# Problem

The issue at hand is if we’re giving our teammates the ball where they are effective scorers. This includes FG% in the area where they received the ball as well as the ability to make a move that results in a made basket.

I wanted to look at if we are putting the ball in players’ hands where they can score. This comes about in a couple ways: passing to Tim Duncan in the high-post is great as he has a high field-goal percentage there as well as practiced moves to attack the rim with which he has a high-percentage of successes. If for example (and this is completely hypothetical), we find that when Blake Griffin catches it on the right-wing he has a low percentage of success we know that we can coach Blake on what he does when catching it in that area as well as coaching your ball-handlers for offensive sets where Blake is out on the wing. Ideally this process could go one degree further and explore even if the shooter has a poor FG% when receiving the ball in that area if they are effective passers from that area.

# Method

Initially I cleaned up the data a bit, included merges so that it included player and team name so that I could make some sense of it.

I then created a function that when you input a player’s name or id you can get all the records of them as a passer.

I initially wanted to graph all of the passes, plotting where they passed from, where they passed to, if the shot was made, and color code based on NDD of the resulting shot. This proved pretty difficult in R, and I briefly explored creating the visualization in D3 before deciding that the most valuable information would be the actual analysis and that for the time being I will just present the information via tables. I ended with a basic plot of where all the passes originated from and if they resulted in a made or missed shot.

I then simplified the location data by creating areas on the court: top of the key, right/left wing, right/left corner, high post, and low post. I grouped pass origin and possession origin into these areas to see exactly where a player passes from and to in basketball terms.

Then I moved onto passer analysis. Once we had our player and the areas I was able to quantify for each pass a player makes, what is the FG% of the shooter when he receives the ball in that area. For example, if we look at Ben McLemore in the data we can then get a new dataset that shows when he passes to Demarcus in the high post X% of the times that results in a bucket. This gets created for all shooters in all areas of the court.

The goal is to create a profile for a player as a passer. Here are a few profiles and the insights that can be pulled from the analysis. The profile includes all of the aforementioned charts and data. The idea here is analyzing a player to identify effective passers and positive promoters on the offensive end of the floor.

Let’s look at Ben McLemore in this dataset:



The plot above shows everywhere Ben passed from, whether the resulting shot was a make or miss (O or X) and if the ‘shooter’ made a basketball move or more or less caught and shot (<3 dribbles). This plot points out the obvious: Ben operates mainly on the wings, occasionally from the high post. One thing it points out is that usually when Ben passes from the baseline the shooter takes 3 or more dribbles for the shot. This tells me this is not necessarily an open shot for the shooter and that they have to create a shot for themselves.

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| --- | --- |
| Top of the key | 54.7% |
| High Post | 54.4% |
| Low Post | 63.8% |
| Right Wing | 49.4% |
| Left Wing | 54.5% |
| Right Corner | 57.1% |
| Left Corner | 53.3% |

From this data we’ve also pulled the FG% of all shooters when McLemore passes to them from each area on the court. So we see that every time Cousins was in the high post and received a pass from McLemore it resulted in a bucket ZZ% of the time, whereas when Cousins was on the right wing it resulted in a bucket YY% of the time.

These insights could not only be used to coach your own team on the offensive end but also used as a tool for game planning for your next opponent.

Lastly there is value for the GM when considering personnel changes. Offensively as a team we want to be able to score from every part of the floor. We can now quantify and identify if a player can score when they receive the ball in a specific area on the court.