NBA Next Basket

Introduction

During the NBA playoffs, DraftKings sportsbook offers a live bet on the next made basket being a 2 or a 3 pointer. The betting odds remain fairly static and change slightly based on the team with the ball and how much time has passed between made baskets. Overall, the betting odds for the 3-ball are approximately +200, which is what I hypothesized as flawed. It is important to note that you do not need to predict which team makes the basket, just its value.

Method

After acquiring a few seasons of NBA play by play data, I iterated through each game, summed the home score and away score columns, took the difference of consecutive values to get the change in score, and then removed the 0’s (no change) and 1’s (free throws), resulting in an array of just 2’s and 3’s. With these arrays, I wrote a for loop that counted the number of 2-point baskets that occur between each 3-ball and plotted the results in a histogram.

**Figure 1: NBA 19-20 RegSeason**

The above chart shows when 3’s occurred relative to other 3’s across the league over the course of a full regular season, with percentages displayed above each bin. Being that the bet is only offered during the playoffs, which has inherently better shooting teams, the same was done for just the playoffs.

**Figure 2: NBA 17-18 Playoffs (1,238 total 3’s)**

**Figure 3: NBA 18-19 Playoffs (1,308 total 3’s)**

**Figure 4: NBA 19-20 Playoffs (1,421 total 3’s)**

The key findings here is that the most likely time for a 3 pointer to occur is directly following a previous 3 at about 30%. From there, the likelihood of another 3 being made decreases exponentially, mimicking a 1/X type function. It is also interesting to note that there is an increase in 3’s being made over the years (1238, 1308, 1421) which will favor the soon to come betting strategy.

Actions

As of last year, there was a 35% chance of the next basket being a 3 after one being made, and a 22.5% chance of one being made if there one 2-point basket made after a 3. Thus, there was a 57.5% chance of a 3-pointer occurring within 1 basket of another (either 3-3 or 3-2-3). Not so random!

The betting strategy developed was to wait for a 3 to occur and then bet that the next made basket will also be a 3. Should that be untrue, and a 2 falls in, double the previous bet and place it on that next shot being a 3. Should that also be untrue, wait until another 3 occurs to repeat the process. With the odds of a 3 being +200 the net result will be:

Where X is the initial bet value. Should you have applied this strategy every game in the 2019-2020 NBA playoffs you would have netted 142X. This assumes the capability of betting on every desired shot, which turns out to be unpragmatic.

Improvements

The results proved desirable put are not optimal. There are additional actions that can be taken to minimize losses and increase overall return. For example, implementing a stopper value for games that are going poorly from the 3-point bet perspective. Also, one can try to predict bad matchups and avoid betting on during those games altogether. That year, the Lakers were a net negative team for this bet during the playoffs and the Rockets were a huge positive team.

To conclude, the reason that this cannot be employed, is that the DraftKings website does not update or accept bets quickly enough to keep up with the pace of a basketball game, and the rate at which bets need to placed.