Have coaches changed how they select which players to give more minutes to?

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Abstract

Since the NBA adopted the three point line in .

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Methods

The basketball reference player season finder was used to extract the per 100 team possessions stats, single season, during the three point era (since season 1979-80), during the regular season ("Player Season Finder Basketball-Reference.com" 2017), and that information was coupled twith the minutes per game played by each player, again extracted from the basketball regerence player season finder but now in the per game stats. We divided that dataset into 37 datasets, one for each season from the 1979-80 season to the 2015-16 season.

For each season, the per 100 team possesion stats was used to fit a global glm model (Nelder and Baker 1972) that explains the minutes per game of each player based on the following variables: Two point shot attempts per 100 possessions, two point shot percentage, three point shots attempts per 100 possessions, three point shot percentage, free thow attempts per 100 possessions, free throw percentage, total rebounds per 100 possessions, assists per 100 possessions, steals per 100 possessions, blocks per 100 possessions, turnovers per 100 possessions, points per 100 possessions and effective field goal percentage.

In order to be able to compare the strength of relationship of every variable on the same scale, all of them were scaled and centered (Bro and Smilde 2003) using the caret package (Kuhn and Johnson 2013).

For each season, we tested variables for collinearity. Then we fitted every possible first order model not allowing models to coexist if they had a pearosn correlation coefficient equal or higher than 0.7 (Dormann et al. 2013).

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Then the models were ranked based on Akaike's Information Criteria for small sample sizes (AICc) (Cavanaugh 1997) using the MuMin Package (Bartoń 2013; Burnham and Anderson 2002). We didn't use model averaging since even though collinear variables were prohibited to coexist in the same model, these might coexist in the average model (Cade 2015), thus we selected the best possible model for each season selecting by AICc (Burnham and Anderson 2002). All of the analyses using R statistical Software (Team 2016),

Results

Season	number of players
1980	137
1981	149
1982	147
1983	144
1984	152
1985	149
1986	151
1987	136
1988	145
1989	146
1990	165
1991	161
1992	166
1993	164
1994	164
1995	156
1996	164
1997	157
1998	162
1999	143
2000	176
2001	155
2002	159
2003	159
2004	166
2005	161
2006	153
2007	171
2008	181
2009	174
2010	177
2011	171
2012	146
2013	168
2014	200
2015	210
2016	200

As we can see in figure 1, the AST is the variable that appears in most season being selected in 36 of 37 seasons, followed by PTS and TRB being selected in 29 and 25 seasons respectibely

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Here are two sample references: Bartoń (2013; Cade 2015).

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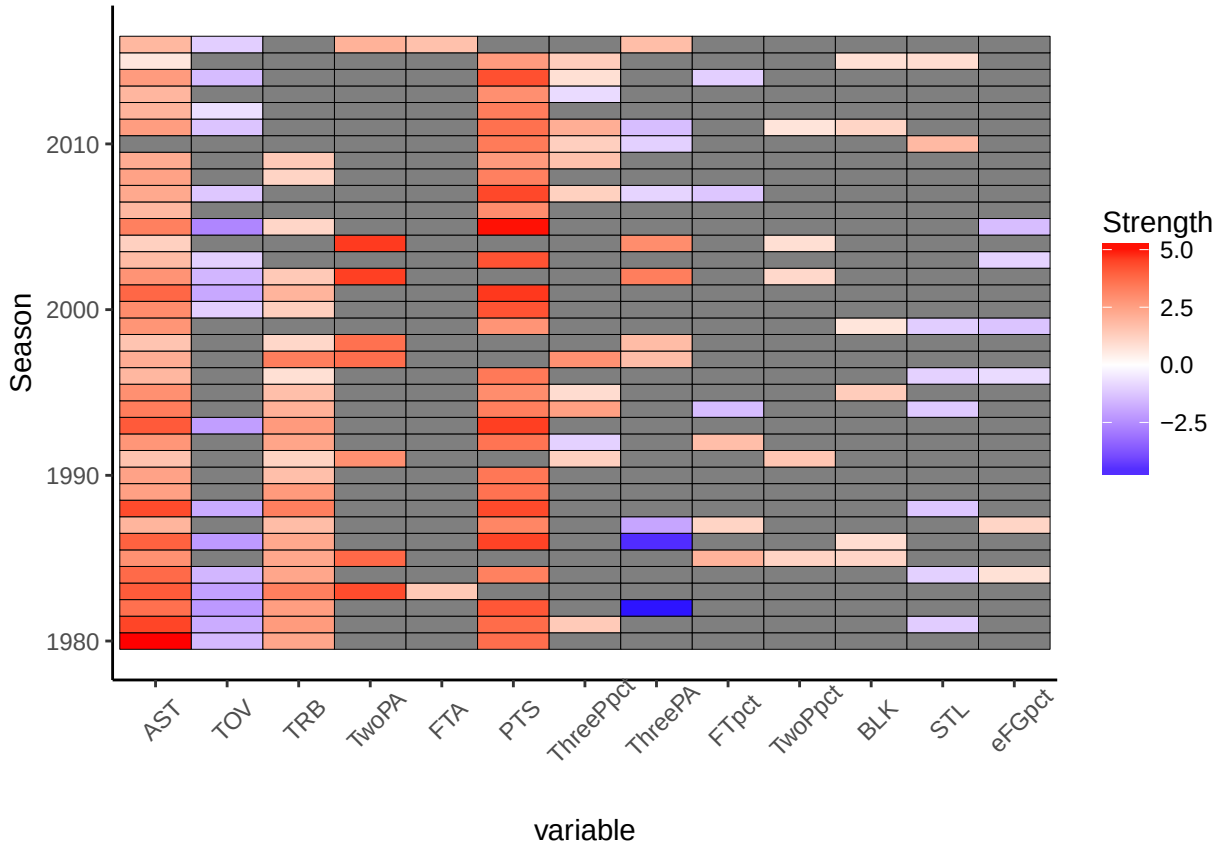

Figure 1: Strength of relationship by season

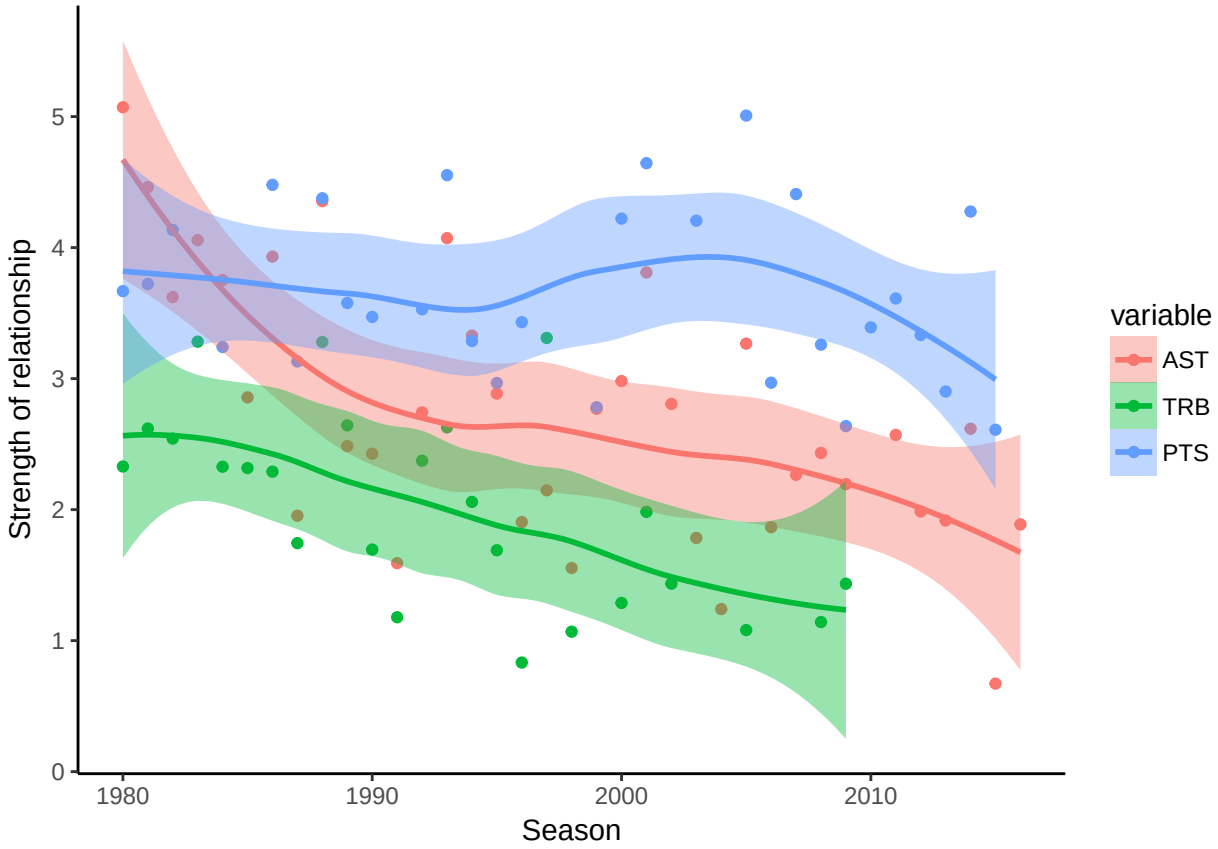

Figure 2: Strength of relationship by season for assists, Rebounds and points