



# NBA Player Value:

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SAVING NBA GENERAL MANAGERS FROM THEIR MISTAKES

# The Problem

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General Managers are tasked with the responsibility of constructing and paying a roster composed of high-level athletes—every one of which feels he ought to be paid what he is worth.

All too often, these GMs succumb to external pressures: to sign the player the fans want or that the media has placed on a pedestal, to pay a player more than he is worth out of fear of missing out on a player, offering too little to a player out of pride or fear (or both) and missing out—the reasons go on and on.

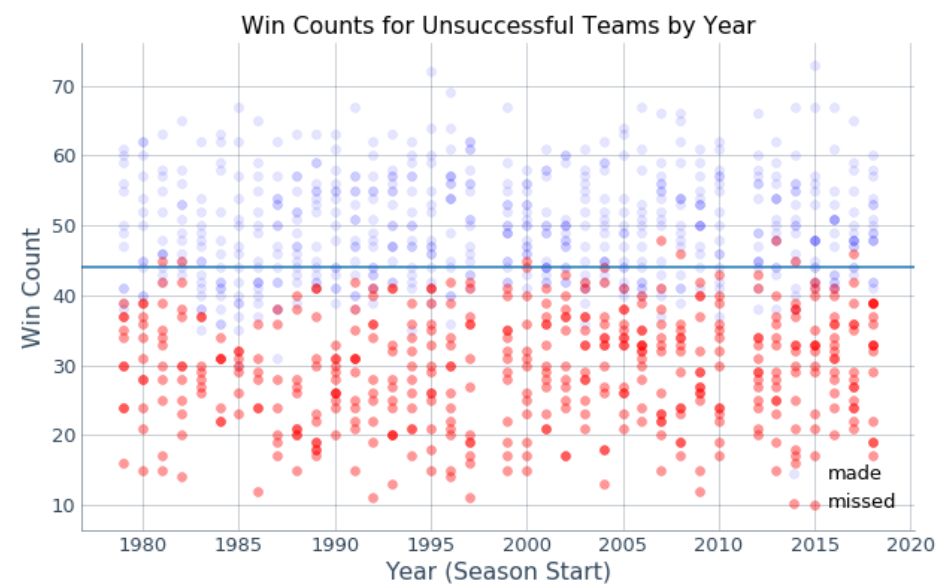
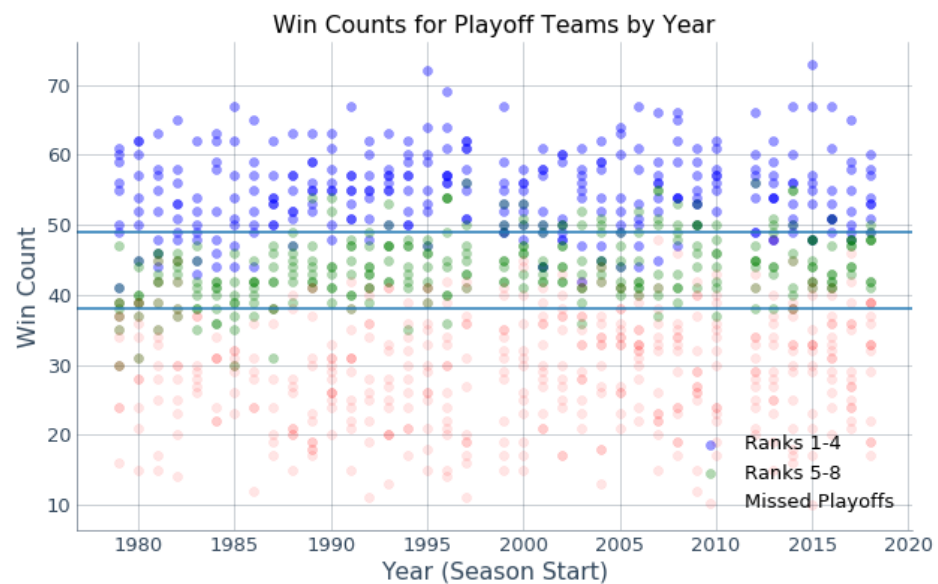
None of these pressures is based in anything objective. GMs need something on which to fall to make such costly and high stakes decisions, a means of defending the decisions they make.

As we saw in Michael Lewis' "Moneyball," professional sports leagues can be ruled by forces other than logic, but the game always has potential to be affected by it.

Using machine learning, we will look to give any GM an upper hand who is willing to take it.

A photograph of several Chicago Bulls players on a basketball court. The players are wearing white jerseys with red trim and the word "BULLS" in red. The jersey numbers 33, 23, 9, and 7 are visible. They are standing on a wooden court with a basketball hoop and backboard in the background. The image is dimmed to serve as a background for the text.

# Step One: Identify Successful Teams

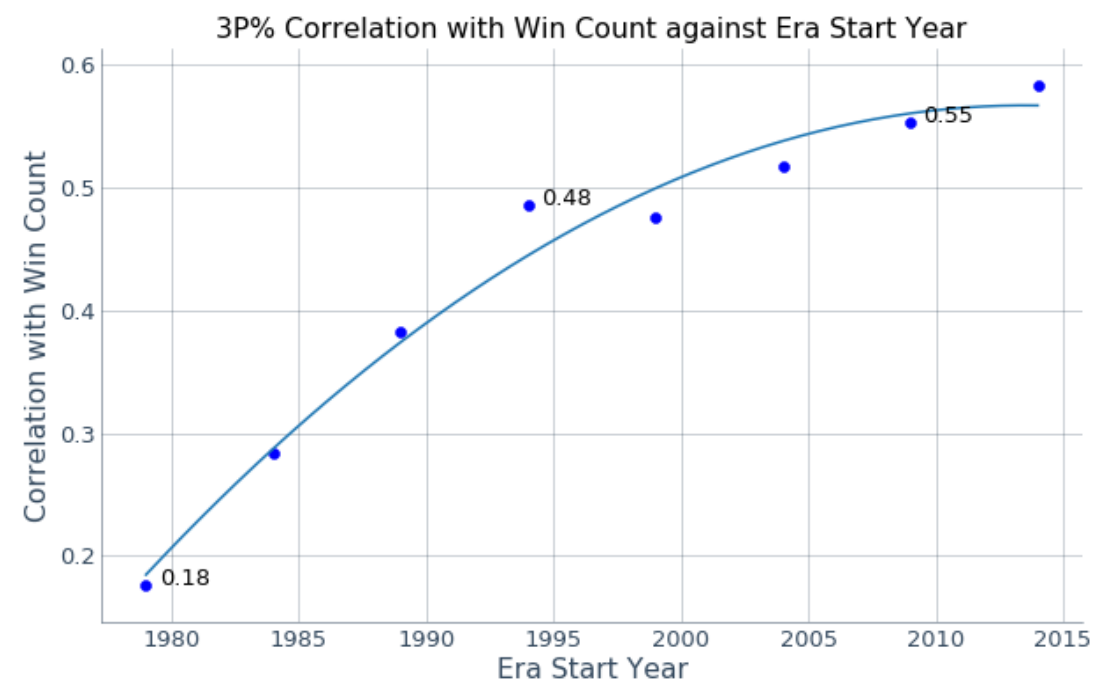
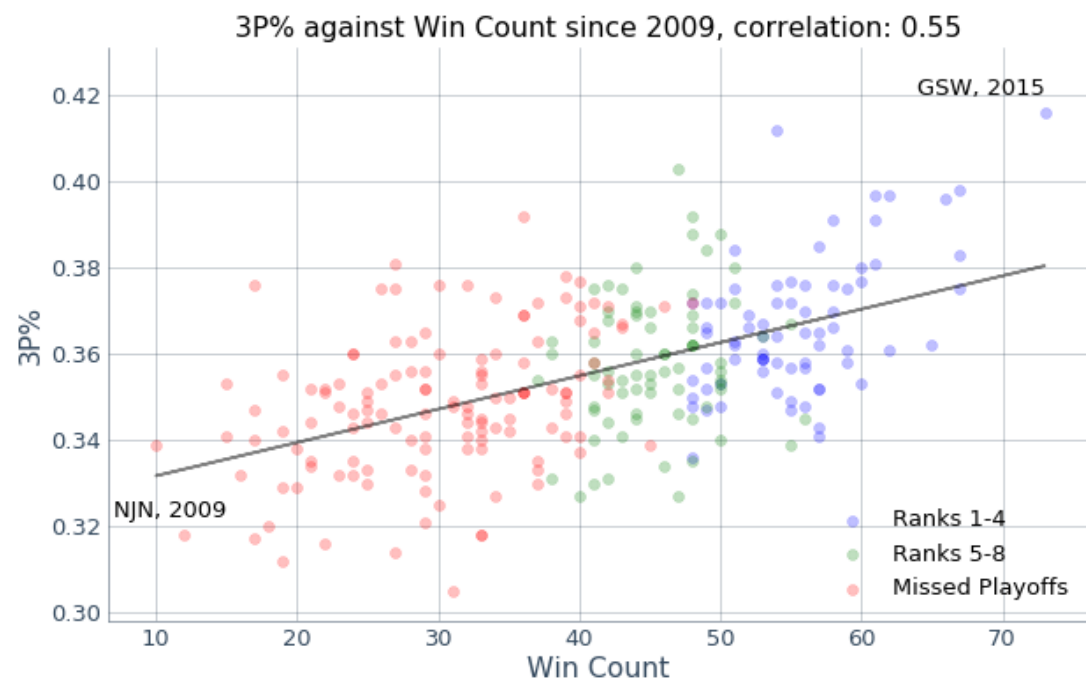




Determine  
What Makes  
Teams  
Successful

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## Step Two: Determine Player Value

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Using updated player positions from a linear discriminant analysis, along with key career and year-to-year statistics, develop models that will give the best possible and most objective dollar amount to any specific player

## Step Three: Make Recommendations

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Using Machine Learning, predict player salary given such features as position, age, and relevant playing statistics

Make recommendations for teams looking to make cuts, sign new players, or restructure contracts

Turn recommendation system into accessible web application





# THE VALUE OF GETTING IT RIGHT

## DIRECT VALUE:

A bad player contract can cripple a team for upwards of a dozen years. For example, someone owed \$25 million but provides \$1 million worth of value to the team effectively gives their team \$24 million less to work with than the average teams elsewhere in the league.

## INDIRECT VALUE:

When the salary cap is handled such that the majority of players on a team are paid only what they are worth and no more, a team can allow for a high-level player or player to be signed for more than they might be worth—a “max-level” player whose impact extends past statistics by increasing ticket sales because of his style of off-court personality.

The screenshot shows the Basketball Reference website. The main navigation bar includes links for Players, Teams, Seasons, Leaders, Scores, Playoffs, Draft, and Play Index. The 'Scores' link is highlighted with a red circle. Below the navigation bar, there's a search bar labeled 'Enter Person, Team, Section, etc'. The main content area is divided into three columns: 'Every Player' (showing a grid of player headshots), 'Every Team' (showing the 2018-19 NBA Standings table), and 'What's Hot' (showing site news and trending topics).

**2018-19 NBA Standings**

| East      | West      |
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| ATL (1)   | GSW (1)   |
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