

# The Evolution of Points Scored in the NBA\*

## A Breakdown on How NBA Offense has Changed since 2000

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Using the basketball statistics provided by [basketball-reference.com](https://basketball-reference.com), this paper investigates the rise of scoring in the NBA by analyzing the difference in statistics from the years 2000 to 2024. By making use of league-wide statistics as well as highlighting significant individual analytics from certain teams and players, we aim to showcase the main contributing factors to the rise in scoring as well as any possible consequences. This paper covers the significant factors from quantitative numbers, like, the rise in three-point shooting and increased shooting efficiency, as well as, qualitative measurements, such as team pace and overall physicality. With the help of running these findings in a model, we intend to predict how NBA scoring may look in the future and whether there is another level of scoring or if it is nearing its peak.

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\*Code and data are available at: [https://github.com/foreverwoods/evolution\\_of\\_NBA\\_scoring](https://github.com/foreverwoods/evolution_of_NBA_scoring).

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# 1 Introduction

The evolution of scoring in basketball throughout its tenure has brought about various discussions between the older generation of fans and the newer generation. A main topic of debate is in regards to the scoring of the game. Throughout this paper, we will be looking into the statistical data from the 2000-2001 NBA season up to the current 2023-2024 season. By analyzing the data and considering the changes, we aim to deduce the significant factors that have impacted scoring in the NBA. There are also other factors that may not be as obvious in the statistics, such as the change in pace of the game, how defenses have changed, and how the playstyles have evolved. This shows that what most would have as the ‘conclusive main argument’ for the ‘rise of NBA scoring’ in three-point shooting, may not be as significant on its own as it was originally perceived. There are many more factors that come into play that may co-align with the rise of three-point shooting, but have not been properly considered. All of these understandings are vital in predicting the possible future of NBA scoring. Suppose an NBA team replaced every single NBA shot with a three-point shot, since it is worth more points, then the entire game plan would change. Opposing teams would not consider that team a threat when they are closer to the basket, so they could overload the three point line and work to lower their opponents’ three-point shooting percentage beyond the league average. This hypothetical scenario could end up with that three-point shooting team scoring significantly less than the average NBA team. ‘Live by the three, die by the tree’, as they would

call it. The problem is, we don't directly know what is the main source behind this surge in scoring, or if it is a single factor alone.

Shooting the basketball, affecting the offense through intangibles, and defensive effort, these are all factors that we will be looking into throughout this paper. This paper aims to make use of R Core Team (2023) to provide an analysis of the main factors that have contributed to the rise in scoring in the NBA and how it may affect the future of the sport, from statistics, to the player archetypes sought after, to whether or not the current NBA records will be broken. After introducing the chosen statistical data ranging from individual teams and players, to cumulative, league-wide stats, we will incorporate this data into a generalized linear model to predict whether or not scoring will continue to rise, or if it has reached its peak. After the creation of four models, we can highlight any significant instances that make a big impact towards scoring. Whether it is making a play on the defensive end to score a fast-break bucket, or shooting the ball at a higher percentage, the main purpose of the paper is to break it down into simple, basic NBA metrics to get a better understanding of how the game has changed. The estimand is what were investigating as we look for the main factors, both offensive and defensive that contribute to the rise in NBA points scored.

## 2 Data

The information used in the development of this paper is from basketball-reference, which is a reputable database that tracks NBA statistics as far as the first ever game in 1946 (*Basketball-Reference.com - Basketball Statistics and History* 2024). It is endorsed by professional sports writers and major sports media outlets, like ESPN, which proves its reliability for the analysis in this paper. With the now completed 2023-2024 NBA season, the paper aims to analyze the increase in the 'average points per game' for each NBA season from 2000 to 2024 to find trends that affected the league as a whole as opposed to a subset of outlier teams.

The data was cleaned using **arrow** (Richardson et al. 2024), then parsed, analyzed, and visualized using **R** (R Core Team 2023) utilizing the packages **tidyverse** (Wickham et al. 2019), which made use of the following packages:

- **ggplot2** (Wickham 2016)
- **dplyr** (Wickham et al. 2023)
- **readr** (Wickham, Hester, and Bryan 2023)
- **tibble** (Müller and Wickham 2023)

as well as:

- **knitr** (Xie 2023) for table visualization.

## 2.1 Basketball Context

To give a brief context into the sport, in basketball, scoring points is done by shooting the ball through a hoop that is 10 feet off the ground. You can score two points by shooting the ball from within a marked line, called the three-point line, and three points by shooting the ball from beyond that line. The game is played in four 12 minute quarters and the team with the most points at the end of the game wins.

For a statistical breakdown on the significance of NBA offense and defense, in the 2000-2001 season, the average points per game by an NBA team was 94.8. In the current 2023-2024 season, the average points per game by an NBA team is 114.4, with approximately 90% of the games played (82 games per team) in the season. This is an increase of 19.6 points per game, which is overall a ~20.7% increase in scoring.

The biggest telltale sign of this increase, and the main topic of concern in the rise of three-point shooting. In the 2000-2001 season, the average three-point attempts per game by an NBA team was 13.7, with an average of 4.8 made to give a 35.4% shooting percentage. In the current 2023-2024 season, the average three-point attempts per game by an NBA team is 35.1 with an average of 12.8 made to give a 36.6% shooting percentage.

So in this time period, the average three-point attempts per game nearly tripled while also increasing the shooting percentage by 1.2%. While this information is very helpful in discovering the underlying causes of the rise in NBA scoring, there were also some consequences to this change. Like how the number of fouls has decreased from 22.3 to 18.9 which affects the number of free throws decreasing from 24.9 to 21.9 taken a game.

## 2.2 Variables

The basketball analytics used for this paper's analysis specifically look at the average team's stats across an entire NBA season. These statistics are official NBA data provided by the NBA's official statistics tracking partner, Sportradar. Thus, this data is legitimate and unbiased as a viewer from home can track each statistics live and achieve the exact same stat sheet as basketball-reference. I have divided the analytics between offensive-based stats and defensive-based stats due to the impact defense has in stopping an offensive team from scoring, which can be seen on Table 1.

Table 1: NBA Average Team Statistics For Each Season

NBA Season	FGA	3PA	FTA	ORB	DRB	AST	STL	BLK	TOV	PF	PTS	FG%	3P%	FT%	Pace
2023-24	88.9	35.1	21.7	10.6	33.0	26.7	7.5	5.1	13.6	18.7	114.2	0.474	0.366	0.784	98.5
2022-23	88.3	34.2	23.5	10.4	33.0	25.3	7.3	4.7	14.1	20.0	114.7	0.475	0.361	0.782	99.2

Table 1: NBA Average Team Statistics For Each Season

NBA Season	FGA	3PA	FTA	ORB	DRB	AST	STL	BLK	TOV	PF	PTS	FG%	3P%	FT%	Pace
2021-22	88.1	35.2	21.9	10.3	34.1	24.6	7.6	4.7	13.8	19.6	110.6	0.461	0.354	0.775	98.2
2020-21	88.4	34.6	21.8	9.8	34.5	24.8	7.6	4.9	13.8	19.3	112.1	0.466	0.367	0.778	99.2
2019-20	88.8	34.1	23.1	10.1	34.8	24.4	7.6	4.9	14.5	20.8	111.8	0.460	0.358	0.773	100.3
2018-19	89.2	32.0	23.1	10.3	34.8	24.6	7.6	5.0	14.1	20.9	111.2	0.461	0.355	0.766	100.0

These analytics include:

- **Season**
  - Represents the NBA season, ex: 2000-01 signifies the NBA season between 2000 to 2001.

Offensive Analytics:

- **PTS**
  - The average points per game a team scored during a given NBA season.
- **FGA**
  - The average number of field goals (shots) attempted per game by a team during a given NBA season. This includes three point field goals, but not free throws.
- **FG%**
  - The average field goals percentage (shots made / shots missed) by a team during a given NBA season. This includes three point field goals, but not free throws.
- **3PA**
  - The average number of three-point field goals (shots) attempted per game by a team during a given NBA season.
- **3P%**
  - The average three-point field goals percentage (threes made / threes missed) by a team during a given NBA season.
- **FTA,**

- The average number of free throws attempted per game by a team during a given NBA season.
- FT%
  - The average free throw percentage (free throws made / free throws missed) by a team during a given NBA season.
- AST
  - The average number of assists (player scores off a teammate's pass) per game by a team during a given NBA season.
- TOV
  - The average number of turnovers (the team loses possession of the ball without attempting a shot) per game by a team during a given NBA season.
- ORB
  - The average number of offensive rebounds (offensive team rebounds the ball after a missed shot) per game by a team during a given NBA season.
- Pace
  - The average number of possessions a team has in a full game during a given NBA season.

#### Defensive Analytics:

- DRB
  - The average number of defensive rebounds (defensive team retrieves the ball off the offensive team's missed shot) per game by a team during a given NBA season.
- STL
  - The average number of steals (defensive team takes the ball away from offensive team) per game by a team during a given NBA season.
- BLK
  - The average number of blocks (defensive player deflects a shot attempt from the offensive player) per game by a team during a given NBA season.
- PF
  - The average number of fouls (player deflects makes illegal contact with a player on the opposing team) per game by a team during a given NBA season.
    - \* If the offensive player is fouled during a field goal attempt and make the shot, then the field goal is counted and they are awarded 1 free throw. If they miss the shot, then they are given a proportional amount of free throws as their attempt (2 for a field goal within the arc and 3 for three-point attempts).

## 2.3 Justification

The reason why these variables were chosen is because they are the basic and fundamental aspects of basketball. These represent both offense and defense in an understandable manner, as opposed to advanced analytics, such as: Offensive Rating which calculates how many points a team can score within 100 possessions. This is a metric that, while valuable on its own, loses its value in the context of trying to calculate the average points per game since it is utilized in said formula.

**Season** and **PTS** are necessary since we would like to see the change in points scored as the years go by. The figure, Figure 1 showcases the increase in scoring over the years. In this figure, you are able to see specific seasons where NBA scoring took a significant leap as opposed to previous years, i.e. 2018-19.

**FGA**, **FG%**, **3PA**, **3P%**, **'FTA'**, **FT%**, are the variables that track every possible way to score a point. While three point shooting is still considered a 'field-goal' it is essential that we highlight it since it is a main contributing factor to the increase in scoring. Taking a look at the two figures in Figure 2, Figure 2a clearly shows how the increase in three pointers attempted correlates to the increase in points per game, regardless of the year it took place. Figure 2b shows how the three point shooting percentages relatively stayed the same (accounting for slight disparities from time to time), and that it is the volume of threes taken that made a difference.

**AST** is another offensive stat that has shown a correlation to points per game. Taking a look at Figure 3, you can see how the an increase in assists per game, correlates to an increase in points per game. This can possibly signify a change in offensive system, where teams are passing the ball more often as opposed to isolation play in order to generate better, higher-percentage, shot attempts.

**TOV**, **ORB**, **Pace**, are the last offensive statistics. They are possibly outliers in comparison to the other, more direct statistics, but they do show significant changes over the years. In the later years between 2000-2024, it is clear that both turnovers per game and offensive rebounds per game lessened, while the pace of the game increased.

**DRB**, **STL**, **BLK**, **PF**, are the main defensive statistics that have direct impact on offensive output. By securing a defensive rebound, steal, or block, the defending team can shut down the offensive team's possession and prevent them from scoring. **PF**, or personal fouls, impact the offense in various ways as it generally dictates how aggressive a team is playing defense. This can be seen in Figure 4, where it shows the less fouls committed, generally outputs to an increase in points per game.

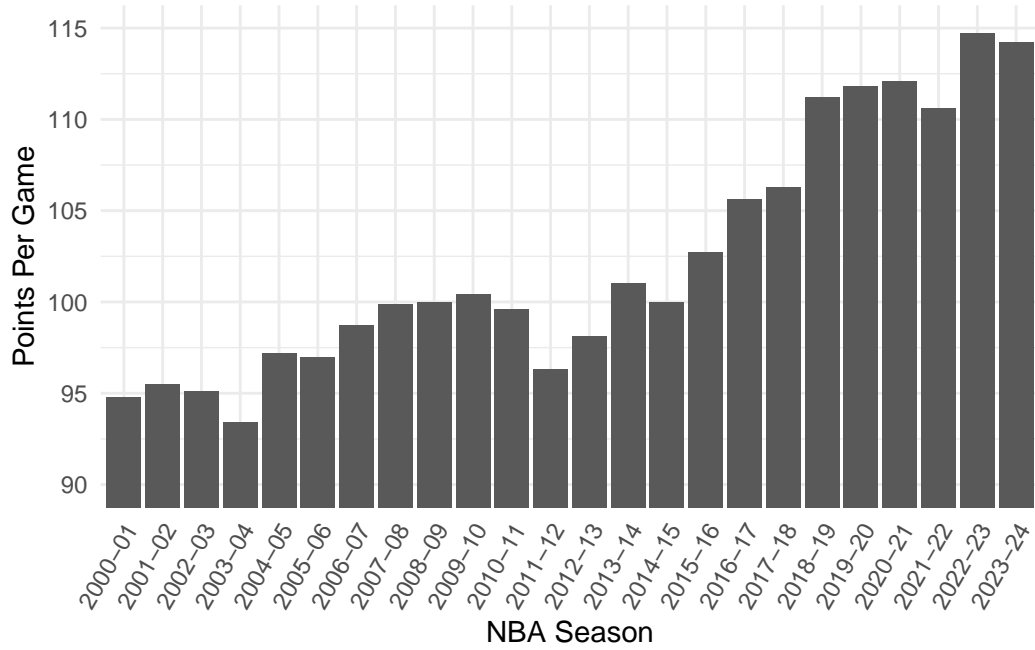


Figure 1: NBA Average Points per Game For Each Season

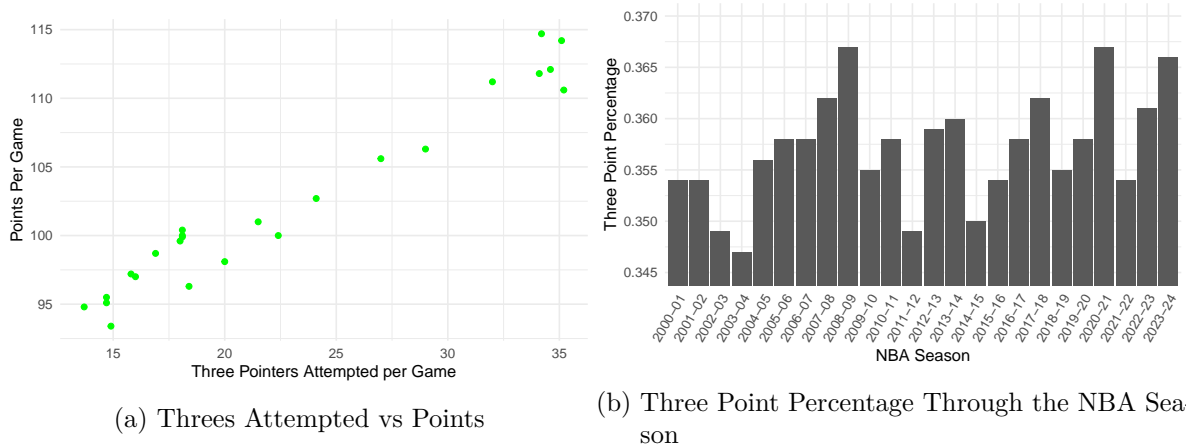


Figure 2: Impact of Three Point Shooting in the NBA



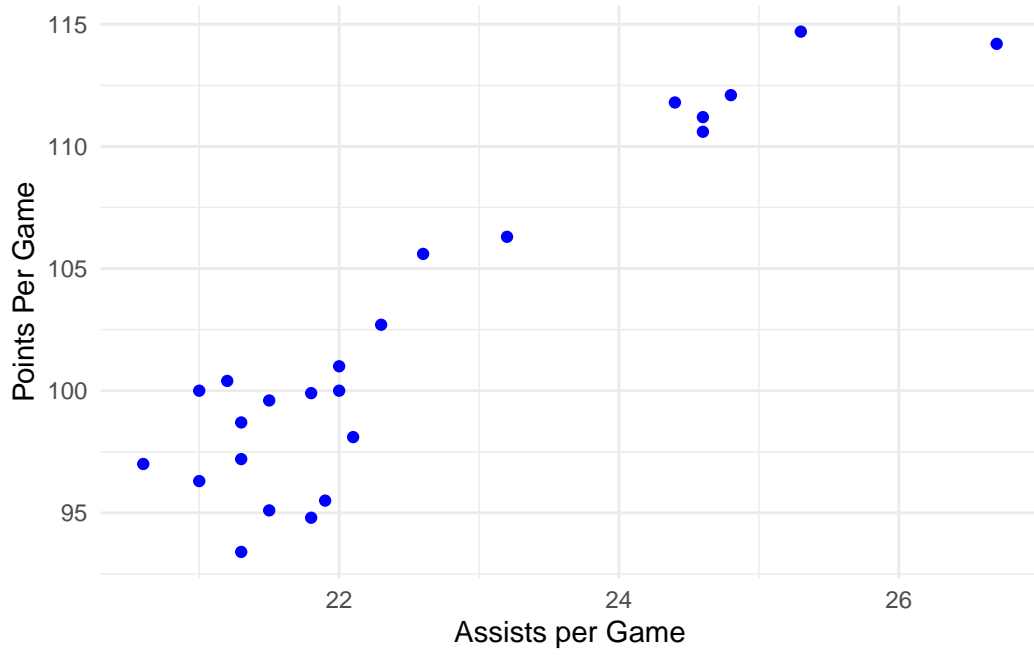


Figure 3: NBA Assists vs. Points

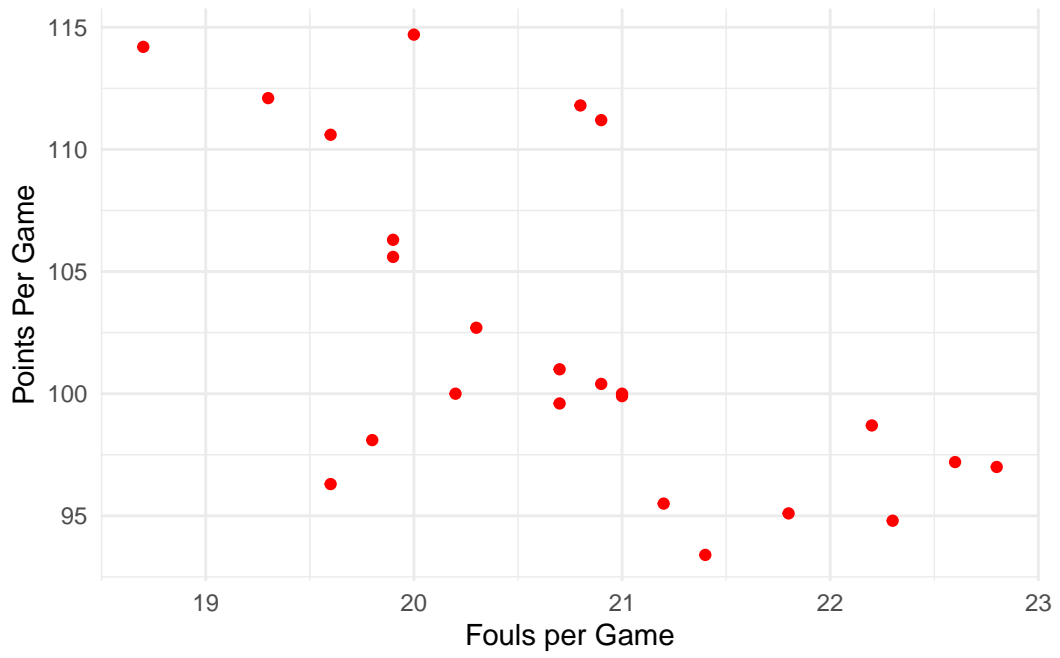


Figure 4: NBA Fouls vs. Points

### 3 Models

The production of the generalized linear model was created with the **rstanarm** (Goodrich et al. 2024) package. This is then followed up using **modelsummary** (Arel-Bundock 2022). There are a total of four models created that aim to predict the average points per game. We hope to highlight the most important factors that contribute to scoring points in the NBA. These models are:

1. Three Point Scoring and Efficiency
2. All Forms of Scoring and Their Respective Efficiencies
3. Offensive Intangibles
4. Defensive Importance in Scoring

#### 3.1 Three Point Scoring and Efficiency

##### 3.1.1 Model set-up

The model we are interested in is:

$$\begin{aligned}y_i | \mu_i, \sigma &\sim \text{Normal}(\mu_i, \sigma) \\ \mu_i &= \beta_0 + \beta_1 \text{3PA}_i + \beta_2 \text{3P-percentage}_i \\ \beta_0 &\sim \text{Normal}(0, 2.5) \\ \beta_1 &\sim \text{Normal}(0, 2.5) \\ \beta_2 &\sim \text{Normal}(0, 2.5) \\ \sigma &\sim \text{Exponential}(1)\end{aligned}$$

where  $y_i$  is average points per game in an NBA season,  $\text{3PA}_i$  is the three pointers attempted per game and  $\text{3P-percentage}_i$  is the average three point percentage.

Table 2 shows a model summary for this model, this will be discussed further in the [results](#) section.

##### 3.1.2 Model justification

This first model is exclusive to three point shooting. This is what many people believe to be the sole factor in the increase in NBA scoring. There has been instances in the NBA where teams have elected to shoot only high percentage shots, which are three pointers and layups, eliminating the mid range almost entirely. This was seen in the 2017-2018 NBA season with the Houston Rockets, where they took the top seed in the Western Conference while leading the league with 41.5 threes a game Schwartz (2018). If you compare that to the league average

stats in that season, this would be an increase of 12.5 three pointers a game. As such, it would be a wise decision to solely dedicate a model to these statistics.

## 3.2 All Forms of Scoring and Their Respective Efficiencies

### 3.2.1 Model set-up

The model we are interested in is:

$$\begin{aligned}
y_i | \mu_i, \sigma &\sim \text{Normal}(\mu_i, \sigma) \\
\mu_i &= \beta_0 + \beta_1 3PA_i + \beta_2 3P\text{-percentage}_i + \beta_3 FGA_i + \beta_4 FG\text{-percentage}_i + \beta_5 FTA_i + \beta_6 FT\text{-percentage}_i \\
\beta_0 &\sim \text{Normal}(0, 2.5) \\
\beta_1 &\sim \text{Normal}(0, 2.5) \\
\beta_2 &\sim \text{Normal}(0, 2.5) \\
\beta_3 &\sim \text{Normal}(0, 2.5) \\
\beta_4 &\sim \text{Normal}(0, 2.5) \\
\beta_5 &\sim \text{Normal}(0, 2.5) \\
\beta_6 &\sim \text{Normal}(0, 2.5) \\
\sigma &\sim \text{Exponential}(1)
\end{aligned}$$

where  $y_i$  is average points per game in an NBA season,  $3PA_i$  is the three pointers attempted per game,  $3P\text{-percentage}_i$  is the average three point percentage,  $FGA_i$  is the field goals attempted per game,  $FG\text{-percentage}_i$  is the average field goal percentage,  $FTA_i$  is the free throws attempted per game,  $FT\text{-percentage}_i$  is the average free throw percentage.

Table 3 shows a model summary for this model, this will be discussed further in the [results](#) section.

### 3.2.2 Model justification

This second model is all forms of scoring. While an increase in scoring is generally attributed to better shooting, having a model to resemble that can allow you to check it and compare with defensive metrics whether the change was affected more by offense or defense. This includes the attempts for each scoring shot as well as the efficiencies over the years.

### 3.3 Offensive Intangibles

#### 3.3.1 Model set-up

The model we are interested in is:  $\text{ORB} + \text{AST} + \text{Pace} + \text{TOV}$ ,

$$\begin{aligned}y_i | \mu_i, \sigma &\sim \text{Normal}(\mu_i, \sigma) \\ \mu_i &= \beta_0 + \beta_1 \text{ORB}_i + \beta_2 \text{AST}_i + \beta_3 \text{Pace}_i + \beta_4 \text{TOV}_i \\ \beta_0 &\sim \text{Normal}(0, 2.5) \\ \beta_1 &\sim \text{Normal}(0, 2.5) \\ \beta_2 &\sim \text{Normal}(0, 2.5) \\ \beta_3 &\sim \text{Normal}(0, 2.5) \\ \beta_4 &\sim \text{Normal}(0, 2.5) \\ \sigma &\sim \text{Exponential}(1)\end{aligned}$$

where  $y_i$  is average points per game in an NBA season,  $\text{ORB}_i$  is the average number of offensive rebounds per game,  $\text{AST}_i$  is the average assists per game,  $\text{Pace}_i$  is the average number of possessions per game,  $\text{TOV}_i$  is the average number of turnovers per game.

Table 4 shows a model summary for this model, this will be discussed further in the [results](#) section.

#### 3.3.2 Model justification

This third model is exclusive to offensive intangibles that are not directly scoring, but can lead to a potential score. This could be from increased playmaking leading to better percentage shots (less contest from defenders), turning the ball over less, crashing the boards for offensive rebounds more, or just playing in a faster pace.

### 3.4 Defensive Importance in Scoring

#### 3.4.1 Model set-up

The model we are interested in is:

$$\begin{aligned}
y_i | \mu_i, \sigma &\sim \text{Normal}(\mu_i, \sigma) \\
\mu_i &= \beta_0 + \beta_1 \text{STL}_i + \beta_2 \text{BLK}_i + \beta_3 \text{PF}_i + \beta_4 \text{DRB}_i \\
\beta_0 &\sim \text{Normal}(0, 2.5) \\
\beta_1 &\sim \text{Normal}(0, 2.5) \\
\beta_2 &\sim \text{Normal}(0, 2.5) \\
\beta_3 &\sim \text{Normal}(0, 2.5) \\
\beta_4 &\sim \text{Normal}(0, 2.5) \\
\sigma &\sim \text{Exponential}(1)
\end{aligned}$$

where  $y_i$  is average points per game in an NBA season,  $\text{STL}_i$  is the average number of steals per game,  $\text{BLK}_i$  is the average number of blocks per game,  $\text{PF}_i$  is the average number of fouls per game,  $\text{DRB}_i$  is the average number of defensive rebounds per game.

Table 5 shows a model summary for this model, this will be discussed further in the [results](#) section.

### 3.4.2 Model justification

This last model is exclusive to defensive attributes. This can help us see what defensive factors are most significant in the change in NBA scoring. Steals and Blocks could possibly lead to more fast-break opportunities where teams run down the floor, generally leading to a score on the other end because the other team is not set to play defense as they were not expecting their possession to be stolen or blocked. Personal fouls could also lead to more free throw opportunities for teams, and defensive rebounds ensure that your team gets the possession and the chance to score.

## 4 Results

### 4.1 Threes Model

The intercept (23.391) is the average points scored when you zero out the other factors. 3PA: 0.798 is the increase in average points associated with each additional 3-point attempt. 3P%: 170.222 is The increase in average points associated with a 1 percentage point increase in 3-point shooting percentage. Since the percentage points are set up to not add up to 100 percent, divide 170.222 by 100 to show what a 1% increase in shooting percentage would increase in points, which is 1.70 points per game.

Table 2: Three Point Scoring and Efficiency

	Avg Points Per Game
(Intercept)	23.391 (19.141)
‘3PA’	0.798 (0.038)
‘3P%’	170.222 (55.102)
Num.Obs.	24
R2	0.962
R2 Adj.	0.961
Log.Lik.	−39.185
ELPD	−42.2
ELPD s.e.	3.3
LOOIC	84.3
LOOIC s.e.	6.6
WAIC	84.1
RMSE	1.18

## 4.2 Scoring Model

The intercept (-110.27) can be disregarded as we have removed all forms of scoring, as such it is in the negatives. 3PA: 0.340 is the increase in average points associated with each additional 3-point attempt. 3P%: 18.512 is The increase in average points associated with a 1 percentage point increase in 3-point shooting percentage. Since the percentage points are set up to not add up to 100 percent, divide 18.512 by 100 to show what a 1% increase in shooting percentage would increase in points, which is ~0.19 points per game. FGA: 0.93 is the increase in average points associated with each additional field goal attempt. FG%: 1.67 increase in average points with each 1% increase in field goal percentage. FTA: 0.755 is the increase in average points associated with each additional free throw attempt. FT%: 0.3455 increase in average points with each 1% increase in free throw percentage.

Table 3: All Forms of Scoring and Their Respective Efficiencies

	Avg Points Per Game
(Intercept)	−110.270 (4.454)
‘3PA‘	0.340 (0.019)
‘3P%‘	18.512 (6.830)
FGA	0.930 (0.037)
‘FG%‘	167.422 (6.416)
FTA	0.755 (0.027)
‘FT%‘	34.550 (4.776)
Num.Obs.	24
R2	1.000
R2 Adj.	1.000
Log.Lik.	20.387
ELPD	12.5
ELPD s.e.	3.3
LOOIC	−25.0
LOOIC s.e.	6.6
WAIC	−27.1
RMSE	0.14



Table 4: Offensive Intangibles

	Avg Points Per Game
(Intercept)	37.794 (29.539)
ORB	-1.201 (0.968)
AST	1.386 (0.526)
Pace	0.881 (0.341)
TOV	-2.558 (0.991)
Num.Obs.	24
R2	0.965
R2 Adj.	0.960
Log.Lik.	-37.522
ELPD	-42.9
ELPD s.e.	4.1
LOOIC	85.8
LOOIC s.e.	8.2
WAIC	85.0
RMSE	1.08

### 4.3 Intangibles Model

The intercept (37.794) is the average points scored when you zero out the other factors. ORB: -1.201 is the decrease in average points associated with each additional offensive rebound. This makes sense because an offensive rebound will only come with missed shots, but is not something that should be considered a negative aspect to offense. AST: 1.386 is the increase in average points associated with each additional assist. Pace: 0.881 is the increase in average points associated with each additional team possession. TOV: -2.558 is the decrease in average points associated with each additional turnover. This makes sense because it means that your team would miss out on the entire possession meaning you score no points as well as it took time out of the clock which gives you less possessions overall to play the game.

## 4.4 Defense Model

The intercept (99.952) is the average points scored when you zero out the other factors. This is approximately how many points are scored on average from offense alone. STL: -12.497 is the decrease in average points associated with each additional steal. This is quite a shocker since a steal should technically trigger a fast-break opportunity, allowing a team to score. But, you do have to consider one thing, which is that the other team will lose an opportunity from your team stealing the ball. This will affect the overall scoring averages for the league. BLK: 3.372 is the increase in average points associated with each additional block. This is also a shocker because a steal was a significant decrease, but blocks are not. One explanation can be that blocks need to be recovered and thus do not always translate to a fast-break opportunity like steals. PF: -0.912 is the decrease in average points associated with each additional foul. This makes sense because it can cause teams to lose possession, reliable offensive players fouling out may also translate to less scoring as well. DRB: 3.321 is the increase in average points associated with each additional defensive rebound.

Table 5: Defensive Importance in Scoring

	Avg Points Per Game
(Intercept)	92.952 (29.250)
STL	-12.497 (2.902)
BLK	3.372 (3.480)
PF	-0.913 (0.623)
DRB	3.321 (0.390)
Num.Obs.	24
R2	0.879
R2 Adj.	0.847
Log.Lik.	-53.320
ELPD	-58.7
ELPD s.e.	4.4
LOOIC	117.4
LOOIC s.e.	8.8
WAIC	116.3
RMSE	2.18

## 5 Discussion

### 5.1 First discussion point

The first discussion point is how significant three point shooting is to NBA offense. It was a clear factor to keep in mind prior to developing the paper. Many people hear about how Stephen Curry has changed the game forever as the NBA offense transitioned to shooting more threes. This was evident on Figure 2 in the Data section as they showed the clear correlation between three pointers attempted and points scored, as well as an emphasis that it may not just be better shooting, but rather the volume of threes. This gives the idea that if you can shoot more threes, while you do expect to miss more shots than a more efficient mid-range, you expect more points throughout the entire game. If you shoot 10 threes at 35% that is

approximately 10.5 points, while if you shoot 10 field goals at 45%, that is approximately 9 points scored. This shows how NBA teams have adapted to accomodate for more statistically efficient methods of shooting.

## **5.2 Second discussion point**

The second discussion point is how the offensive intangibles have affected NBA offense. It is clear from Figure 4 from the Data section since it showed the correlation between assists and points scored. There are certainly more ways than scoring to affect an NBA offense. There are a ton of ways that players can impact an opposing team's gameplan. If a player is a good shooter, then the opposing defender will stick closer to them allowing more space in the area closer to the hoop. This is called spacing the floor, an intangible offensive asset. Increased ball movement can also lead to better offensive plays because it can allow you to get a better look (more wide open from defender's contest) for a teammate which can be a higher percentage shot. There are a lot of ways to impact an offense, and offensive intangibles are one of them, but it is clear that they are not as significant as shooting the ball itself.

## **5.3 Third discussion point**

The last point of discussion is regarding defense. What I failed to consider when creating my model was that the defense of one NBA team impacts the offense of the other NBA team. This is a tradeoff that is reflected on the overall team stats for the season. This is why I was shocked to see those values in the defensive model summary, but I understood that this was an oversight on my end. There may be another way to measure the change in defense over the years and correlate it to the increase in offensive output. Possibly look towards seeing if there is a lack of defense being played in the league that is not reflected in numbers alone? Watching games can help with this as you can see whether players are being left wide open in games. There is also the point to consider that handchecking was banned in the NBA in the mid 2000s, which could have possibly made a great impact on how NBA offense is played since defenses are not allowed to be as physical.

## **5.4 Weaknesses and next steps**

There is only so much you can portray when you have statistics only. There are a lot of parts of basketball that cannot be measured in stats alone. One big thing to consider now is that basketball is more popular than ever. There are a lot of players that begin young and are more prepared for when they play in the NBA. You could consider this an increase in talent as well. While this does not guarantee that you will see an anomaly such as the next Michael Jordan, or LeBron James, it does increase the floor of NBA players and thus, increases the overall talent in the league. This could be why there is an increase in offensive output, but it is not a factor that we can measure.

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