

Seth Partnow Analysis: Measuring individual defense is hard; determining Klay Thompson's value may be harder



By Seth Partnow (/author/seth-partnow/) 1h ago



Measuring individual defense is hard. Recent dissections of the defensive impact of Klay Thompson and Donovan Mitchell help illustrate some of these challenges. I'm not going to claim to have an answer for how good either player is, but can hopefully shed some light on how one might go about considering the question.

While imperfect, traditional stats do a reasonably good job of describing who does what on offense, especially with the ball. However, attempting to measure defense simply by flipping the box score around and assigning credit or blame to a player's position opposite is a pretty

level-zero approach to the game. Coaches at all levels emphasize defense isn't you stopping your individual matchup, but rather our five stopping their five.

So, we can't readily stat count our way to a good evaluation of individual defensive contributions, and have to dig a little deeper.

The examinations of Thompson and Mitchell showcase divergent approaches. Ben Taylor's video discussion of Thompson (<https://www.youtube.com/watch?v=y589G84w03E>) is more in the realm of traditional film analysis, though per usual for Ben (listen to Ben on the first episode of my new podcast! (<https://theathletic.com/podcast/8-back-to-back/?episode=46>)) he combines film work and statistical context in evaluating Thompson to be an above average defender. Meanwhile, Ben Dowsett examines Mitchell's defensive progress two years in (<https://www.forbes.com/sites/bendowsett/2019/09/23/donovan-mitchell-is-working-to-become-a-better-defenderbut-he-was-already-better-than-we-thought/#50d037e47d1e>), and comes away impressed:

According to advanced optical tracking data obtained from a league source, Mitchell did very well in a few important areas for perimeter defenders last year:

- **Drives:** *The Jazz gave up just 0.87 points per-possession ... when Mitchell defended a drive to the basket that ended in a shot, foul, turnover or pass to a subsequent shooter. That was third-lowest in the NBA among 122 qualified guards, just ahead of First-Team All-Defense member Marcus Smart, who sat fourth.*
- **Isolation:** *The Jazz allowed 0.91 PPP with Mitchell defending isolations, 41st of 121 guards.*
- **Pick-and-roll:** *Of 160 NBA guards or forwards defending the ball-handler in a pick-and-roll, Mitchell's 0.82 points per-possession allowed was the single lowest number in the league*

These are both reasonable stabs at addressing a complex topic, but evaluating individual defense is hard. For each player, the evaluation is really a three step process:

1. What is he being asked to do?
2. How well does he do it?
3. How much value does he provide relative to role?

None of these are easy questions, and we'll start with the last one first. At this point it seems reasonably well-settled that players on the larger end of the position spectrum provide more defensive value

(<https://web.archive.org/web/20150307185614/http://nyloncalculus.com/2015/03/06/the->

rise-of-the-power-forward-distribution-and-variance-of-rpm-by-positions/) than smaller, because being large and in the way of the basket has proven to be a fairly major part of modern defense (<https://fansided.com/2015/09/16/deep-dives-rim-protection-metrics-revisited/>). Big surprise there. Beyond that, it's hard to contextualize value across roles at this point without resorting to catchall metrics, which we'll get to.

On the issue of defensive role, 30 teams means 30 schemes, so while comparing point guards for two different teams might not be an apples-and-oranges situation, it is at least comparing gala apples to golden delicious. So we have to be somewhat abstract and recognize that at this point the intricacies of scheme are a source of uncertainty in our analysis and leave it at that. But we can still answer some part of the question of what each player is meant to do on defense.

A first point of considering is who is each player guarding? While the tracking-data derived matchup data available on NBA.com is imperfect in light of the frequency of switching in today's game. At least in this public data, matchups are largely determined but who each player is judged to have been guarding for the longest duration on each possession. However, that longest duration might or might not include the important parts of a possession, and especially in the postseason, teams hunting for mismatches against switching might confound attempts to determine who is supposed to be guarding whom.

That said, with a broad enough sample, this data can illustrate general trends. Last year, Jared Dubin and Krishna Narsu took a first pass at defining roles with this data (<https://fansided.com/2018/04/19/nylon-calculus-nba-matchup-data-defensive-roles/>), and it's worth a read. My one real critique is in their use of a measure of effectiveness (Offensive Player Impact Plus/Minus or O-PIPM) as a proxy for an opponent's role. To my mind that's both overly complex and slightly off the mark.

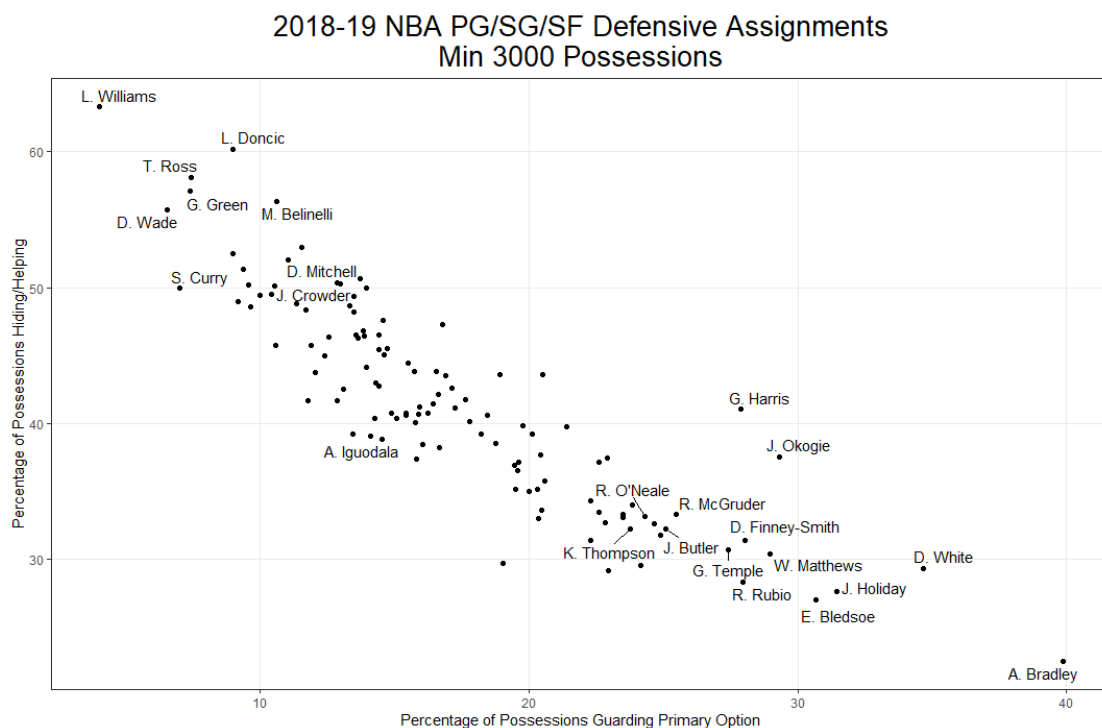
Usage rate is a pretty blunt tool for the most part, but if one wants to see which players a team relies on most for scoring, it's hard to argue against picking a measure of who shoots the most. I think it's fair to say a coach will tend to put their better (or at least perceived to be better) defenders on the most active opposition scorers, and usage is a perfectly fine representation of volume of scoring activity.

However, simply taking the weighted average of opponent usage rates doesn't tell us much as among players with at least 1,000 defensive possessions last year, nearly 89% had an "average usage rate guarded" of between 18% and 22%. We need a little better way of differentiating offensive roles for the purpose of defensive assignments.

As a quick and dirty approach, I've defined "primary options" as players with usage rates of 25% or higher, while "tertiary options" had usage rates below 17.5%. Those are completely arbitrary cutoffs, but reasonably reflect the distribution of talent across most offensive lineups. The average possession features about .8 "primaries" and 2.2 "tertiaries" using those parameters.

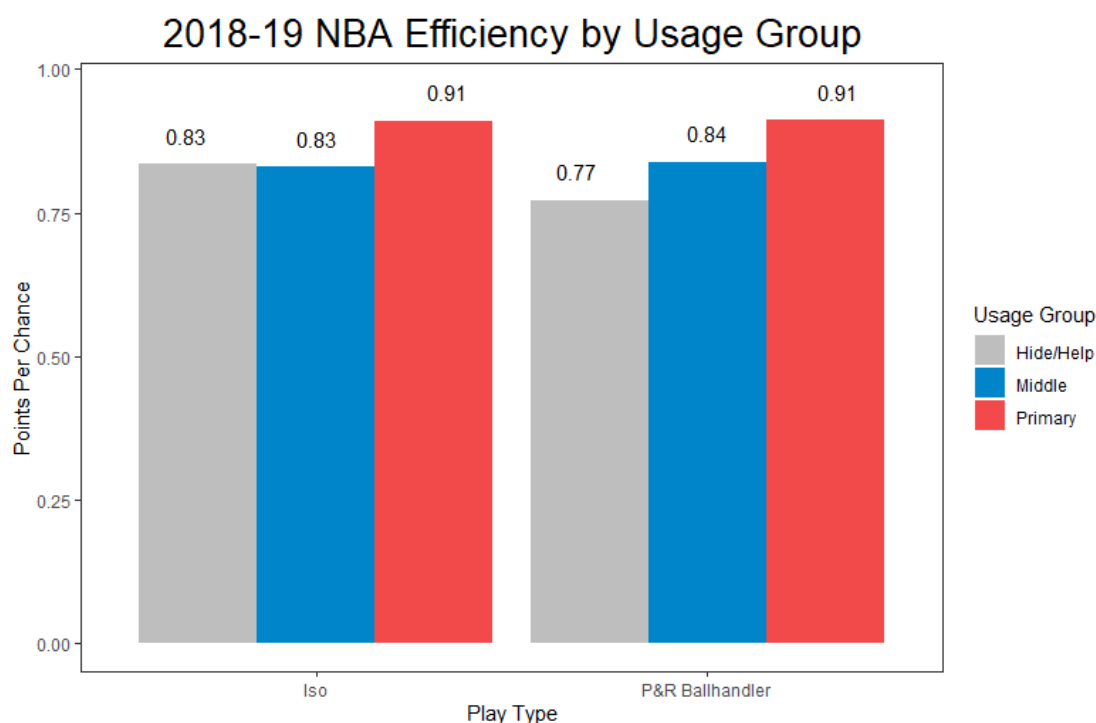
With this in place, we can now look at how frequently players ended up defending these primary options as compared to how frequently they were either employed as help defenders or simply "hidden" on tertiary options. While there is some slight variation across positions (as defined by Basketball Reference) with power forwards guarding "primary" options a little less and being "hidden" a little more than the other spots, the baseline rate of players guarding primary options around 15% of the time and being "hidden" around 45% of the time is rough equivalent for the other four spots. It also appears starters tend to guard higher usage players than bench players, likely because they play against other starters.

So with that as a set up, let's examine Thompson and Mitchell in comparison with a number of other high rotation guards and wings, including their teammates:



On the above graph, easier assignments are to the top left, while toward the bottom right are players asked to guard top scorers. It is no accident that the players on either end of the spectrum were teammates for much of last season. If Doc Rivers was going to hide Lou Williams at all costs, Bradley's reputation as a dogged on-ball defender (more on below) earned him the nod.

Bringing it back to our two case studies, we can see that Thompson quite frequently drew the toughest assignments compared to other Warriors perimeter players, while Mitchell leaned heavily on Ricky Rubio to take on those challenges. To demonstrate how much these differences in deployment might impact the sorts of play type efficiency numbers cited by Dowsett with respect to Mitchell, consider:



It should be no surprise that primary offensive options tend to be significantly better at, well, initiating offense than lower usage counterparts, so naturally guarding other options is going to be easier in ways that should show up in terms of allowed efficiency.

Now, this is definitely comparing apples to oranges since Dowsett was using tracking data-derived averages while the chart above is per the Synergy data provided on NBA.com. The differences between the two systems are non-trivial and if given the choice, the tracking data is preferable. However, for present purposes in terms of illustrating the greater difficulty inherent in guarding high usage players without having to be overly precise in terms of how much greater the challenge, the Synergy numbers work just fine.

In Mitchell's case, it's certainly better that players running isos are pick-and-rolls against him did so with poor efficiency than if they had been more effective, but a lot of that low efficiency is attributable to who he was guarding. Add in the effect of Defensive Player of the Year Rudy Gobert (as well as Rubio and Derrick Favors, two other plus defenders by many advanced metrics) and you have to ask, how much of Mitchell's apparent performance was him and how much was him simply being solid in a very favorable defensive environment?

Meanwhile, Thompson quite frequently drew the toughest assignments for the Warriors and was almost never hidden. On an individual level, the results are difficult to ascertain from public data, as the manner in which Synergy play types are not really amenable to comparisons between players. That data is only capturing efficiency on play ending attempts. So if a player isolates on Thompson, breaks him down, gets to the basket and dishes to a teammate for a dunk, that play is not debited from Thompson's account while if on the same iso, he stonewalls the ballhandler for 8 seconds before forcing a pass out into a rushed jumper, he won't receive any credit for destroying an opponent possession. In the biased, limited samples available publicly Thompson only allowed around 0.75 points per chance on isolation and pick and roll ballhandler plays, compared to 0.86 for Steph Curry and 0.92 for Andre Iguodala, but again, I don't think those numbers mean much.

Other metrics paint Thompson in a less flattering light. According to Basketball Reference.com, his defensive box score plus minus (DBPM, an estimate of defensive impact per 100 possessions based on box score stats) was 166th in the league among qualifying players at -2.0/100, compared to -1.4 from Curry (146th) and 1.7 (36th) from Iguodala. Defensive Real Plus/Minus rated Thompson 470th compared to 143rd for Curry and 47th from Iggy. The Warriors' defense was 4.3/100 better by defensive rating with Thompson off the floor than when he was on. To sum up, not great, Bob. Klay might not have been particularly good defensively last year.

And in fact, those particular metrics have never much liked Thompson. In the five previous seasons he ranked 233rd, 278th, 266th, 278th and 215th in DRPM, though even this info requires a caveat. It turns out that Thompson is a specific player type that defensive metrics with large box score components simply miss on. He has always had somewhat pedestrian traditional defensive stats, never averaging more than 3.4 defensive rebounds or 1.1 steals per game despite routinely averaging 34-35 minutes per game, and while these counting stats do tend to be correlated with good individual defense, they aren't determinative. Previous research

has indicated that DRPM in particular

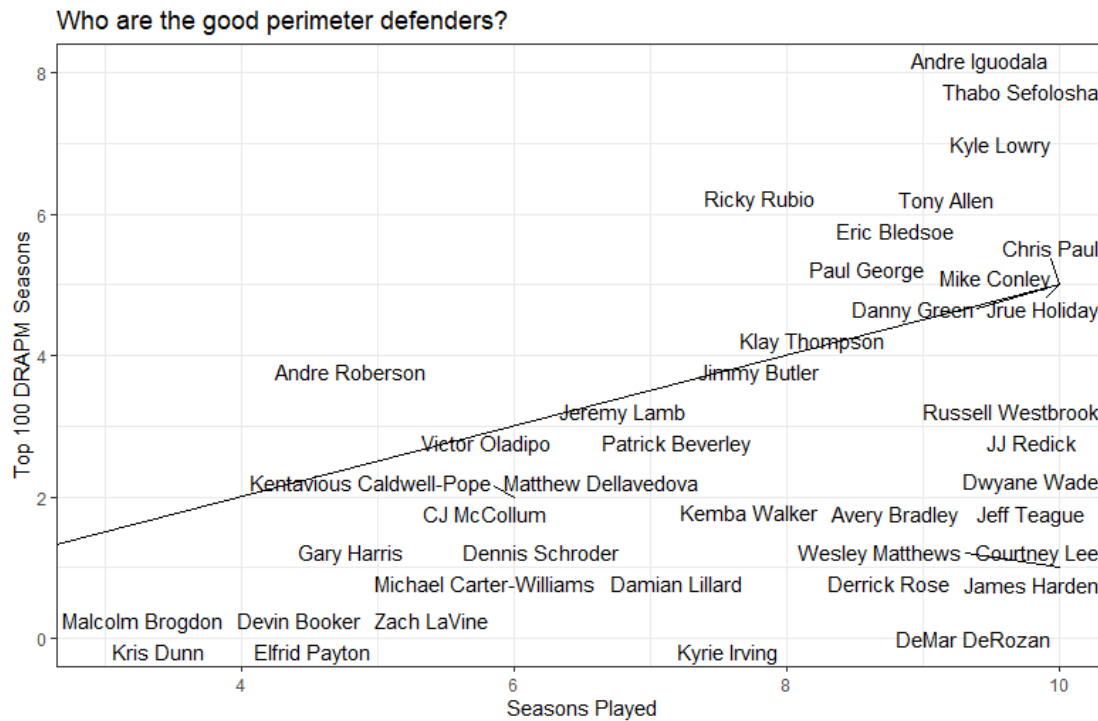
(<https://web.archive.org/web/20160425090824/nyloncalculus.com/2016/02/19/freelance-friday-deconstructing-rpm-the-mighty-prior/>) can overweight those counting stats of certain categories of players to either their benefit (biggs who chase blocks and rebounds) or detriment (solid, but “non-stat-y” perimeter players.) So when these stats grade Curry out higher than Thompson, a lot of what is being picked up is Steph having higher steal and rebound numbers. To come full circle, Thompson taking on those more difficult individual assignments could be part of what allows Curry to use his quickness and ability to read the game to be a more of a ballhawk. In effect, Thompson is occupying blockers so Steph can make the tackle.

To account for these contrary indicators, it might be worth looking at a metric which assigns value purely based on floortime outcomes. Regularized Adjusted Plus/Minus (or RAPM) is a methodology which estimates player value per 100 possessions by controlling for the strength of teammates and opponents any given player shares the floor with.

RAPM is far from a perfect stat. In many ways, it's a black box, as it can be very difficult to readily identify why a player shows up well or poorly. The values produced are the midpoint of a fairly wide ranging estimate of impact as even a full season's worth of data is a small sample. Many regression based metrics such as RAPM and/or RPM are not particularly portable when a player changes teams or roles (<https://fansided.com/2018/07/31/nylon-calculus-real-plus-minus-players-change-teams/>).

Still, RAPM can be a good indicator of general value over time, either analyzing multiple seasons at once or looking at ratings across many seasons.

RAPM has generally rated Thompson decently well. The most convenient publicly available version (<http://nbashotcharts.com/rapm?id=-1106328546>) has rated Thompson as a top 100 most impactful defender in 4 of his 8 seasons. Comparing this “50% hit rate” to some other perimeter players, he stacks up quite well, with only some recognizably elite defenders like Iguodala, Thabo Sefolosha and Tony Allen hitting top 100 status more frequently. Also, Ricky Rubio, once again illustrating the backcourt defensive help Mitchell has, and with the Jazz's addition of Mike Conley (top 100 in 5 of 10 seasons), will likely continue to have.



Interestingly, by pure RAPM, Thompson had his worst defensive season since he rookie campaign in 2018-19, so many of the foibles Taylor highlighted in his video might have been both real and a relatively new development in Thompson's game.

Returning to Avery Bradley for a moment, he is perhaps the player most penalized by using "top 100" as an arbitrary cut off as he has been ranked between 105th and 119th in four different seasons. He is also perhaps illustrative of both how big a factor health and injuries can have on a player's defensive output and how sticky defensive reputations can be. During his final two seasons in Boston in 2015-16 and 2016-17 he was beset by a wide range of injuries and illnesses while ranking 298th and 358th in DRAPM in those years despite still being viewed as a top flight defender over that time. Over his last two seasons split between Detroit, the Clippers and Memphis, he has ranked 110th and 118th, indicating a possible return to form.

Which gives us something to watch for when Thompson returns from his ACL injury, presumably for the 2020-21 season. He might no longer be the very good-if-not-quite-elite defender he seems to have been over his career, but it will probably also take us all a long time to catch on.

(Photo: Garrett Ellwood / NBAE via Getty Images)

What did you think of this story?

**MEH****SOLID****AWESOME**

Seth Partnow (/author/seth-partnow/) covers the NBA and basketball analytics for The Athletic. He resides in Milwaukee and was formerly the Director of Basketball Research for the Milwaukee Bucks. Follow Seth on Twitter **@sethpartnow** (<https://twitter.com/sethpartnow>).



1 COMMENT

Mara A. 41m ago

Great charts, Seth!

**READ MORE**

(/1246862/2019/09/30/john-hollinger-great-time-for-nba-and-for-me-to-return-to-this-side-of-it/?article_source=related)

Hollinger: A great time for the NBA, and for me to return to this side of it

(/1246862/2019/09/30/john-hollinger-great-time-for-nba-and-for-me-to-return-to-this-side-of-it/?

article_source=related)
**As United States American NBA stars line up for Tokyo, Colangelo says Olympics
'apparently' matter more to them**

(/1249397/2019/09/30/as-american-nba-stars-line-up-for-tokyo-colangelo-says-olympics-apparently-matter-
more-to-them/?article_source=related)

**A plane fit for the King(s): NBA and team decide to charter Air Drake
for upcoming trip to India**

(/1249162/2019/09/28/a-plane-fit-for-the-kings-nba-decides-to-charter-air-drake-for-upcoming-trip-to-
india/?article_source=related)

**'In terms of being a leader, I failed': Kyrie Irving takes an important
first step toward reviving his career with Nets**

(/1248858/2019/09/28/in-terms-of-being-a-leader-i-failed-kyrie-irving-takes-an-important-first-step-toward-
reviving-his-career-with-nets/?article_source=related)

**How friendship produced a much-needed basketball partnership for
Kevin Durant and Kyrie Irving**

(/1248775/2019/09/28/how-friendship-produced-a-much-needed-basketball-partnership-for-kevin-durant-
and-kyrie-irving/?article_source=related)

**The LeBron James illusion: Making Laker dysfunction and the
longest summer of his career, disappear**

(/1248317/2019/09/28/the-lebron-james-illusion-making-laker-dysfunction-and-the-longest-summer-of-his-
career-disappear/?article_source=related)

National

NHL (/nhl/)

MLB (/mlb/)

NBA (/nba/)

NFL (/nfl/)

College Basketball (/college-basketball/)

College Football (/college-football/)

Fantasy Football (/fantasy-football/)

Fantasy Baseball (/fantasy-baseball/)

Mixed Martial Arts (/mma/)

Boxing (/boxing/)

Motorsports (/motorsports/)

Fantasy Basketball (/fantasy-basketball/)

Fantasy Hockey (/fantasy-hockey/)

Sports Business (/sports-business/)

Golf (/golf/)

MLS (/mls/)

Premier League (/premier-league/)

Champions League (/champions-league/)

Bundesliga (/bundesliga/)

International (/international-soccer/)

EFL (/efl/)

Scottish Premiership (/scottish-premiership/)

Fantasy Premier League (/fantasy-premier-league/)

UK Women's Football (/womens-football/)

NWSL (/nwsl/)

WNBA (/wnba/)

The Athletic Ink (/ink/)

Podcasts (/podcasts/)

Videos (/videos/)

US

Arizona (/arizona/)

Atlanta (/atlanta/)

Baltimore (/baltimore/)

Bay Area (/bayarea/)

Boston (/boston/)

Buffalo (/buffalo/)

Carolina (/carolina/)

Chicago (/chicago/)

Cincinnati (/cincinnati/)

Cleveland (/cleveland/)

Columbus (/columbus/)

Dallas (/dfw/)

Denver (/denver/)

Detroit (/detroit/)

Houston (/houston/)

Indiana (/indiana/)

Jacksonville (/jacksonville/)

Kansas City (/kc/)

Las Vegas (/vegas/)

[Los Angeles \(/losangeles/\)](#)

[Memphis \(/memphis/\)](#)

[Miami \(/miami/\)](#)

[Minnesota \(/mn/\)](#)

[Nashville \(/nashville/\)](#)

[New Orleans \(/neworleans/\)](#)

[New York \(/newyork/\)](#)

[Oklahoma \(/oklahoma/\)](#)

[Oregon \(/oregon/\)](#)

[Orlando \(/orlando/\)](#)

[Philadelphia \(/philly/\)](#)

[Pittsburgh \(/pittsburgh/\)](#)

[Sacramento \(/sacramento/\)](#)

[San Antonio \(/sanantonio/\)](#)

[San Diego \(/sandiego/\)](#)

[Seattle \(/seattle/\)](#)

[St. Louis \(/stlouis/\)](#)

[Tampa Bay \(/tampabay/\)](#)

[Utah \(/utah/\)](#)

[Washington DC \(/dc/\)](#)

[Wisconsin \(/wisconsin/\)](#)

[Canada](#)

[Calgary \(/calgary/\)](#)

[Edmonton \(/edmonton/\)](#)

[Montreal \(/montreal/\)](#)

[Montréal \(français\) \(/montreal-fr/\)](#)

[Ottawa \(/ottawa/\)](#)

[Toronto \(/toronto/\)](#)

[Vancouver \(/vancouver/\)](#)

[Winnipeg \(/winnipeg/\)](#)

[Share](#)

[Buy a Gift \(/checkout/?type=gift\)](#)

[Share for \\$25 \(/share/?source=footer\)](#)

[HQ](#)

[Blog \(/blog/?source=footer\)](#)

[Careers \(/careers/?source=footer\)](#)

[Code of Conduct \(/code-of-conduct/?source=footer\)](#)

[Business Inquiries \(/contact-us/?source=footer\)](#)

[Press Inquiries \(/press/?source=footer\)](#)

Writing Inquiries (<mailto:writing@theathletic.com>)

Support

FAQ (<https://theathletic.zendesk.com/hc/en-us>)

Forgot Password? (</forgot-password/?source=footer>)

Redeem Gift (</redeem/?source=footer>)

Email Us (<mailto:support@theathletic.com>)

(/)

©2019 The Athletic Media Company. All rights reserved.

Terms of Service (</tos-us/>)

Privacy Policy (</privacy-us/>)

Payment Terms (</payment-terms/>)

support@theathletic.com (<mailto:support@theathletic.com>)



(<https://twitter.com/TheAthleticNBA>)



(<https://www.facebook.com/TheAthletic/>)



(<https://www.instagram.com/theathletichq/>)



(<https://itunes.apple.com/us/app/the-athletic/id1135216317?ls=1&mt=8>)



(<https://play.google.com/store/apps/details?id=com.theathletic>)

