ISAIAH THOMAS VS. KYRIE IRVING: WHO HAD THE BETTER SEASON IN BOSTON?

A look at the statistics behind one of the biggest trades in modern NBA history

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IN 2017, IT FELT LIKE A NORMAL NBA OFFSEASON.

Kevin Durant relished in the glory of winning his first NBA Championship with the Golden State Warriors. As their superstar LeBron James entered the final year of his contract, the runner-up Cleveland Cavaliers were desperately trying to retool their roster and make another competitive run at a championship. And the Boston Celtics were coming off a deep playoff run led by an MVP caliber season from Isaiah Thomas, who was recovering from a seemingly benign hip injury.

Like most other NBA off seasons, rumors were running wild, but if you were a seasoned fan, you wouldn't give any of them serious thought, unless a select few NBA writers reported on them. And then, it happened. NBA insider Adrian Wojnarowski tweeted out his latest scoop on one of these rumors, or as fans like to call them, "Woj Bombs." The Cleveland Cavaliers were sending star point guard Kyrie Irving to the Boston Celtics in exchange for Isaiah Thomas and a package of role players and draft picks. The news shocked the NBA community and left everyone with more questions than answers.

I was a big fan of both players and was excited to see how each of them performed in Boston. Now, with the benefit hindsight, fans have made their verdict on which team "won" the trade and moved on. While basketball is a team sport, I believe there is much to be gleaned from analyzing these players' seasons from an individual standpoint. Using Python and data from basketball-reference, I take an offense-minded look at Isaiah Thomas's last season and Kyrie Irving's first season in Boston to complete our picture of one of the biggest trades in modern NBA history.

SCORING

Neither Isaiah Thomas nor Kyrie Irving are known for their defensive prowess. Their outstanding value comes from the offensive side of the floor. So naturally, let us start by looking into what they ultimately did best: score. Thomas averaged 28.9 points per game to Irving's 24.4. Averages can tell a lot about a player, but they don't tell the whole story; consistency is even more important when comparing two players in similar roles. This is most easily visualized through a boxplot (Fig. 1).

As we can see, Thomas's scoring data shows less variation (evidenced by a narrower box) and is more prolific than Irving's. In fact, Thomas's lower quartile in points per game is the same as Irving's median points per game (25 points).

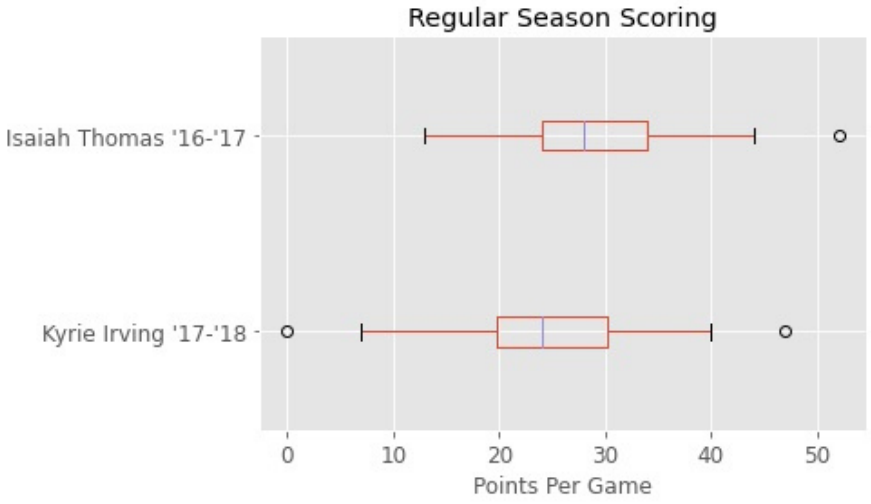

Fig. 1

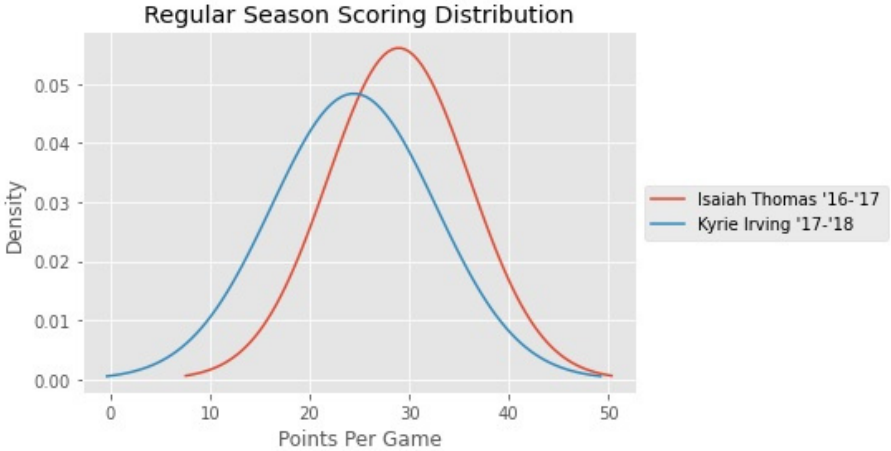

Fig. 2

Their scoring distributions (Fig. 2) tell a similar story- Thomas was more productive (evidenced by the right-shifted center of his curve) with higher consistency (evidenced by a narrower, taller graph). We can assume an approximately normal distribution because the kurtosis and skewness values for these data sets falls within a ±2 tolerance and the median ≈ mean. Consequently, we can use a basic z-test procedure to better understand these distributions.

$$z = \frac{(10 - \mu)}{\sigma}$$

$$probability(< 10) = normcdf(z)$$

Fig. 3

For example, if we want to find the probability that either player scored less than 10 points in a game, we would use the equations given in Fig. 3, where μ is the player's average points scored per game, and σ is their scoring standard deviation over the regular season. Using this procedure, we find that Kyrie Irving had a ~4% chance of scoring less than 10 points on any given night, while Isaiah Thomas had less than a 0.5% chance!

Clearly, Isaiah Thomas was a more prolific and consistent scorer than Kyrie Irving. But any experienced basketball fan will tell you it's not just about how much you score- it's how you score. In other words, a player's shooting efficiency is just as important as putting up big numbers. Many times, it is the difference between a role player and a star player. Does Thomas keep his advantage here? Let's take a look.

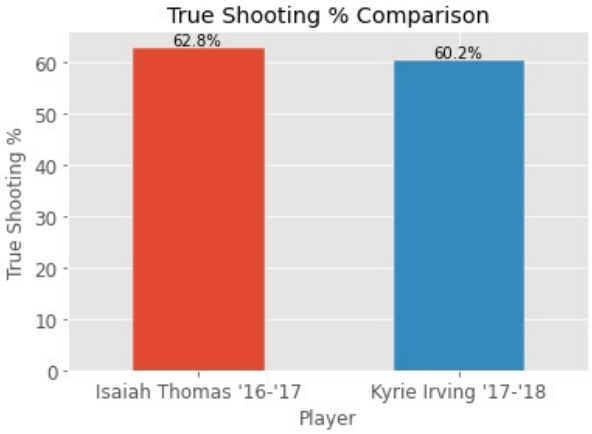

Fig. 4

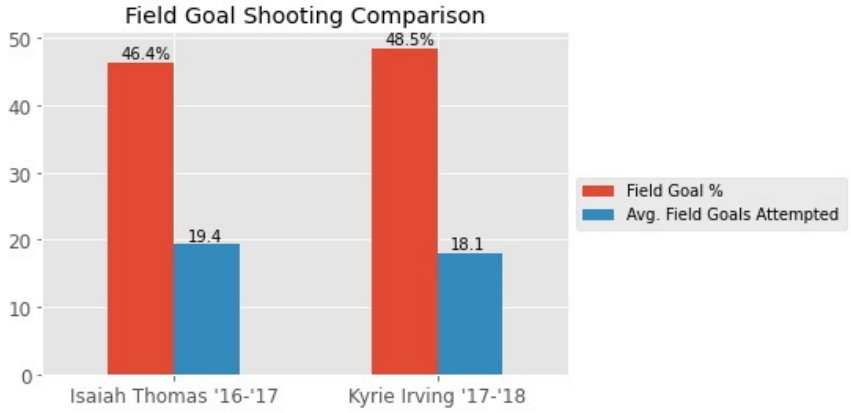

Fig. 5

Figure 5 shows that despite taking ~1.4 more shots per game, Isaiah Thomas suffers a 2.1% deficit in his shooting efficiency. On the surface, this seems to be a slight advantage for Kyrie Irving. However, it is important to note that raw field goal percentage does not account for the relative value of a shot made. Let me explain. If player A scores 5 out of 10 layups, his field goal percentage would be 50%. If player B makes 5 out of 10 three-point shots, his field goal percentage would also be 50%. Even though their field goal percentage is the same, we know that player B's shots were more valuable, because three-point shots are worth more than layups (which are worth only 2 points). Luckily, there is a metric that solves this issue for us: True Shooting Percentage.

True Shooting Percentage considers the number of two-point shots, three-point shots, and free throws a player takes. It gives us a more wholistic view of a player's scoring from all parts of the floor. Without getting too much into the specifics, it does this by dividing the total number of points scored by a weighted sum of all attempts from the field, including free throws. In short, True Shooting Percentage is more representative of a player's scoring efficiency than raw field goal percentage. This is shown in figure 4, where we see that Isaiah Thomas scores nearly 2.6% more efficiently than Kyrie Irving. This swings back the scoring advantage to Thomas, but only very slightly. It is important to note that a true shooting percentage above 60% is outstanding and any difference <3% above 60% can be considered relatively negligible.

After looking at all the scoring data available, we find that Isaiah Thomas was a considerably more productive scorer while maintaining a similar level of efficiency as Kyrie Irving. Advantage Thomas.

PLAYMAKING

Even though scoring may be their bread and butter, point guards also serve another key role as the team's primary ball handler. It is no secret that Kyrie Irving is a magician with the ball- just look up Kyrie Irving highlights if you don't already know what I'm talking about. Unfortunately, there are no metrics that can measure this skill directly, but we can measure how well players facilitate ball movement through their assists. Ultimately basketball is a team sport, which demands that everyone gets involved on the offensive end through passes. For point guards, this is an especially important statistic to measure their impact on their team. Let us first compare the raw assist per game numbers between Thomas and Irving in fig. 6. Here we see a much different picture than scoring. Irving was much more consistent with his playmaking, as evidenced by the smaller range of his plot. On the other side, Thomas enjoyed a higher upside at the cost of consistency (evidenced by the larger range of his box's 'tails'). When averaging these numbers over the season, we find that Thomas only had a slight advantage over Irving, with 5.9 vs. 5.1 assists per game.

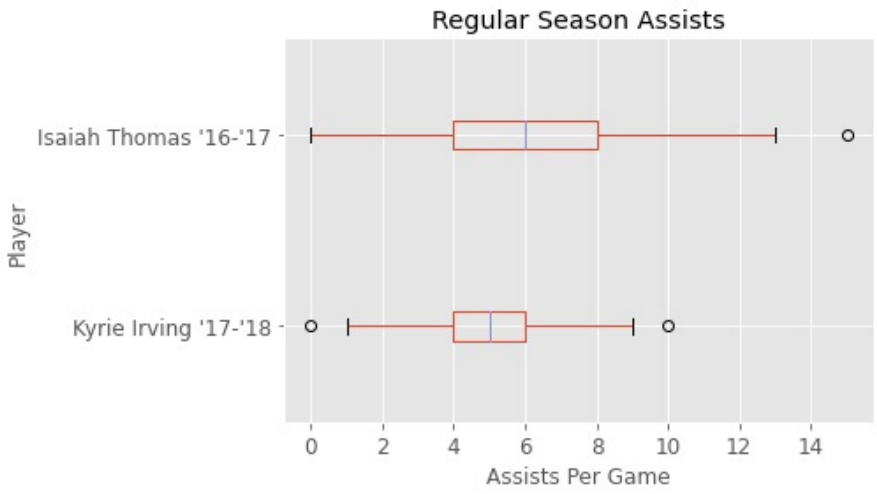

Fig. 6

Their assists distributions (Fig. 7) tell a similar story- Thomas was more productive (evidenced by his right-shifted center) but with lower consistency (evidenced by a flatter, wider curve). One interesting note here is that both distributions extend below 0, but we know that having negative assists per game is impossible. This indicates that both players had a notable number of games with 0 or near-0 assists. Thomas had more such games, as his curve extends deeper into negative assist territory.

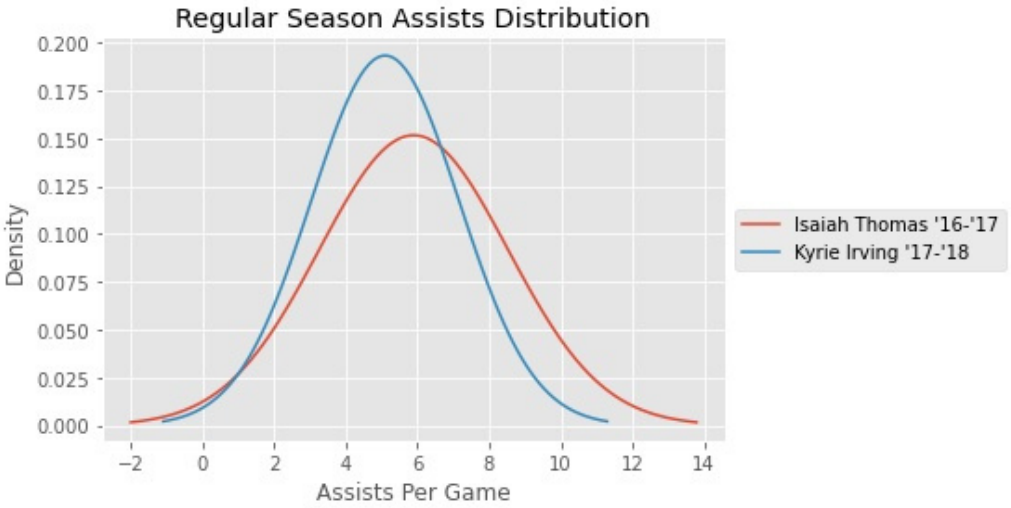

Fig. 7

As their team's primarily ball handlers, point guards have a direct impact on how their team's offense runs and how well their teammates do. This can be measured through numerous metrics, some of which are shown below.

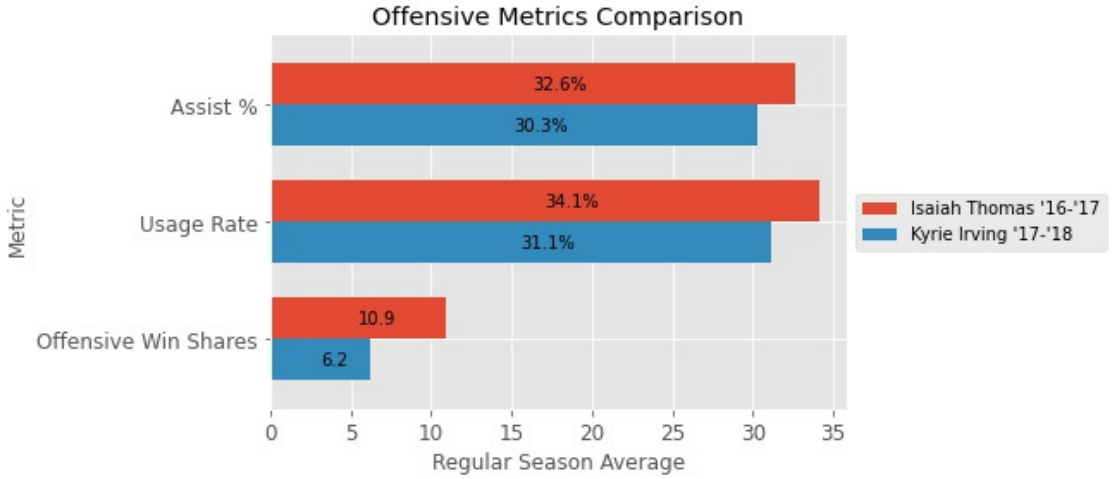

Fig. 8

Figure 8 shows that Isaiah Thomas enjoys a healthy advantage in all 3 metrics. But what do these metrics measure and what do they mean?

- *Assist %* - Assist % is an estimate of the percentage of teammate field goals a player assisted on. In other words, how many of their teammates' scoring plays did the player directly assist. Although by no means perfect, this metric gives insight into how much a player directly impacts their teammates' scoring, and Isaiah Thomas proved to be the more dominant ball handler on his team.
- *Usage Rate* - Usage Rate is an estimate of the percentage of plays a player uses while he is on the floor. It is a direct measure of how a team's offense runs through a single player. A smaller usage rate with the same per game statistics would indicate greater ball handling efficiency. Irving has a marginally lower usage rate than Thomas, but as we previously saw, Irving's per game scoring and assists lag notably behind Thomas. This indicates yet again that Thomas was more productive and efficient with his time on the ball.
- *Offensive Win Shares* - Offensive Win Shares is a statistic that attempts to divvy up credit for team success among all individuals of a team. This is done through a complex formula, and although no stat is perfect, this metric is considered as one of the most powerful tools to measure the impact a player has on their team's offense. As we can see, Isaiah Thomas holds a considerable advantage here. But it is important to note that that Kyrie Irving had 7 teammates averaging 10+ points per game while Isaiah Thomas only had 4. This leads us to believe that Irving depended on his teammates more than Thomas did. Determining if this was out of necessity or a simple play style choice is a question for another time. Bottom line: Isaiah Thomas played a bigger offensive role in Boston than Kyrie Irving.

Points guards have an unparalleled influence on the playmaking of their team. Despite having more teammates score in the double figures and less 0 assist games, Kyrie Irving did not facilitate his team's offense more productively than Isaiah Thomas. Another point to Thomas.

TEAM VALUE

Individual production can explain a lot about a player and their success (or lack of it). Ultimately, a player's performance cannot be effectively analyzed without looking at the team that surrounds them. In other words, we need the right context. One way we can evaluate the team is through the Value Over Replacement Player (VORP) metric. This metric estimates the points per 100 team possessions that a player contributes above a replacement or bench level player. This metric gives us a better idea of the relative value a player brings to his team, especially when written as a proportion of all his teammates. This is charted for both players in figures 9 & 10.

From a quick look at the pie charts, it is easy to see that Isaiah Thomas was much more valuable to his team's offense than Kyrie Irving, with a 9.3% advantage. But a closer look at the pie slices leads us to a better understanding of the teams that surrounded each player.

For example, the top 3 players on each team accounted for 90.3% (Fig. 9) and 90.2% (Fig. 10) of the entire pie. So, although Irving's VORP was relatively smaller, the overall dynamic of his team was similar to Thomas's team. Why would Irving intentionally limit his production? Most likely because of Celtics newfound star Jayson Tatum. In the same year the Celtics traded for Kyrie Irving, they also drafted Jayson Tatum with the third overall pick. Having seen his superstar potential up close, Boston wanted to make sure he reached his full potential and gave him more opportunity than rookies would traditionally get. This focus on the long-term development of a young star ultimately hurt Kyrie's ability to completely control the offense, and it is reflected in the metrics.

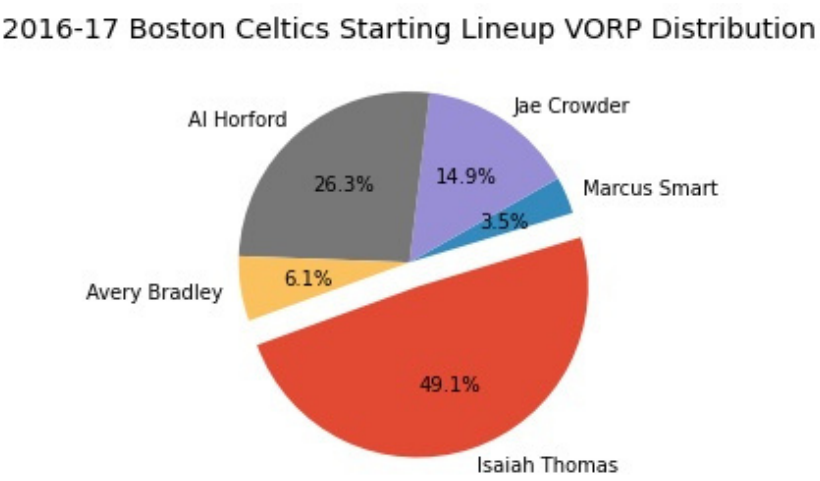

Fig. 9

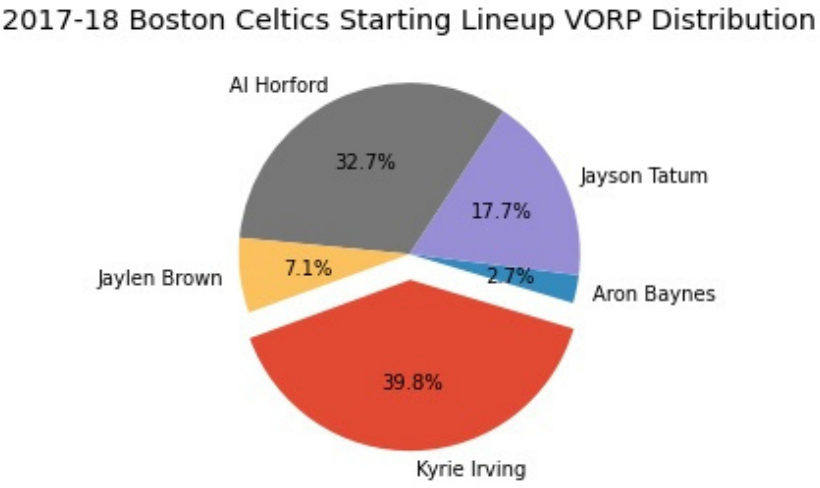

Fig. 10

Another important measure of player's value is their performance when the pressure is the highest. Typically, this means evaluating Thomas's and Irving's performance in the playoffs. However, Irving had surgery on his left knee at the end of the 2017-18 regular season and missed the playoffs. So, for the purposes of our analysis, we look at the next best thing: their performance against top teams during the regular season. Below, I have charted a couple metrics from Thomas's and Irving's performance against top 10 ranked teams, based on their regular season records.

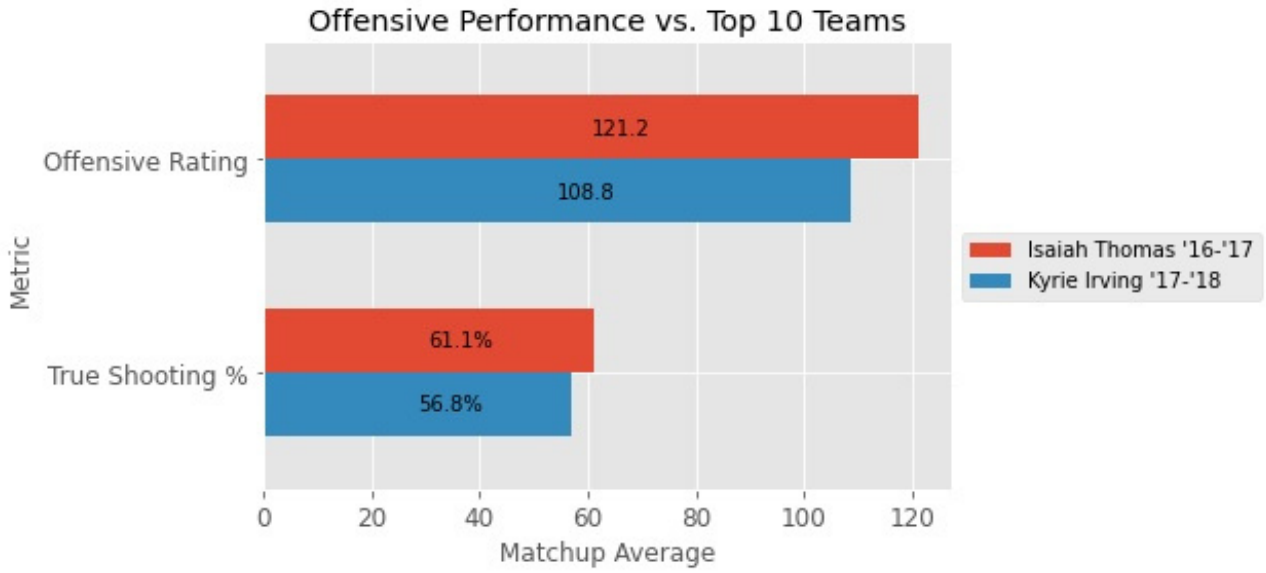

Fig. 11

Here we see a new metric: Offensive Rating. This statistic estimates the number of points produced by a player per hundred total individual possessions (not team possessions). More concisely, it gives us a measure of how many points a player generates for their team when they try to score. Again, Thomas blows Irving out of the water on this one. And he does this while enjoying a healthy 4.3% advantage in scoring efficiency. Thomas is more productive and efficient on the offensive end. I think we are seeing a trend here.

But don't let us get too carried away: regular season games are nowhere near the intensity of playoff games. Irving's resume more than establishes himself as a top tier high pressure performer- just look at his production during the legendary 2016 NBA finals comeback. Most notably, he made one of the all-time great shots in NBA history to seal their comeback in that series. Isaiah Thomas cannot boast the same. The closest he got to Irving's resume was earning the nickname "King of the 4th Quarter," after stringing together a series of impressive clutch performances over the regular season. Even though Thomas was more productive and efficient in the regular season, fans know all too well that the playoffs are a completely different beast. Until a player has proven himself on that stage, we cannot take the player too seriously, and Thomas has quite simply never had the same opportunity or production as Irving on that stage. But our analysis is strictly limited to these players' regular seasons in Boston. With the information available to us, Thomas again comes out on top.

HISTORICAL COMPARISON

We've looked at how these players' production and efficiency compare to each another. But how do these seasons stack up in the history of the NBA? Are Isaiah Thomas and Kyrie Irving getting too much praise or are they under appreciated? I compared Thomas's and Irving's production with 4 historically great offensive regular seasons in NBA history: Allen Iverson's 2000-01 MVP Season, Kobe Bryant's 2007-08 MVP Season, Stephen Curry's 2015-16 MVP Season, and James Harden's 2017-18 MVP Season.

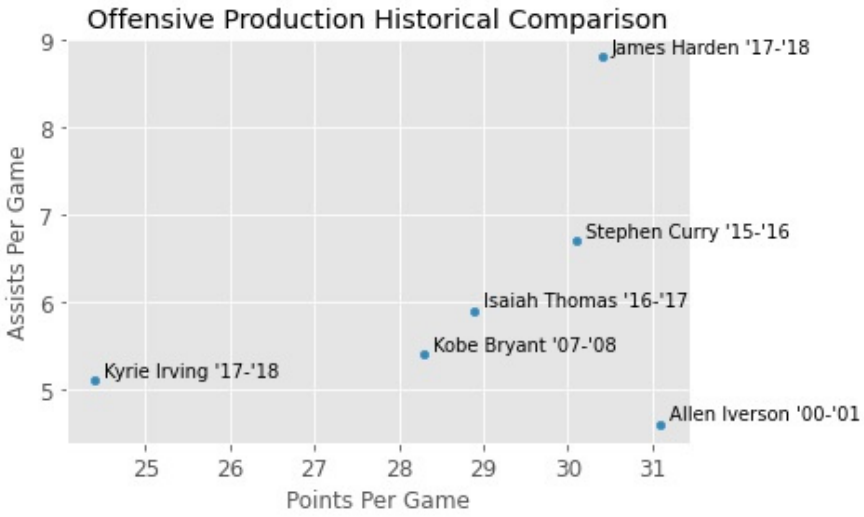

Fig. 12

In figure 12 to the left, I made a scatter plot of each player's points per game vs. their assists per game. The top right of the chart is the most productive while the bottom left is least. Irving lagged considerably behind the pack, but Thomas held his own. Some may even argue that Thomas had a better season than Bryant and Iverson, but we can't make such bold claims without more context. The pace and prevalence of the three-point shot has substantially changed the NBA in recent years, an interesting topic that goes beyond the scope of our analysis here.

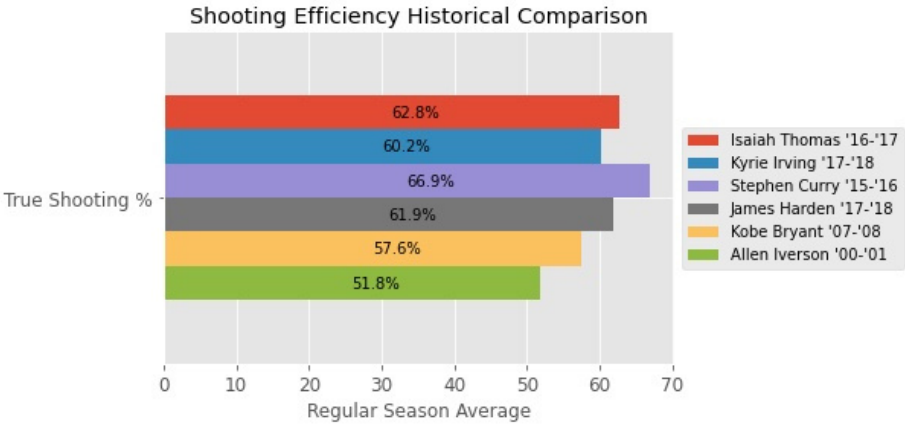

Fig. 13

As we discussed before, production means nothing without some level of efficiency. In figure 13, I compare each player's scoring efficiency. This visual is markedly different than the one above. Even though Irving was less productive, he was still as efficient, if not more, than his peers. It's even more remarkable that Thomas did not win an MVP award, despite boasting a comparable level of production while being the second most efficient scorer among his MVP-winning colleagues. Again, this may stem back to the quicker pace of the modern NBA.

Lastly, let us compare these players' team value to better understand the influence they had on their respective team's offense.

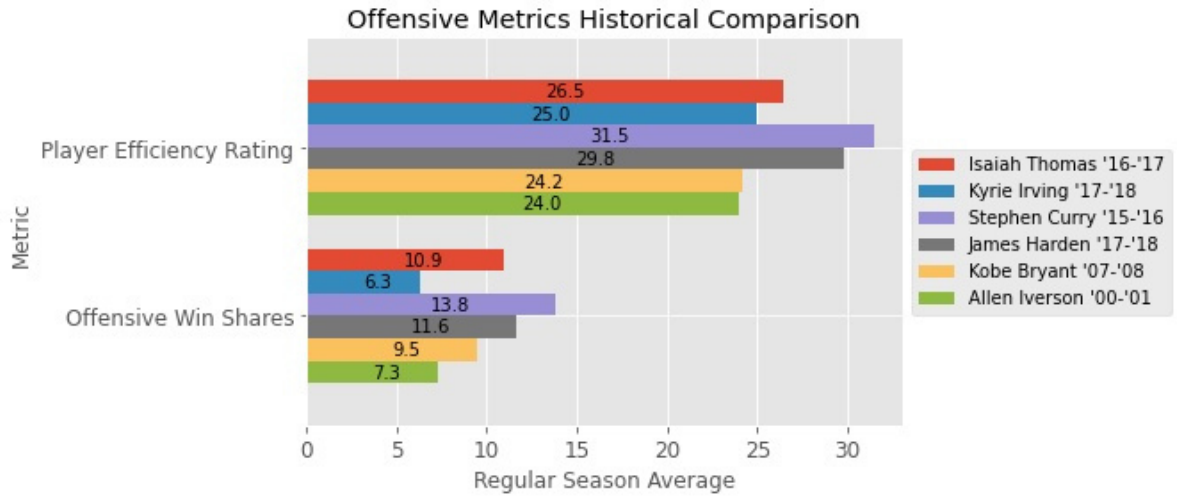

Fig. 14

Figure 8 shows that Isaiah Thomas enjoys a healthy advantage in all 3 metrics. But what do these metrics measure?

- *Player Efficiency Rating (PER)* - According to its creator John Hollinger, PER is a rating of a player's per minute productivity. It does this throough a complex formula that adds positive contributions like points, assists, and rebounds while subtracting negative contributions like missed shots, fouls, and turnovers. This chart is eye-opening for Irving's production. Although he was not as productive as Thomas, he was still efficient compared to his predecessors. This insinuates that Irving could have been more productive, if he was given more control over his team. And again, we see Thomas stand his ground with some of the most efficient seasons in NBA history.
- *Offensive Win Shares* - We have already looked at this metric before, but just to remind us, Offensive Win Shares measure the impact a player has on their team's offense. Isaiah Thomas, yet again, proves to be as prolific as the best of them. Like we saw before, Irving lags considerably behind Thomas and the rest of the pack, confirming our belief that he did not control his team's offense as dominantly as others. Yet, other metrics say he was very efficient. This leads us to conclude that Irving's lack of production was not borne out of a lack of ability, but a dearth of opportunity.

Comparing Thomas's and Irving's regular season campaigns to historically great NBA players gives us important context to their numbers. We saw that Isaiah Thomas's numbers were very comparable to his MVP-winning colleagues, raising interesting questions about how fast the NBA has changed in the span of decade. More importantly, we found that Kyrie Irving's ability and efficiency shined through, despite not being as productive as his peers. Both Thomas and Irving had something to gain from doing a historical comparison- it lessened the blow to Irving's numbers while further elevating Thomas's prolific season. This round is a draw.

CONCLUSION

In the end, the comparison between Isaiah Thomas's 2016-17 regular season and Kyrie Irving's 2017-18 regular season was no contest- Thomas had a more prolific season on greater efficiency. Irving's extraordinary offensive skills were not enough to lift him over the systemic productivity of Thomas's offense. From just this analysis, it may look like the Celtics "lost" this trade, but trades last for more than just one season, unlike the scope of this report.

After the trade, Isaiah Thomas never fully recovered from his hip injury. Since the 2016-17 season, he is yet to average even 20 points per game or even starter-level minutes. In fact, he is not even in the NBA- no team has signed him for over a year. Thomas's story, much like Derrick Rose, signifies the meteoric rise and fall of a once MVP caliber player.

On the other hand, Kyrie Irving has continued to dazzle NBA fans with his magical dribbling skills and scoring ability. Despite leaving Boston on unsavory terms, he remains as one of the NBA's premier point guards and is now contending for another championship with superstar Kevin Durant in Brooklyn.

Years later, most fans have declared Boston the "winner" of the trade and have moved on. There is little conversation about Isaiah Thomas's historic season. While he may never reach the heights he once did, it would be unfair to characterize his entire career by a devastating hip injury. Like the numerous athletes before him, Isaiah Thomas should be remembered for the best of his ability and not his recent shortcomings due to injury.

All charts and graphs in this report were made using data from basketball-reference. You can see the code I used to generate these charts here.