

Are Three-Pointers Worth too Much?

By Jayden Kim





Dataset

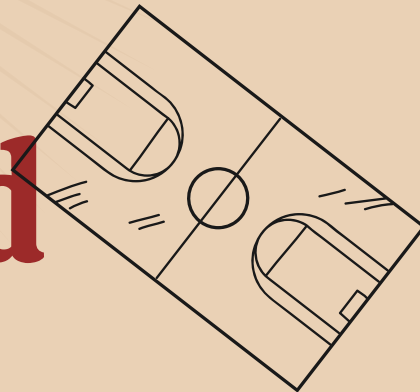
■ NBA Stats (1947-present)

- Extensive database of NBA players, teams, and advanced metrics.
- Chose season as 1997 and beyond.
(Introduction of play-by-play era.)

■ **Myth or Fact?**

- With its huge data, I figured I could answer the question to whether the 3-pointer “ruined” the NBA or not.

Cleaning and Visualizing



- I had prior knowledge in basketball.
- Thus, I knew what metrics and specific datasets I needed from seeing the columns and cleaned out the unnecessary ones.
 - I also combined two datasets together as one had metrics the other one didn't, but it was too much data to keep them separate.
- I created visuals and converted data into readable numbers to analyze and derived insights from them.

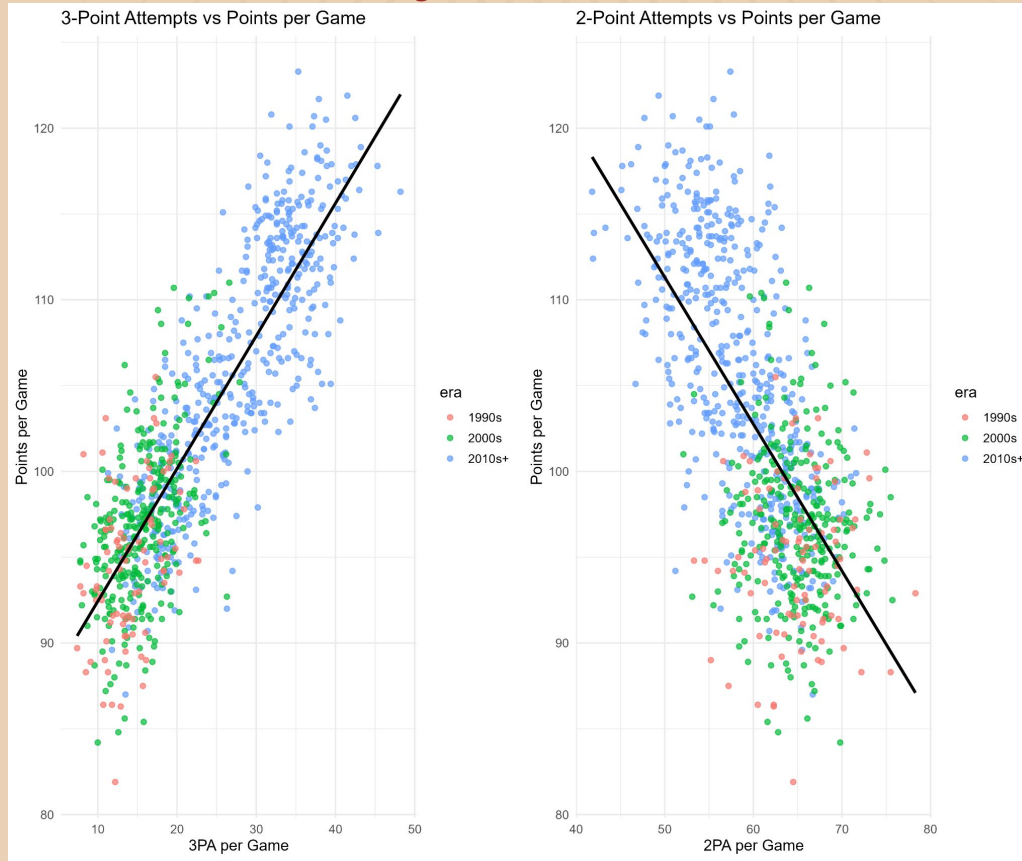
How could “3”-pointers be worth too much?

- A trending notion in the NBA is that “3-pointers have ruined basketball”.
- Stems from the idea that, simply statistically speaking, 33% of made 3s = 50% of made 2s
- This notion was brought up in nearly every podcast, talk show, or conversation during recent NBA playoffs.
- It felt as if no lead was safe and teams were making insurmountable comebacks in record amounts of time.
- What was meant to shift from the big-man heavy era in 1979 to allow has now seemingly become the most imbalanced mechanism of the game.

Do the numbers back it up or is it just a belief?



- Evidently, as years went on, teams attempted more 3s which led to more PPG.
- Simple motto: You score more, you win more.



- Conversely, as years went on, teams attempted less 2s which led to more PPG as more shots went to the 3.



Why is this such a problem for teams?

Relying on 3s

Games decided before truly starting

- NBA games are based on momentum. If a team catches fire from 3 early, it's difficult for the opponent to claw back.
- Thus games can be decided even in the first quarter.

Significant blowouts

- Largest point margin in NBA history between Grizzlies and Thunder (152 - 79).
- Grizzlies shot 19/36 from the 3-point line which is roughly 53% versus the Thunder who shot 11/38 which is roughly 29%.

Record breaking point totals

- In the 2024-25 regular season of the NBA, teams were averaging around 113.8 points per game.
- Just over a decade ago, the average points per game in the 2012-13 regular season was 98.1

Unorganized offense/ Over reliance on 3

- Offenses became faster paced, and thus ran less halfcourt sets.
- It suddenly changed from outplaying your opponent, to finding the open man for 3.



Why did this notion trend now?

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1

The biggest culprit: Stephen Curry

- The greatest 3-point shooter ever. What else to say.

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2018 Houston Rockets

- Daryl Morey's philosophy: Live and die by the 3.

0
3

2025 Boston Celtics

- Record breaking 3 point records! (not in a good way)

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4

2025 Indiana Pacers

- Most improbable playoff run in modern NBA history.



1. Stephen Curry

- Not going deep into specifics, Stephen Curry revolutionized the NBA.
- He proved to the NBA that the 3-point shot was a legitimate offensive strategy.

2. 2018 Houston Rockets

- GM, Daryl Morey, designed the Rockets to live and die by the 3.
- In the WCF, they died by it as they missed 27 three-pointers in a row, but only lost by 9.
- Had they made a few more, they'd be in the finals.

3. 2025 Boston Celtics

- The Celtics set the NBA playoff record for most 3-point misses in the during Game 1 of the 2025 EC semis against the Knicks.
- They missed 45 three-pointers in that game.
- Coach Joe Mazzulla loved their reads on offense and the shots taken.

4. 2025 Indiana Pacers

- First round versus Bucks
 - 7-point 40 second comeback in OT starting with a clutch 3-pointer by Nembhard.
- Second round versus Cavaliers
 - 7-point 46 second comeback with a game-winning three by Haliburton.
- ECF versus Knicks
 - First team to make 14-point 2:45 seconds comeback from an explosive 6/7 from 3 in the 4th quarter from Nesmith.



“Fans don’t want to see guys jack up threes.”



- Barkley notes how teams rely too much on the 3-pointer and when they fail to fall, they lack a plan B.
- Additionally he stated, as NBA finals viewership has fallen significantly, that he himself would prefer watching college basketball.



— **Charles Barkley**

(on the biggest problem in the NBA today)



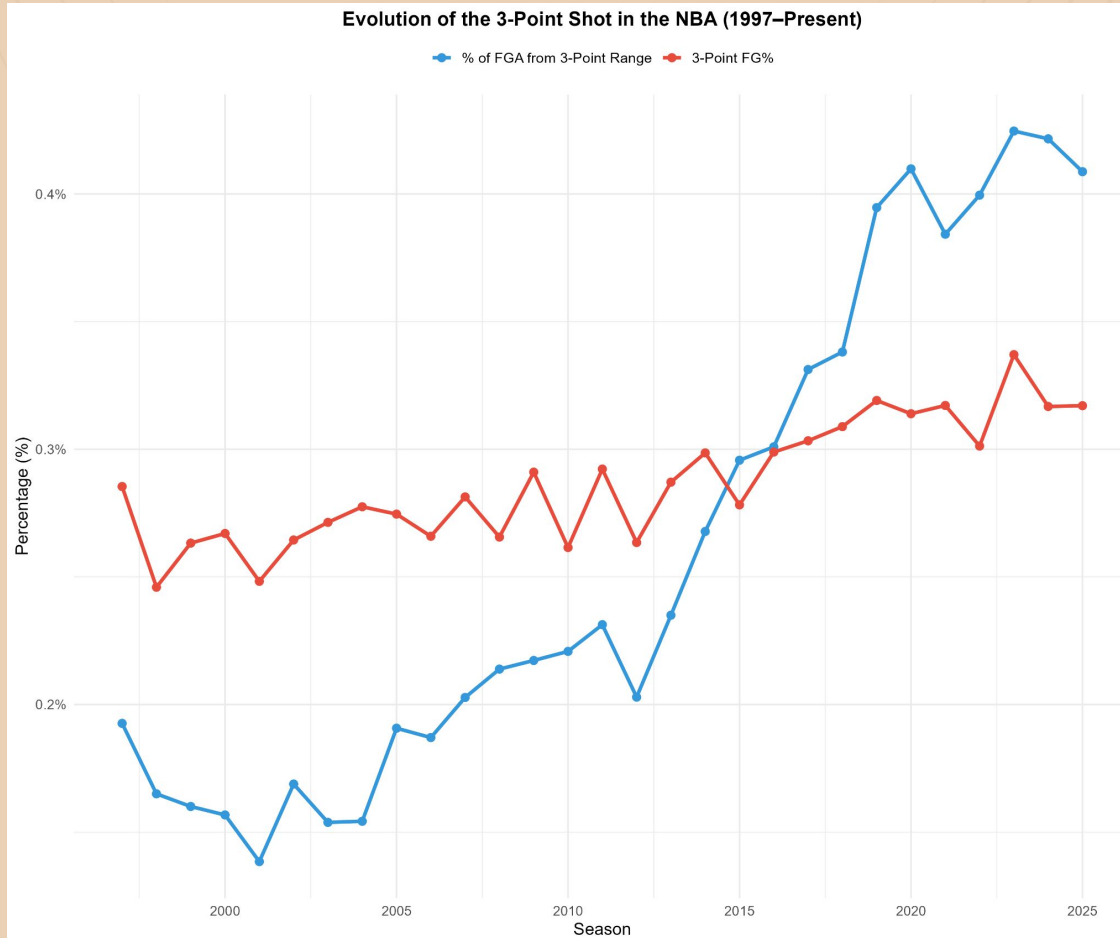
But the 3 offers unexpected outcomes and upsets!

- But, it also brings a big imbalance in the idea of “skill”. A team may seem much better/coordinated/skilled but if the other team can make their 3s, no game is over.
- A team can survive no matter how big the separation between them is.



So are teams less skilled now...?

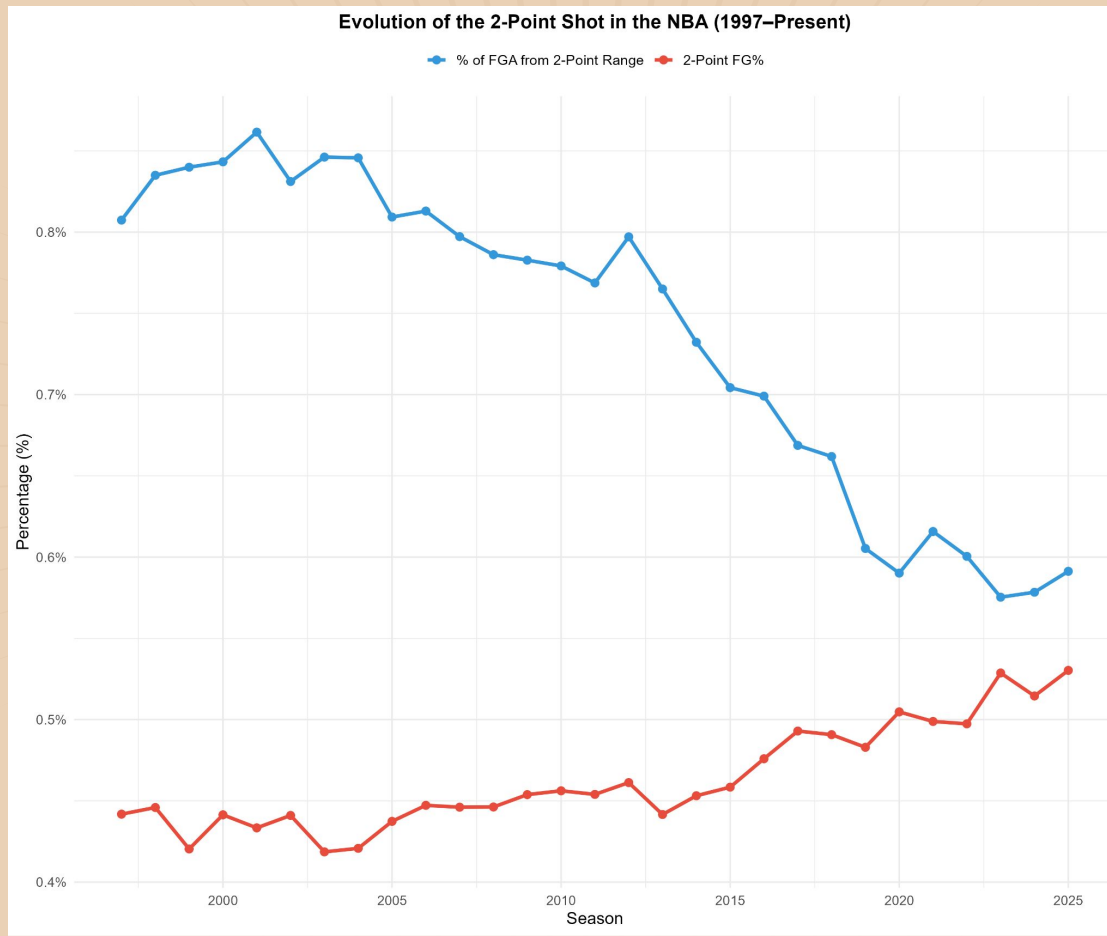
- Evidently, as years went on, players 3pt shot volume percentage drastically increased. (e.g. around 40.87% of shots from players in 2025 were 3s.)
- However, the rate at which they made those shots, remained relatively the same.



- 40.87% - 19.26% = 21.61% difference in % of 3pa (2025-1997)
- 31.71% - 28.54% = 3.17% difference in 3pt % made. (2025-1997)
- If 3-pointers don't take skill, then is the NBA less skilled now as more teams attempt them and they don't even make more?

Actually, they aren't.

- In reality, teams have been becoming more efficient and skilled. Just not in the way you'd expect.
- NBA players have less 2-pointers in their shot charts, but their efficiency is steadily increasing as years go on.



- $80.74\% - 59.13\% = 21.61\%$ difference in % of 2pa. (1997-2025)
- $53.03\% - 44.18\% = 8.85\%$ difference in 2pt % made. (2025-1997)



Why does that happen?

- Theoretically, a team could just pray that the dice rolls in their favor and chuck up threes as it is statistically advantageous. Most teams do.
- However, basketball isn't a dice roll.
- Defenses can adjust and play aggressively on the ball handler, they can double the shooter, or they could deny the 3 at all costs.
- Thus, the 3-point is balanced.



Three-pointers open up the court

Really good 3-point shooting team?

- The defense will focus on stopping the 3 versus the easy basket simply because the 3 is so valuable.
- They will face guard all the way up to the 3-point line rather than playing help or zone defense, forcing the offense to get easy 2-point baskets inside.

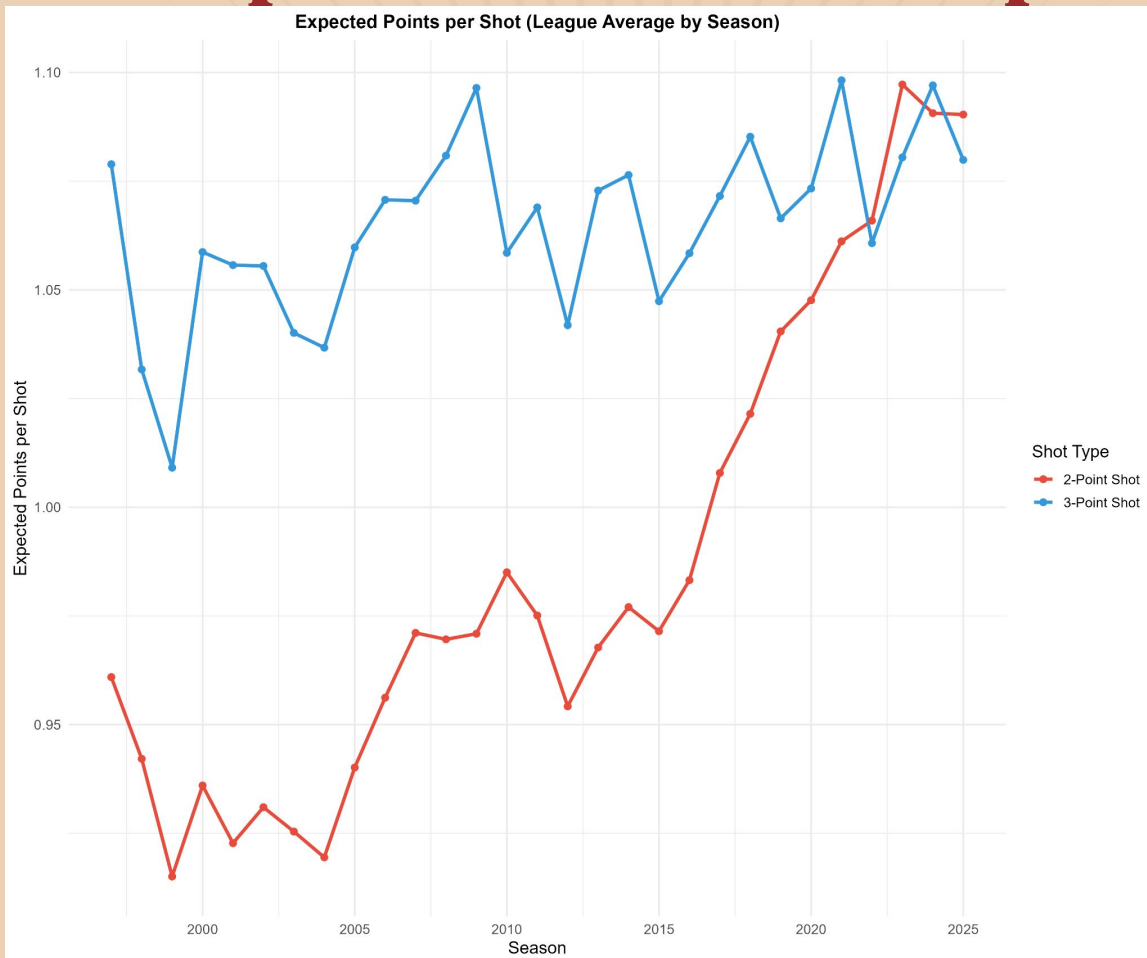


Not a good 3-point shooting team?

- This creates the notion for fans that a team is more skilled than another team as they don't have the unfair advantage of the 3.
- However, in both scenarios, it's evident that the clear efficient shot isn't the 3-pointer, but the 2-pointer.

Value of 3-pointers versus 2-pointers

- While on paper, the 3-point shot seems like a no-brainer, it's clear that the modern NBA has adapted to the surge of the 3-pointer.
- Thus, the expected points per shot changed from being objectively different to nearly identical.



- $1.08 - 1.08 \sim$ the same in EV of 3pt (2025-1997)
- $1.09 - 0.96 = 0.13$ difference in EV of 2pt (2025-1997)
- $1.09 - 1.08 = 0.01$ difference in EV of 2pt - 3pt.

Conclusion:

- Based on the previous graph, if anything, the 2-pointer is worth too much!
- Or more realistically, the 3-pointer is a balanced mechanic and vital to the NBA.

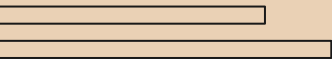




In the Future...



- I would love to explore beyond just the NBA such as the Euro League, where talent is rapidly booming, or the Olympics, where the 3-point line is shorter than the NBA's.
- I also wanted to dive deeper into Charles Barkley's idea that fans don't want to see players jack up threes even though Stephen Curry is one of the most viewed athletes of our generation, but the dataset didn't involve viewership.
 - It did have arena attendees, but that involved a lot of cleaning and processing.



Thanks!



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