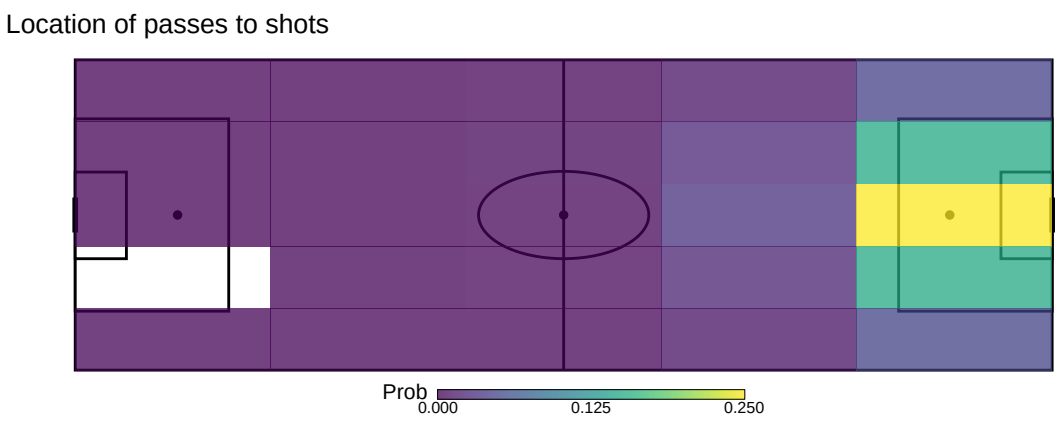
Pass impact

Combining pass impact and pass probability

Pass probability: Probability that the pass will be accurate

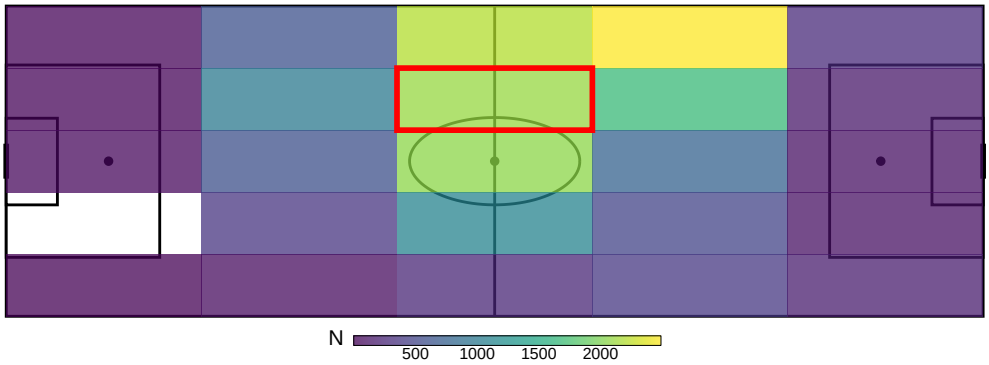
Pass impact: Impact of pass on probability to create a goal scoring opportunity

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



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.

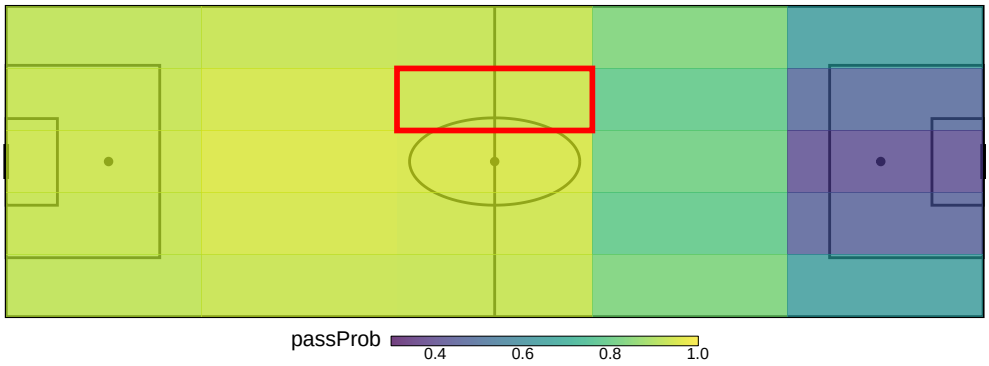
Location of footed passes from red zone



So, the expected value of a pass from the red zone is 0.012
The value of making a vertical pass forward to the next zone is 0.025
Hence, that pass would be 0.013 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.

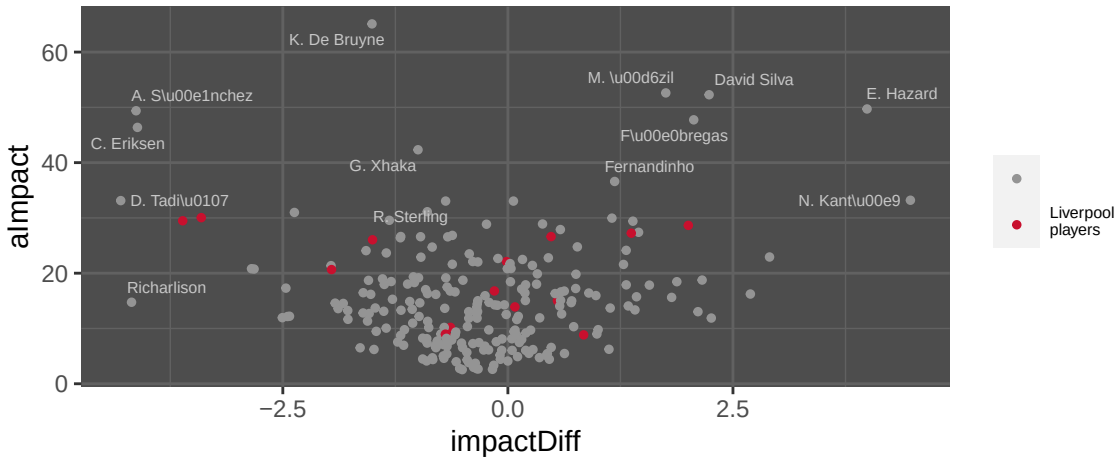
Pass probability of footed passes from red zone



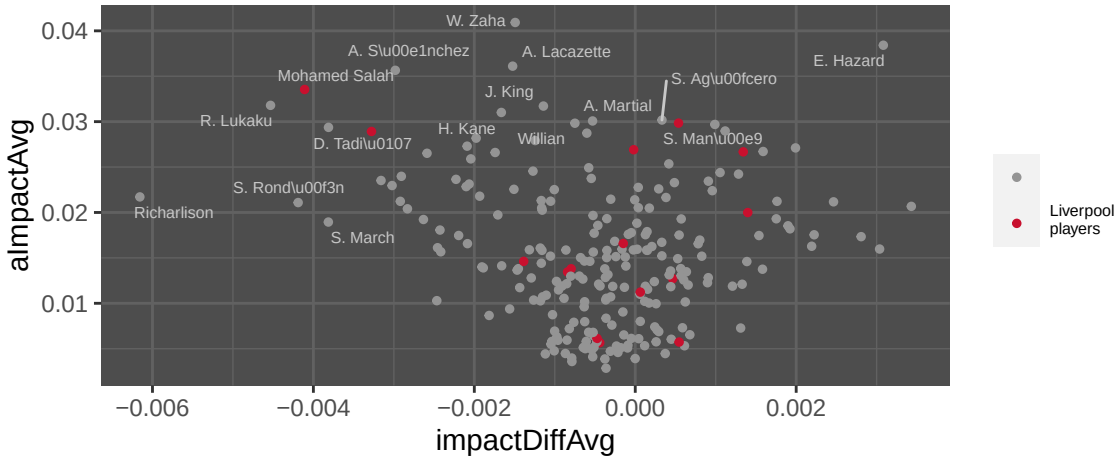
So, each pass now has an expected
- Value, defined as the probability that the pass will lead to pass that assists a shot
- Probability of being accurate

The vertical pass mentioned above had an expected value of 0.013 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 1 %.

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
K. De Bruyne	65.10	2612
M. \u00d6zil	52.62	1772
David Silva	52.28	2334
E. Hazard	49.71	1294
A. S\u00e1nchez	49.38	1385
F\u00e0bregas	47.74	1957
C. Eriksen	46.38	2128
G. Xhaka	42.33	2816
Fernandinho	36.59	2699
N. Kant\u00e9	33.20	2039

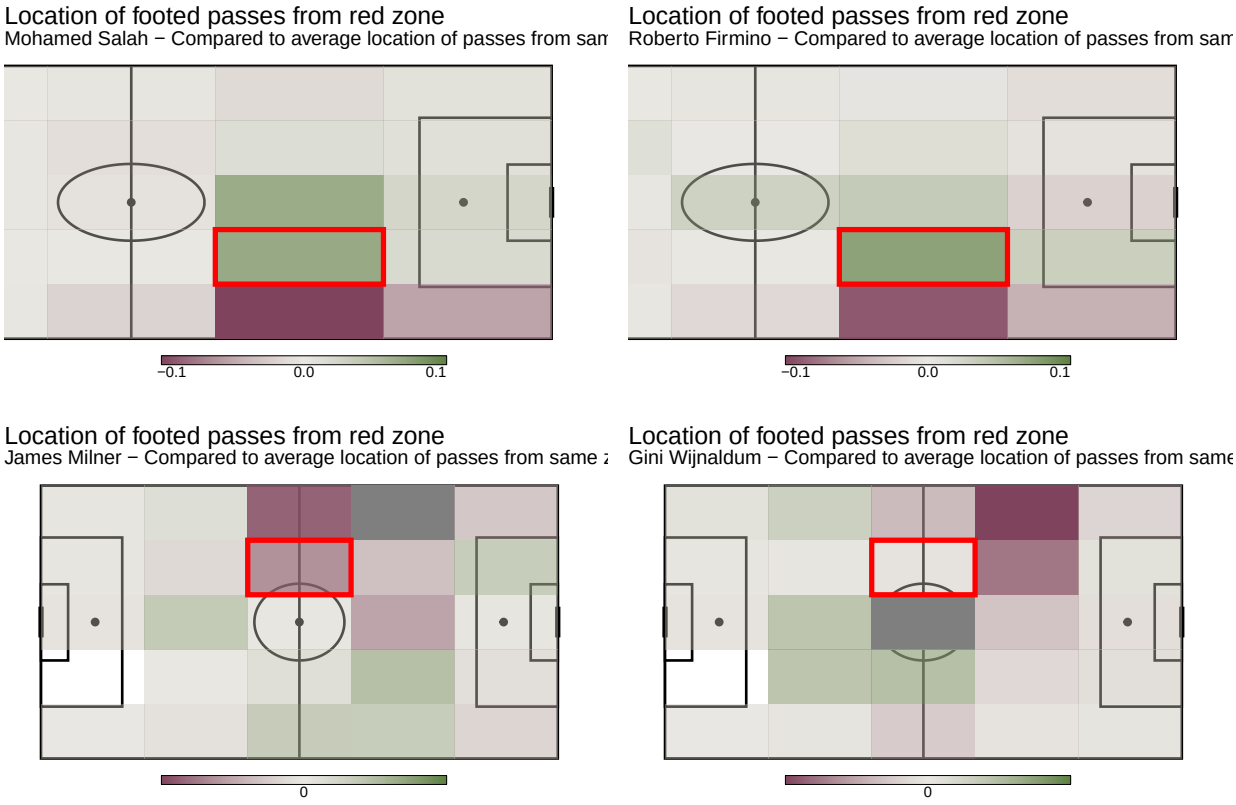
Table 1: Total pass impact - top 10

Continue with a brief analysis of the players in Liverpool. Roberto Firmino is Liverpool's number one for total pass impact and 16th in the league. Mohamed Salah is Liverpool's number one for mean pass impact and fifth in the league.
James Milner is the highest ranked Liverpool player (16th overall) when it comes to average difference between actual and expected pass impact.

Name	Impact	Passes
W. Zaha	4.09 %	650
E. Hazard	3.84 %	1294
A. Lacazette	3.61 %	634
A. S\u00e1nchez	3.57 %	1385
Mohamed Salah	3.35 %	879
R. Lukaku	3.18 %	544
J. King	3.17 %	604
H. Kane	3.1 %	549
S. Ag\u00fcero	3.02 %	593
A. Martial	3.01 %	735

Table 2: Mean pass impact - top 10

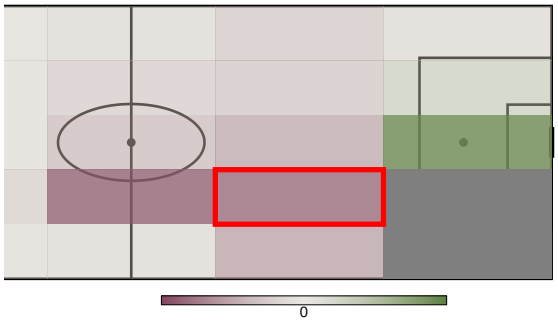
Continue with an analysis of the zone from which they have the highest number of passes and compares the distribution to the average distribution.



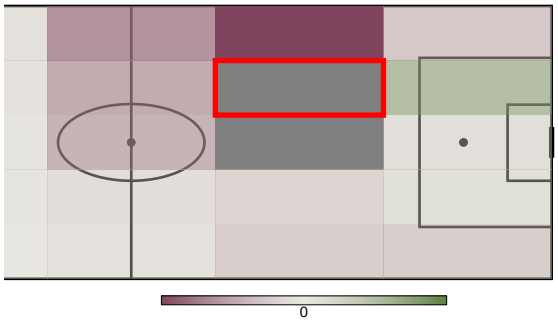
Salah and Firmino are good - mainly keeps the ball in valuable zones, but only progress it a bit more than average Milner's passes forward are either out to the left flank or long balls on the opposite side. Wijnaldum's passaes are, compared to the average player, too a large extent played sideways or backward. Might think that Liverpool could use some more creativity from midfield

Adding Kevin de Bruyne and Özil to compare against Firmino and Salah.
Adding Cesc Fabregas and Xhaka to compare against Milner and Wijnaldum.

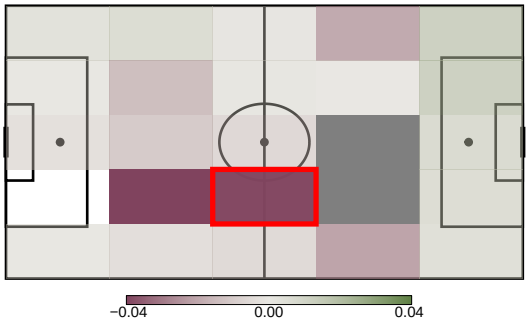
Location of footed passes from red zone
Kevin de Bruyne − Compared to average location of passes from san



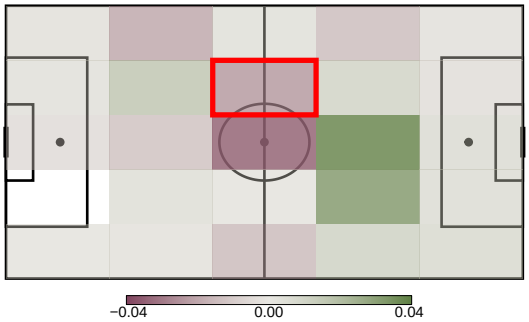
Location of footed passes from red zone
Mezut Özil − Compared to average location of passes from same zon



Location of footed passes from red zone
Cesc Fabregas − Compared to average location of passes from same

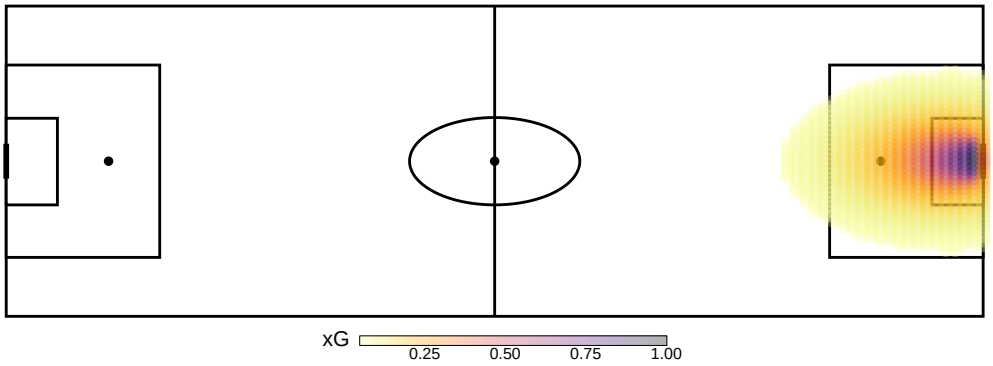


Location of footed passes from red zone
Granit Xhaka − Compared to average location of passes from same z

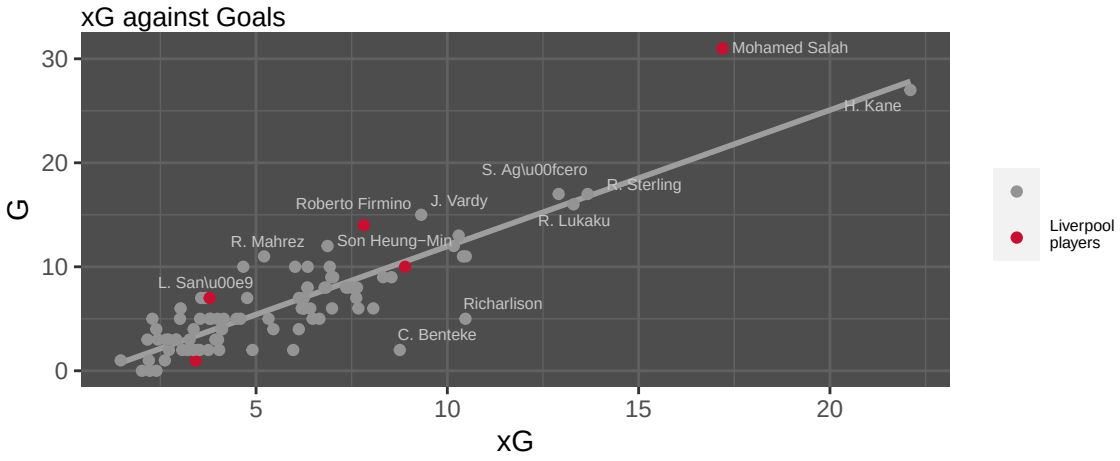


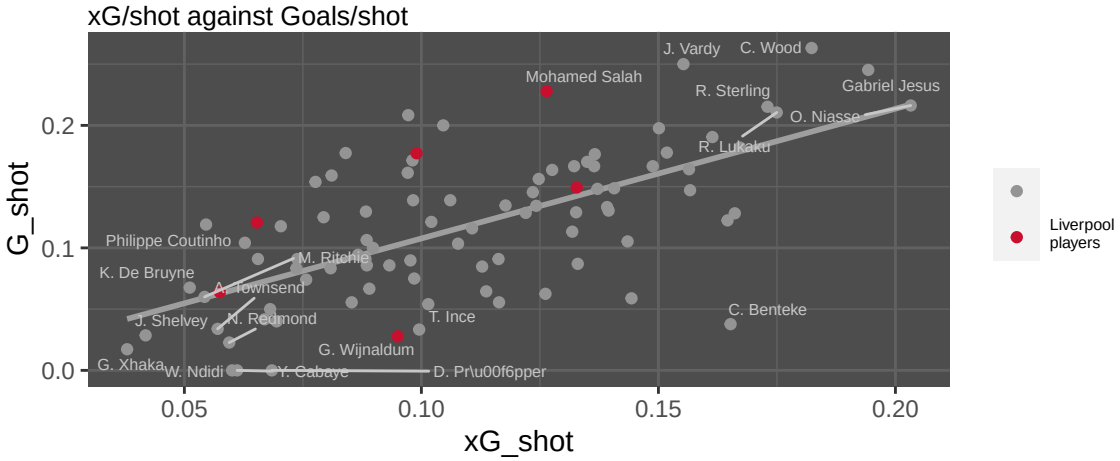
Expected goals

xG model probabilities. Cut−off at 5 %



Not including free kicks or penalties.

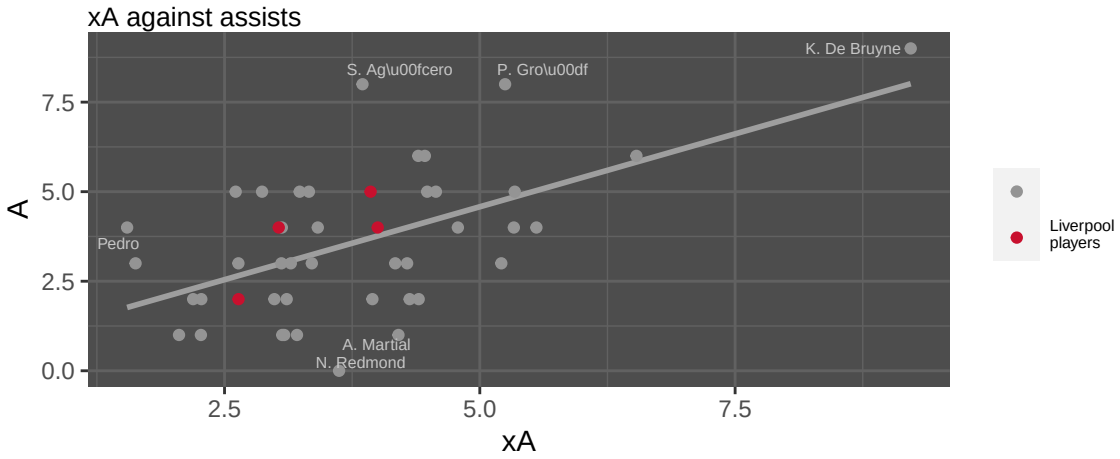


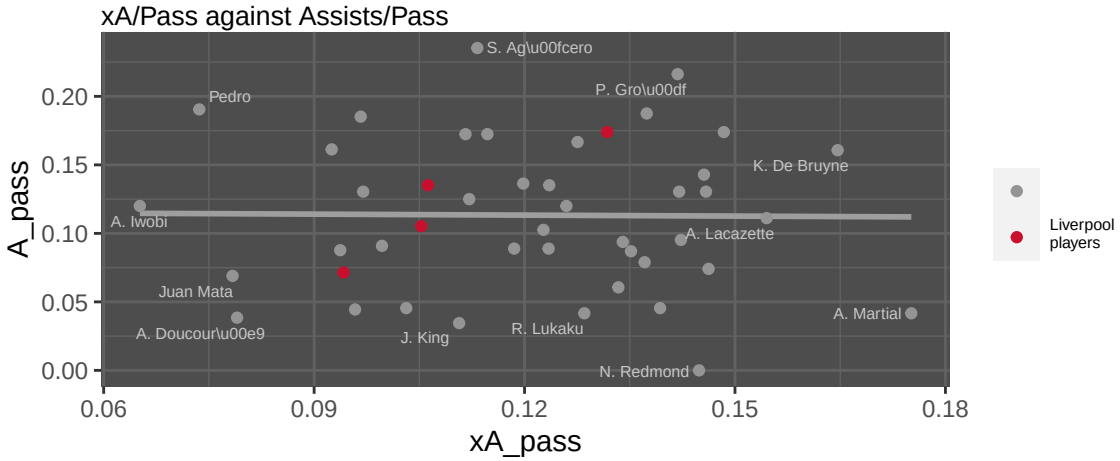


Expected assists

Not including passes from corners or free kicks.

Only looked at last action by team before shot
Definition of assist probably not so simple (duels/dribbles etc. can occur before shot and passing player still get assist)





Add table? Which Liverpool players have the highest ranking?

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

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

Add radars

Improve assist to shot pre-processing