

How Height and College Affects Draft Stock in Basketball Players

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Fall 2023



Introduction

Motivation: I have recently become a fan of NBA during college and have been intrigued by how teams choose who to draft at what position. I see many Youtube videos with titles like “How would the 2019 Draft go Today?”, with many players taking a different position. Is there a way to predict the perfect NBA draft using statistics like college and height?

Research Questions:

Research Question 1 – Does the height of a basketball player affect their draft position?

Research Question 2 – Does the college a basketball player attends affect their draft position?

Methods

Data Collection:

- My sampling units are drafted NBA players who went to either Duke or Kentucky from 1996 - 2019.
- My sample size was 100 players.

Measures:

- I used a historical dataset to determine the height and college of these NBA players and used a logarithmic transformation on the draft position.
- The unit of the height was in centimeters.
- The two colleges I chose were either Duke or Kentucky.

Analysis Method: Using the categorical and numerical explanatory variables, I made a linear model to determine the relationship between the height and college of an NBA draft player and their (log) draft position. I did this using the tidyverse and ggplot libraries in RStudio.

Descriptives

Here is the table of descriptive statistics regarding the draft position, height, and college of the sampling units. The statistics collected here are from untransformed raw data.

Table 1 – Descriptive Statistics

	<i>Center (Mean)</i>	<i>Spread (SD)</i>
<i>Draft Position</i>	17.199	14.849
	<i>Center (Median)</i>	<i>Spread (IQR)</i>
<i>Height (cm)</i>	203.2	13.335
	<i>Kentucky Count</i>	<i>Duke Count</i>
<i>College</i>	54	46

Results

Results table: Using a general linear model of the natural log of the draft number with the player height and the college they attended, these statistics were collected.

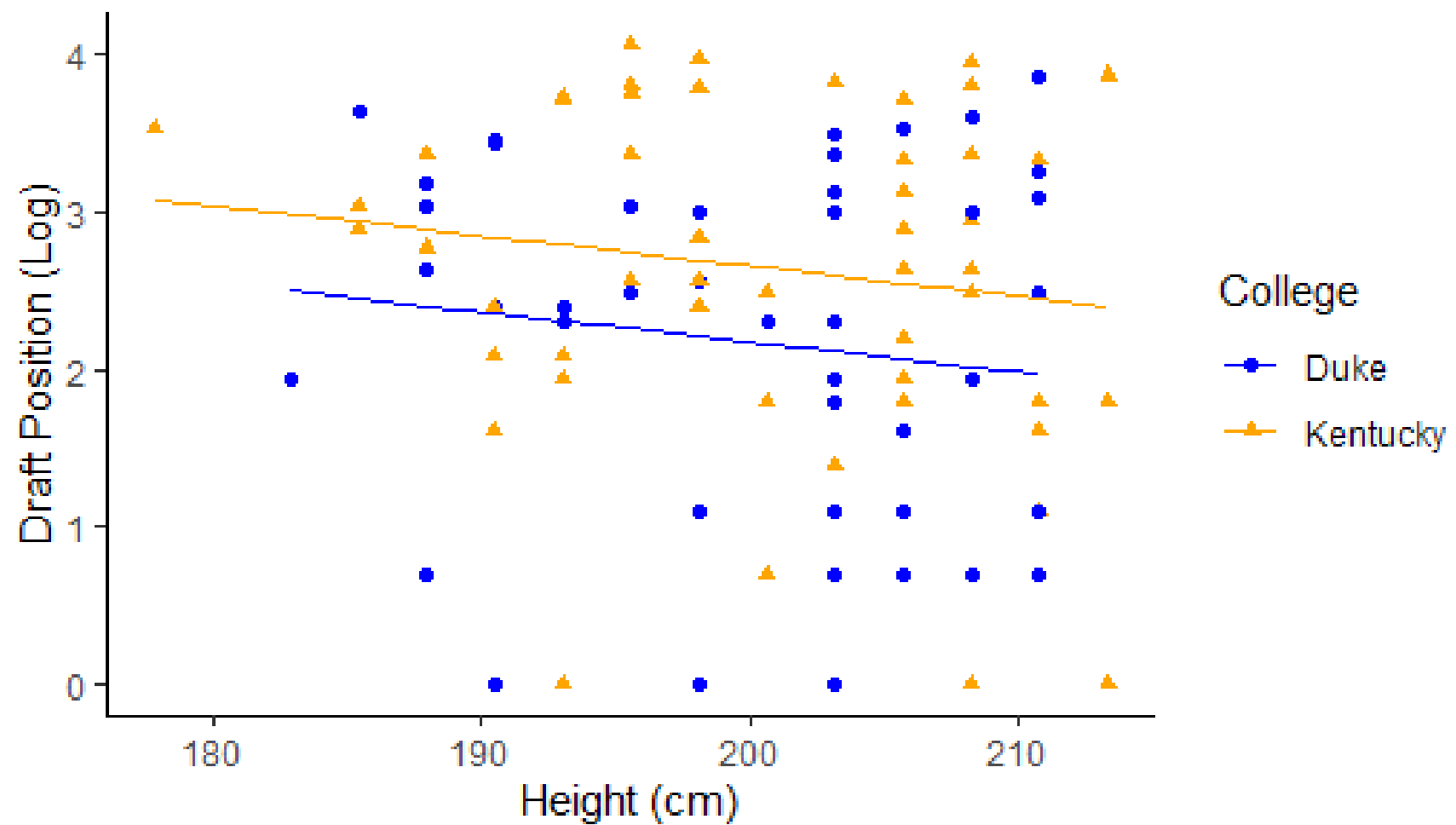
Table 2 – Model Results

	Estimate	t-stat	St. Error	p-value
Intercept	5.986	2.275	2.263	0.025
Player Height	-0.019	-1.453	0.013	0.150
College (Kentucky)	0.485	2.248	0.216	0.027

Model df: 97

***P=*value:** 0.033 < 0.05

Draft Position by College, Height



Assumptions

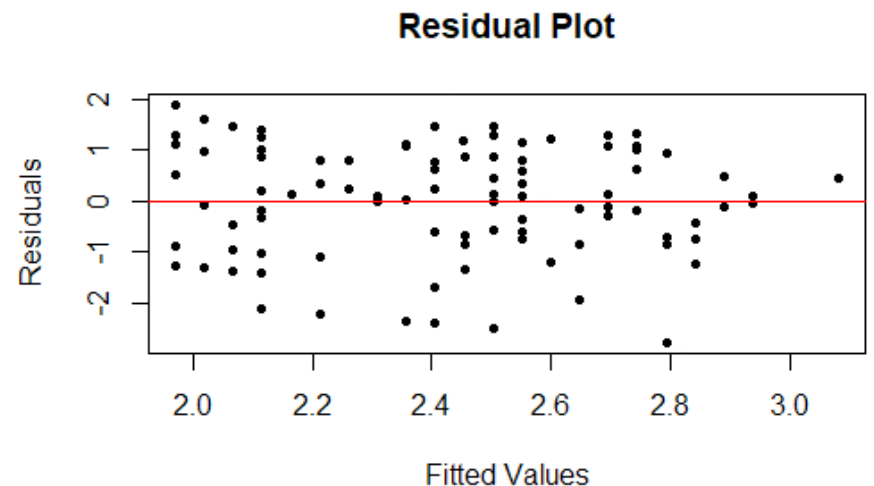
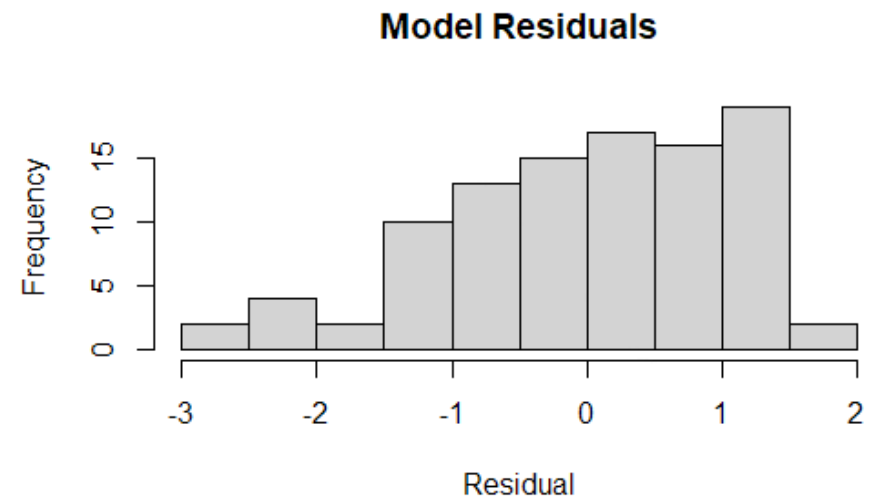
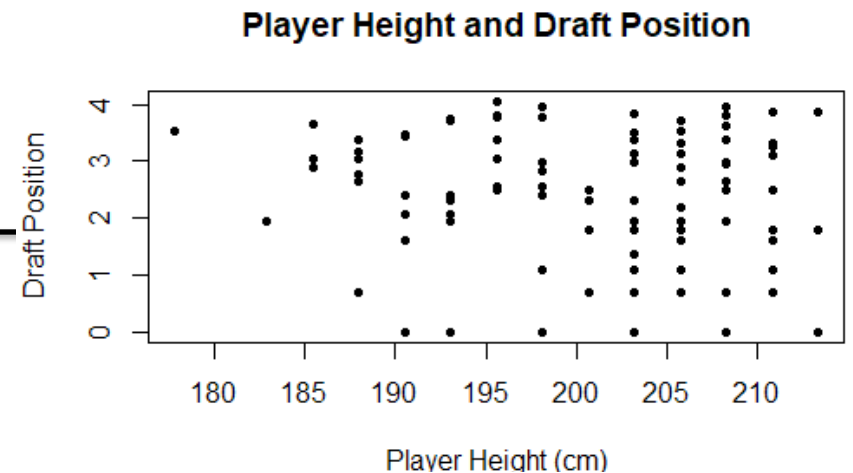
Random sample: This is met from the sampling units being all players available from the filters.

Independent observations: This is met from the study design.

The linear relationship between the numerical explanatory variable and the response was not entirely met, as there is funneling in the data.

The **residuals are normally distributed** as seen in the histogram of model residuals.

The **Residuals have equal variance** as seen in the residual plot, with the points equally distributed above and below the x-axis with little to no visual patterns or curves.



Discussion

Interpretation: The overall regression equation found a relationship between both variables and the draft position ($p < 0.05$), suggesting a lower draft position comes from taller players at Duke. The player height was insignificant as the p value was greater than the threshold of 0.05. The college, however, was, with the difference between the two colleges being significantly different ($p < 0.05$), suggesting that players from Duke have a higher chance of being drafted earlier than Kentucky. In the NBA Draft, a lower number is better, so this means NBA scouts prefer Duke players over Kentucky players on average.

Limitations: The linearity of the numerical explanatory variable assumption was not met, possibly skewing the data and could be a reason why the height relationship was insignificant. The dataset was also limited to only 1996, when the modern draft began in 1989.

Implications: While height does not correlate to a lower draft number, Duke has created better draft prospects than Kentucky from 1996-2019.

Future Research: I would like to add more colleges into this study to see if any one college has more sway on what position a player is drafted in. I would want to change the years that I used in this dataset to expand to 1989, the year the modern draft began.

References:

Greene, Alexander C., "The Success of NBA Draft Picks: Can College Careers Predict NBA Winners?" (2015). Culminating Projects in Applied Statistics. 4. https://repository.stcloudstate.edu/stat_etds/4
(2021, January 23). *NBA Height and Weight Analysis*. Kaggle. https://www.kaggle.com/code/justinas/nba-height-and-weight-analysis/input?select=all_seasons.csv