Atlanta Hawks Programming Assessment

Lawrence Jang

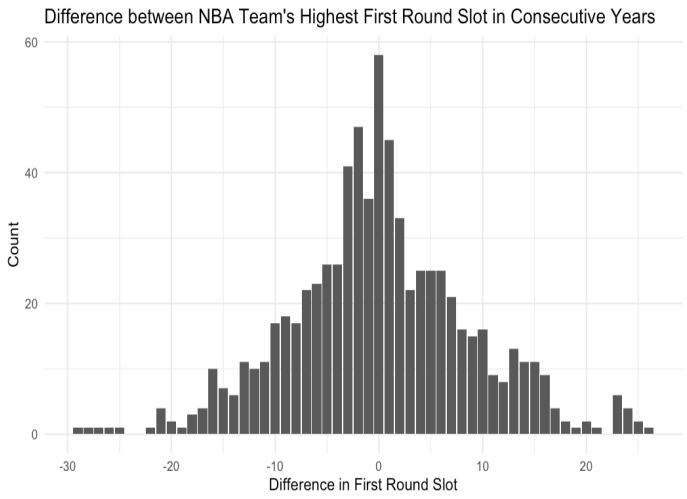
Part 1: Data Comprehension

A.a) We found that Dallas, Minnesota, and Phoenix drafted the most players who went to Duke and were drafted in or before the 2000 draft at 2 players each.

A.b) We found that Boston, Milwaukee, and Seattle drafted the most players with a first name that begins with D and were drafted in an even year draft.

B) I only kept the highest first round pick of each team for a given year; given that draft picks are traded frequently and teams can have more than one first round pick frequently, this reduces potential noise that arises from multiple picks from the same team in a single year. Additionally, the highest pick is most times the significant pick for the team's overall draft strategy and is more representative of a team's performance/true first round slot - it is harder to trade into higher selections over naturally receiving those first round slots, relative to lower first round picks. We found the following statistics for the relationship between a team's highest first round slot in a given year with their first-round slot in the subsequent year.

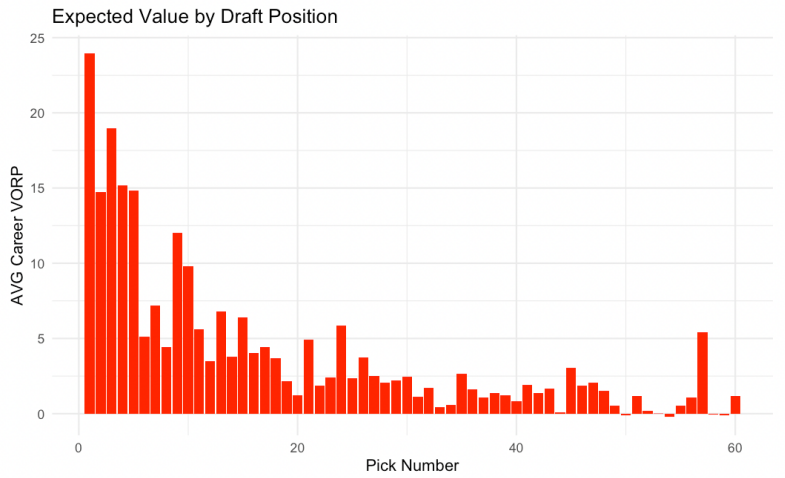
Mean Difference between First Round Slots	0.05593452
Median Difference between First Round Slots	0
Correlation between First Round Slots	0.4550825
Standard Deviation between First Round Slots	8.769413



As seen above, we see there is almost no difference between a team's highest first round pick in consecutive years - this makes intuitive sense, as teams in the NBA do not easily jump in the standings after one year. We see the difference between the consecutive year picks historically follows a normal distribution centered around 0. There are other factors that influence a team's pick position such as trades, free agent signings, and staff changes which are not included in this dataset, which was a limitation.

Part 2: Analytical Acumen

A) I chose to use the value over replacement player statistic as a holistic method to capture a player's value over the span of their career. Similarly to WAR in baseball, I believed it was the easiest statistic to intepret and use in a draft analysis context. To create a method for valuing each draft slot in the NBA Draft, I found the mean/expected value of VORP of a every slot in the draft by taking the average of the VORP of the players' drafted at each respective spot. The expected value for each draft slot can be seen below.



B) From our established expected value by draft position, we define a new variable, VORP value, for each draft pick. We define VORP value for a given pick as the drafted player's VORP minus the expected value by VORP for the pick the player was drafted. Formula for VORP Value for the ith overall pick - VORPValue_i = VORP of Player Drafted - Expected VORP Value of ith overall pick. We found each team's historical draft performance by summing over everyone of their draft picks' VORP value.

Most Historically Overperforming

Team	Total VORP Value
Seattle Supersonics	192.181081
San Antonio Spurs	137.623057
New Orleans Hornets	119.868995

Most Historically Underperforming

Team	Total VORP Value
Los Angeles Clippers	-124.81752
Washington Wizards	-116.906005
Sacramento Kings	-90.501057

We found the most overperforming colleges by the same procedure.

College	Total VORP Value
Wake Forest	169.9479385
Marquette	83.9151170
UCLA	78.7998787

C) Given more opportunities to expand, I would work on doing more time-series analysis, looking at era-dependent and year-dependent player and draft performances. I would also try to incorporate other data sources which include tracking data, team data, and league-wide trends. This would allow for a more insightful analysis of a team's draft history. I would clean up the draft data as well, making sure to include draft day deals such that every player is assigned to the correct team they began their career with (currently, Luka Doncic is an Atlanta Hawks draftee).