**Brief Analysis of UNC’s Offense and Defense**

1. Introduction

Last year in March Madness, UNC was seeded 8th in the East but made it into the final four and beat Duke (Let’s go) to make it to the National Championship. We look forward to running it back and possibly making a step further to bring home the championship. But with the season record of 11-6 at the moment, there are many doubts and criticisms around the team. (I don’t doubt the team at all, since we lost many games without starters and held a close fight with #4 Alabama). Some people on Instagram voiced concerns about defense. An Instagram verified person commented after UNC lost at Virginia: “Fed up with this non defensive team…” Are the concerns reasonable? What is the team’s defense level? This paper tries to analyze UNC’s current level of offense and defense by comparing it to that of an average team at each round of the March Madness from 2013 to 2019.

1. Methods

I used Andrew Sundberg’s Kaggle dataset. Dataset includes every D1 basketball team's season data from 2013 to 2019, including March Madness games if teams made it in the tournament. I only took those teams who made it into the tournament, which generated 476 columns of data (68\*7), and specifically looked at their performances in March Madness, their season adjusted offensive efficiency, and adjusted defensive efficiency. Performance is categorized by round of exit at the tournament, labeled “R68”, “R64”, “R32”, “S16”, “E8”, “F4”, “2ND”, and “Champions”. Adjusted offensive efficiency (ADJOE) provides the estimated points scored per 100 possessions against the average D1 defense; adjusted defensive efficiency (ADJDE) provides the estimated points allowed per 100 possessions against the average D1 offense. Lower numbers are considered better defensive efficiency.

1. Table

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Fig. 1 Fig. 2

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Fig 3.

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Fig 4. Fig 5.

1. Analysis

Figure 1 shows the average and standard deviation of ADJOE and ADJDE for teams exiting at each round of March Madness. For example, “R64” means that the team did not advance into R32 and was knocked out at R64. In general, both ADJOE and ADJDE improved from one round to the next except for ADJOE, which decreased from round E8 to F4. The trend is not unexpected because teams with better ADJOE and ADJDE usually win and advance to the next round. The decrease could be explained by upsets or teams not performing at their average level. This table shows a positive relationship between both ADJOE and ADJDE to tournament result. To visualize the trend of Table I, I created Figure 4 and 5 to show the trend of ADJOE and ADJDE against Performance in March Madness.

Currently, UNC has an ADJOE of 115.0 and an ADJDE of 99.0 ([barttorvik.com](https://www.barttorvik.com/)). Figure 2 shows how many teams at each round have better or worse ADJOE and ADJDE from 2013 to 2019. Unfortunately, no teams that reached final 4 or further has a worse ADJDE than 99.0. This could indicate the urgent need for UNC to improve defensively if UNC wants to go back to the National Championships this year. Even at Sweet 16, only 3 out of 56 teams in the year range has worse ADJDE than UNC. The average ADJDE at Sweet 16 is 93.75. There are still more than half of the teams having better ADJDE (<=99) from 2013 to 2019 at Round 64 than UNC this year. Without improving defense, this could mean an early exit for UNC in this year’s tournament. (UNC’s ADJDE was 93.5 last year).

Offensively, only 2 teams with ADJOE less than 115 have reached the National Championship Game from 2013 to 2019, and only 1 team won the title, which was 7th seeded UCONN in 2014. It’s fair to say that UCONN’s ADJOE is not exemplary of a Championship team though, since they were considered a dark horse, and was the second lowest seeded NCAA champion in history. It would be of great difficulty for UNC to pull off something like that; and UNC’s offensive efficiency is closest to that of an average Sweet 16 team. This could mean that UNC also needs to improve offensive efficiency, although not as much as defensive efficiency. (UNC’s ADJOE was 114.4 last year, which is somewhat similar to this year).

Figure 3 shows every data point of every team’s ADJOE and ADJDE from 2013 to 2019, according to performance. The red line shows where UNC’s current ADJOE and ADJDE lie. If we focus on teams that made it to Final 4 or further, there is not much difference in terms of spread of data points offensively and defensively. This could indicate games having more uncertainty and coming down to players’ single game performance, instead of relying on season average. Other factors, such as turnovers and steals, could be examined on a tournament game-by-game basis to analyze their relationships with how far a team advances in order to make game strategies.