2016-2017 NBA analysis, calculations, and the creation of the Pace-Adjusted Distributor Statistic

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This year in the NBA was a wild one. The Cavaliers didn't get the 1 Seed in the East, the Warriors failed to mesh early, but finished the season on a high note and those two teams will meet in the Finals in less than 72 hours from this writing. We also saw people "lead" teams what seemed like by themselves. Isaiah Thomas of the Boston Celtics became known as "Mr. 4th Quarter" and took his team to the 1 seed in the East, and a Conference Finals appearance. However, all of those storylines paled in comparison to the number 1 most interesting player and story of this year, Russell Westbrook. Westbrook broke the record for most Triple-Doubles (getting 10 of 3 different statistical categories) in a season with 42 games, and posted the second season ever in which a player averaged a Triple-Double per Game.

There was much debate around the league between players, coaches, and media on who deserved the Most Valuable Player award in the league this year. There was a good group of players who many people thought could win it. Some speculated that James Harden should win it, as he had roughly the same statistics with Assists, Turnovers, and Points as Westbrook did. Harden's team won more games than Westbrook's did and people liked how he conducted himself more than Westbrook did. Some people also held the belief that a Warriors player could win it, maybe Kevin Durant or Steph Curry. There was Kawhi Leonard who led an aging Spurs team far, and the best player of this decade LeBron James who many think deserves the MVP every year. Westbrook was an interesting case. He did average the Triple-Double over the season, he also had a team ravaged by the loss of Kevin Durant in Free Agency and a weak supporting cast. However, he was criticized for his attitude at times, his "ball hogging" play in which the ball was always in his hands, and he was also accused of "stat hunting" in order to make his season look better on paper. This analysis has no basis in making a case for a single

player to win the Award, however the main objective is to dispel some of the non-objective ideas about statistics in the NBA.

Data/Methodology

For this analysis, all of the players from the 2017 season were used except for the ones that did not play 100 minutes total in the season as they could influence the calculations and were not a factor during the season. Players that had played for more than one team were judged to play for the team that they played more minutes for over the season, for simplicity. All stats are from www.basketballreference.com. This is not the official site updated by the NBA; however it is reputable and an easy to use source. There are no two sites that will always have the same information. NBA can have differences from ESPN, which can be different from Basketball Reference. Statisticians watching the game in person can have a different interpretation of a play than ones watching it online or on TV, as well as a scorekeeper's personal biases can influence measurements. The main objective of the analysis was to look into the claim that "some players have good stats because they have the ball more". Accounting for that, using a player's Usage Rate and their Team's Pace, the basic formula used is as follows. Definitions of all stats are in the Appendix.

$$AST\% * (avgusg\%/usg\%) * (avgTmpace/Tmpace)$$

That gave a player's average assists per 100 possessions assuming he is on the same team as every other player and has the ball the same amount of time, using how good he is on a per 100 possession basis at getting assists (AST%). This is called Pace-Adjusted Assists (PAA). The same thing is then done for Turnovers (TOV%), giving Pace-Adjusted Turnovers (PAT).

$$TOV\% * (avgusg\%/usg\%) * (avgTmpace/Tmpace)$$

Putting the final product together, we divide assists by turnovers (PAA/PAT) like a classic Assist/Turnover Ratio to get Pace-Adjusted Distributor (PAD). A PAD of less than 1 would indicate a player getting more PAT than PAA.

$$\frac{PAA}{PAT} = PAD$$

Results

The PAD Statistic can be more easily obtained by simply dividing Basketball Reference's Ast% by Tov%, however, it is much easier to understand the flaws with the ball-hogging argument by going through the full exercise. It is also the only way to get PAA and PAT. The results seem to indicate that if a player is "ball-hogging" his way to Assists, then by nature he is doing the same to his turnovers. Despite being 3rd in regular Assists in the season, Russell Westbrook dropped to 36th in Pace-Adjusted Assists. T.J McConnell of the Philadelphia 76ers became first there. However, if you are to fall in one category because of Usage, you must fall in the other. Westbrook dropped from 2nd most Turnovers in the season to 45th LEAST Pace-Adjusted Turnovers. At the end of it all, Westbrook was rated 1st in Pace-Adjusted Distributor. Here are the Top 10 in order.

Player	Tm	Pace-Adjusted Assists	Pace-Adjusted Turnovers	Pace-Adjusted Distributor
Russell Westbrook	OKC	25.3725	7.0405	3.6038
Chris Paul	LAC	36.0426	10.7820	3.3429
Kemba Walker	CHO	18.8054	6.1392	3.0632
Isaiah Thomas	BOS	17.8874	5.8710	3.0467
J.J. Barea	DAL	33.0425	10.9893	3.0068
Joe Young	IND	12.1925	4.0642	3.0000

Mike Conley	MEM	25.6652	8.7782	2.9237
John Wall	WAS	28.4460	9.8257	2.8951
Kyrie Irving	CLE	18.1015	6.2776	2.8835
Damian Lillard	POR	17.0148	6.0471	2.8137

Other notable players are James Harden, LeBron James, and Steph Curry at 13th-15th respectively. Interestingly Blake Griffin, not known for his ball handling, came in at 24th. Nearly all of the top 50 were Guard position players. T.J. McConnell, who had the most PAA (47.7), came in at 68th because of a high number of PAT as well. Andrew Bogut had an unbelievingly high 62.9 PAT, most in the league, came all the way down at 399th. Worst PAD (437th) of this NBA season was Deyonta Davis of the Grizzlies with a 0.1 PAD Rating.

Conclusion

Statistics are ways to understand what is going on beyond the game. Any two people can watch the same exact play happen live and have two completely different interpretations of what transpired. They are objective and go beyond pure talk and opinion. However, players need to be on the right team and with the right group of players to be as successful as they can be. That is not always the case as we see many different teams with Chemistry problems. NBA General Managers and others in the organization, along with other sports, can make a living by getting these decisions right. Also by carefully quantifying the play of not just the stars in the game, but all players involved, we can all make better inferences and more sound opinions on sports in general.

Appendix

(Note: Stats with an asterisk are calculated and/or measured by Basketball Reference)

Assist – (Not used in calculations directly) Any time a player passes the ball to a teammate who then scores

Turnover – (Not used in calculations directly) Any time a player makes a play that gives the ball away to the other team

*AST% -- Assist Percentage - An estimate of the percentage of teammate field goals a player assisted while he was on the floor.

*TOV% -- Turnover Percentage - An estimate of turnovers committed per 100 plays.

*USG% -- Usage Percentage - An estimate of the percentage of team plays used by a player while he was on the floor

*TmPace -- Pace Factor: An estimate of (team) possessions per 48 minutes (1 full game)