



Slam Dunk or Air Ball? Predicting NBA Scoring from College Performance

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INTRODUCTION

- When looking at the NBA draft, there is no guarantee that an NBA team's draft pick will always live up to their expectations and pan out as a successful NBA player
- There is a great deal of unpredictability with how well an athlete will play in the NBA
- This unpredictability led us to explore the question of how we could predict how an athlete will play in the NBA based on their college performance
- More specifically, we explored how we can predict scoring in the NBA based on college performance with the goal of creating a useful model for NBA teams when deciding who to select in the NBA draft

METHODOLOGY

- Located Master Dataset from Basketballreference.com
- Utilized data from 1979-2018 because 1979 was when the 3- point shot was implemented and 2018 was the last full season before COVID-19
- Chose independent variables: height, weight, NCAA field goal percentage, NCAA points per game, and games played
- Dependent variable is NBA points per game
- Created hierarchical model using these variables

LITERATURE REVIEW

- This paper utilized a machine learning based approach to predict the success of an NBA draft prospect. They found that college statistics is the best predictor for longevity in the NBA (A. Kannan, et al. 2018)
- This paper aimed to determine the ability to predict future performance of college basketball players in the NBA using a mix of college player statistics and personality profiles obtained from automated personality mining (on social media) (D. Siemon, 2022)

DESCRIPTIVE STATISTICS

Table 1.

Descriptive Statistics for Variables

	Minimum	Maximum	Mean	Std. Deviation
Height(in)	63	91	78.94	3.633
Weight	133	360	215.66	27.365
NCAA_games	11	152	100.66	30.149
NCAA_fgpc	34.1	69.4	49.55	5.68
NCAA_ppg	1.6	30.7	13.127	4.1343
NBA_ppg	0	30.1	6.18	4.6383

CORRELATION MATRIX

Table 2.

Correlations

	HIE	WEI	fgpct	games	NCAAppg	NBAppg
Height(In)						
Weight	.826*					
NCAAppg	.201*	.240*				
NCAAgames	-.058*	-.026	.062*			
NCAAppg	-.197*	-.183*	.018	-.187*		
NBAppg	-.007	-.018*	.096	-.251*	.505*	

* $p < .01$

RESULTS

- Height and weight have a high correlation of .826
- Weight in the model gives a higher R square so we included weight in the place of height
- Model 4 has highest R square, accounting for 29.5% of the variance in the dependent variable
- Important to note the negative coefficients with NCAA_games and weight
- Highest positive coefficient is with NCAA_ppg, which makes sense intuitively as the top scorers in the NCAA would continue scoring in the NBA

Table 3.

Regression Analysis Results

Predictor Variables	Model 1	Model 2	Model 3	Model 4
Constant	10.925	14.457	1.854	-.816
NCAA_games	-.042(-13.288)**	-.043(-13.427)**	-.027(-9.355)**	-.027(-9.664)
weight		-.016(-4.444)**	.002(.481)	-.009(-2.486)*
NCAA_ppg			.530(27.601)**	.517(27.008)**
NCAA_fgpc				.104(6.863)**
F-statistics	174.97	19.748	761.811	47.097
R ²	.064	.071	.282**	.295**
ΔR ²	.064	.007	.212**	.013**

Note: Unstandardized coefficients reported (β); t-values in parentheses; * $p < .05$; ** $p < .01$

PREDICTED VALUES



Armando Bacot - Senior Forward/Center - UNC
-.027(132 games) -.009(235lbs) + .517(13.7ppg) +.104
(55.6 fg pct). -.816 = **6.38 PPG in the NBA**



Brandon Miller - Freshman Forward – Alabama
-.027(37 games) -.009(200lbs) + .517(18.8ppg) +.104
(43.0 fg pct) -.816 = **10.58 PPG in the NBA**



GG Jackson - Freshman Forward - South Carolina
-.027(32 games) -.009(215lbs) + .517(15.4ppg) +.104
(38.4 fg pct) -.816 = **8.34 PPG in the NBA**

IMPLICATIONS

- The model can be used by NBA teams who are scouting college players
- They can utilize the equation to obtain a statistical estimation for how current college players will score in the NBA
- NBA teams can also take advantage by using the coefficients in the equation to determine what to look for and stay away from
- One example would be the more games a player plays the less they score in the NBA, resulting in NBA teams staying away from older players

FUTURE RESEARCH

- Identifying important predictors allowing for improvement
- Including more variables that can improve the model's accuracy
- Future research can expand by researching and understand the relationship between college performance and NBA scoring, which can help teams be more informed in NBA draft decisions