Brandon Huggard

Dr. Thomas Finholt

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HW12: Determining if an NBA Team Should Foul to End A Game

Sports analytics has always been more easily applied to games that have clearly defined plays versus a continuous run of play; thus why we can see data science becoming an ever larger portion of games like Baseball and American Football. Basketball is largely antithetical to that sentiment, existing in a constant state of play back and forth with stoppages existing only for violations. However, a close and competitive Basketball game presents itself as an anomaly nearing the end of a game. Teams become scripted, either fouling or pressing instinctively while the opposing team runs a predetermined press break. This allows us to more intimately with optimal decision making based on past data with more accuracy than general run of play for a team.

A three point lead is fragile, and denying a team the opportunity to tie the game and steal a huge amount of momentum heading into overtime is a crucial point for any team looking to close out a game. Using NBA Play-by-play data, we can identify teams with a three point lead and under twelve seconds to play- then examine whether fouling to prevent a three point play is optimal in winning the most games.

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[619]: fouled_win_percentage

[619]: 0.625

[620]: not_fouled_win_percentage

[620]: 0.5968586387434555
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While it can be expected most teams with a lead this late will go on to win, we can see that preventing the opportunity for a team to tie the game with one shot has a narrowly higher winning percentage than playing traditional defense. As data science continues to grow in value for sports teams in the coming years, it will be interesting to see how high level teams adapt to create the most optimal environments for a winning team.

Work Cited

Schmadamco. (2021, January 22). *NBA play-by-play data 2015-2021*. Kaggle. Retrieved December 13, 2022, from https://www.kaggle.com/datasets/schmadam97/nba-playbyplay-data-20182019?resource=download&select=NBA_PBP_2017-18.csv