NBA Player Value Analysis

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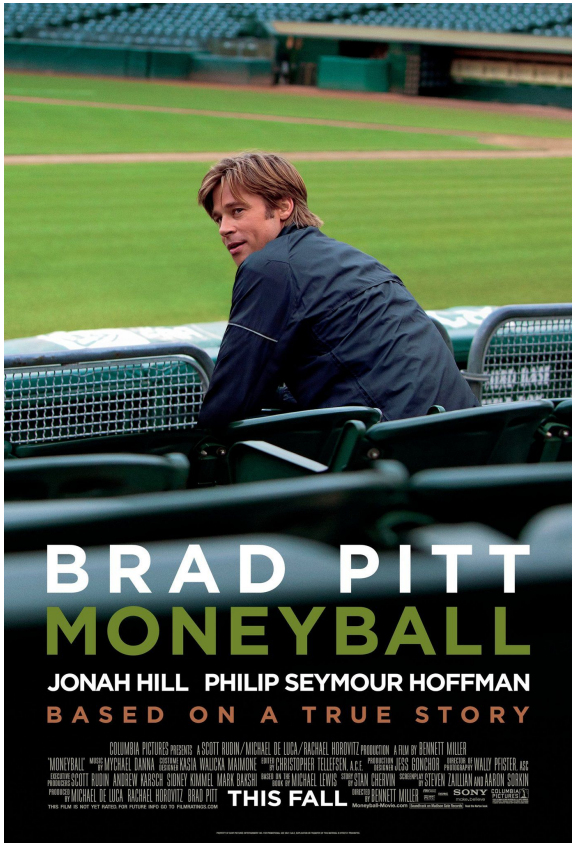
Motivation

- Moneyball + the rise of statistics in sports (baseball & soccer have adopted this well)
- Buying cheaper players who have underrated statistics or large potential based off statistics
- Basketball is keeping track of a lot of stats, but don't have many moneyball teams



What are player statistics worth in terms of salary?

Datasets

NBA Player Statistics: Includes all major statistics: player name, season, team, points, rebounds, assists & more

NBA Player Salaries: Includes full contractual salaries for each player

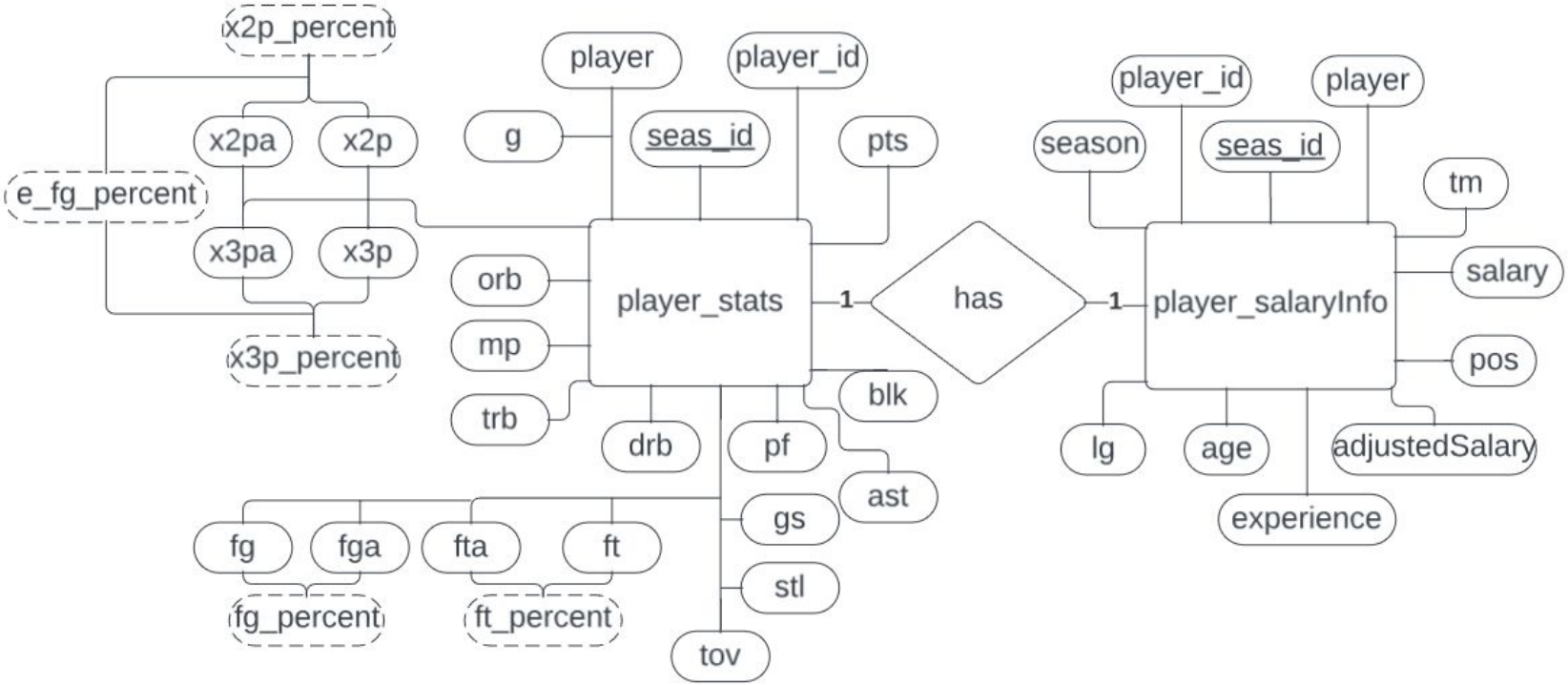
Nikola Jokić, who had 24.4 points per game, 9.82 assists per game, and 11.8 rebounds per game in the 22-23 season with a salary of $33,047,803

Data Cleaning & Manipulation

Our data cleaning consisted of the following:

- “Normalizing” names: Jokić, Pokuševski, etc; to be able to query easier with our American English keyboards.
- Removing duplicate stats of players who switched teams mid-season
- Cleaned salary text from format like “$1,000,000” (which was hard in CSV)
- Added a new column for salaries adjusted with inflation

ERD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Analysis

We decided to use our statistics to predict NBA player salaries and compare the to their real salaries.

To do this we used Multiple linear regression to predict the player salaries based on their total statistics for a season.

Significant predictors: Points, Assist, Offensive and Defensive rebounds, Steals, Games started, experience, minutes played, 2 point percentage, field goal percentage, Effective field goal percentage.

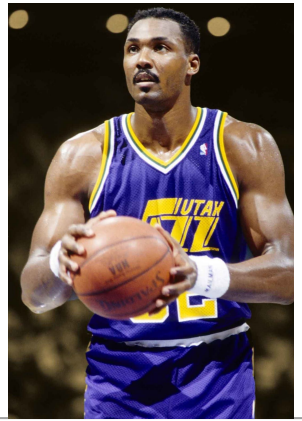
Predicted Salary = *9.5*E3 (pts) + 1.07*E4(ast) - 1.5*E4(orb) + 2.09*E4(drb) - 3.54*E4(stl) + 7.9*E4(gs) + 6.94*E5(exp) - 6.33*E3(mp) -1.69*E7(fg%) + 5.19*E6(2pt%) + 1.34*E7(efg%)*

Results: Which seasons are worth the big bucks?

According to our model, Which players had the highest predicted salaries of all time

1	Lebron James (2018)		$35,427,098
2	Nikola Jokic (2022)		$31,539,876
3	Giannis Antetokounmpo (2023)		$31,094,130
4	Karl Malone (2000)		$28,881,461
5	Stephen Curry (2021)		$28,470,702

Results: How fairly have players been paid?

Most Overpaid (All Time)	Most Underpaid (All Time)	Most Fairly Paid (All Time)
1. Chris Paul 	1. Karl Malone 	1. Devean George 
2. Jimmy Butler 	2. Kevin Willis 	2. Danny Granger 
3. Gordon Hayward 	3. Dirk Nowitzki 	3. Jarrett Allen 

Conclusion (cont.)

One interesting sidenote: our data shows that Michael Jordan was overpaid!

- Due to our adjusted salary for inflation, that amount of money during that time simply couldn't warrant anything more from him; because he won everything!

A question that arises:

What is overpaying if you're winning everything?