

RELEASE ANGLE: UNDERSTANDING OFFENSIVE AND DEFENSIVE IMPACTS

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MOTIVATION



Source: riceowls.com

Why?

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PPP



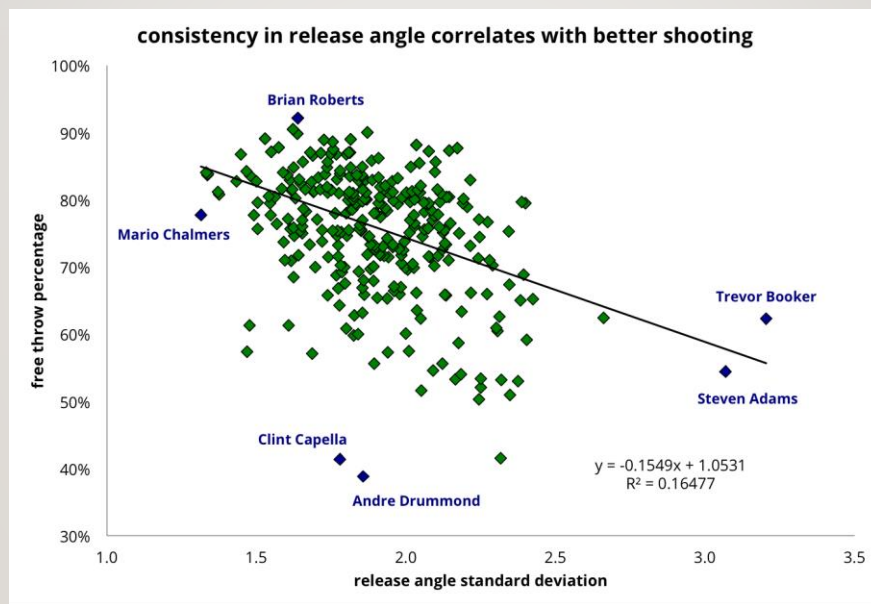
Source: houstonchronicle.com

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PPP

SHOT ARCS!

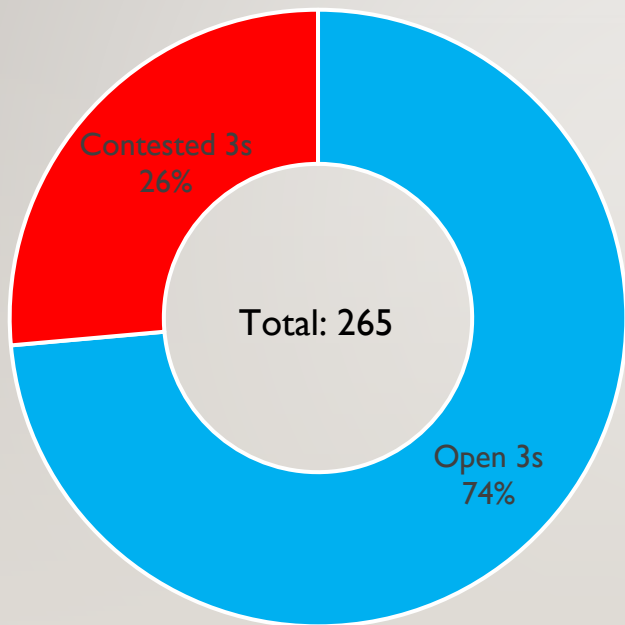
open shot arc \neq contested shot arc



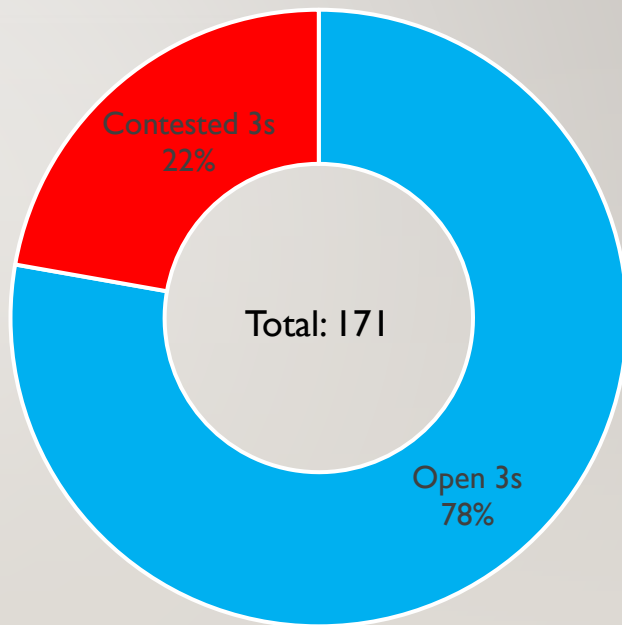
Source: *inpredictable.com*

DATA DESCRIPTION

Men's



Women's



METHODOLOGY

	Shooter	Contested?	Closest Defender	Release Angle (RA)
3-pt shot				



Offense

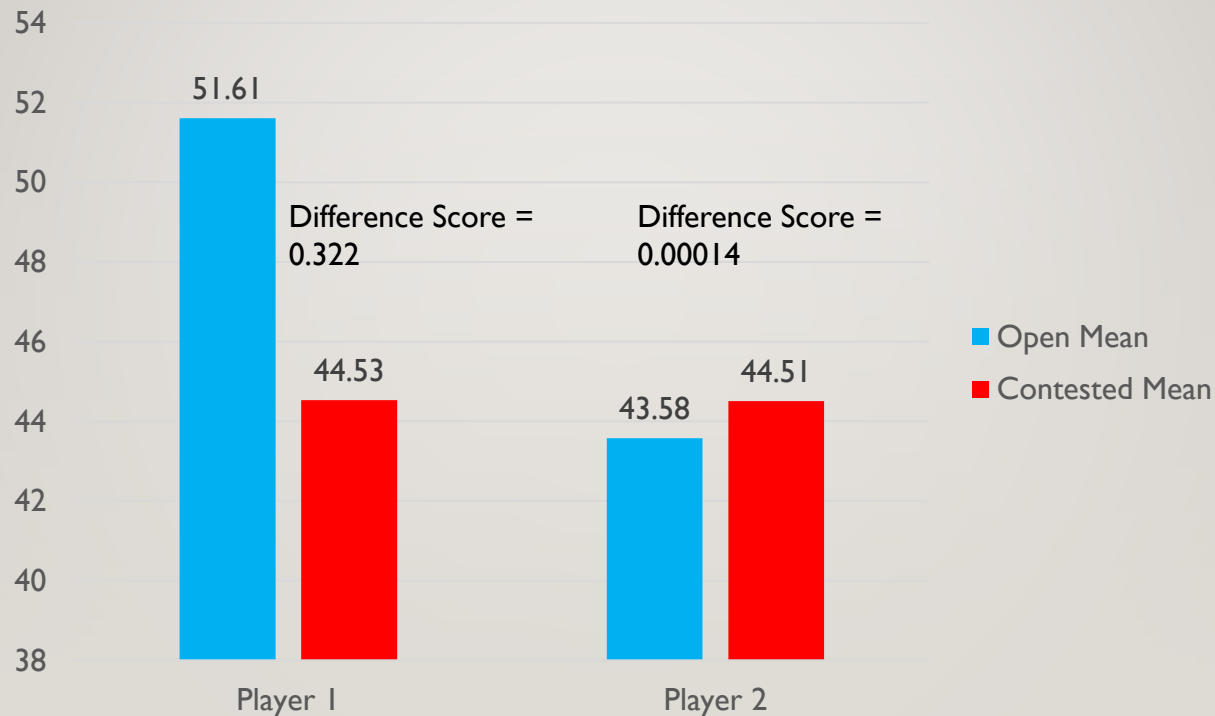


Defense

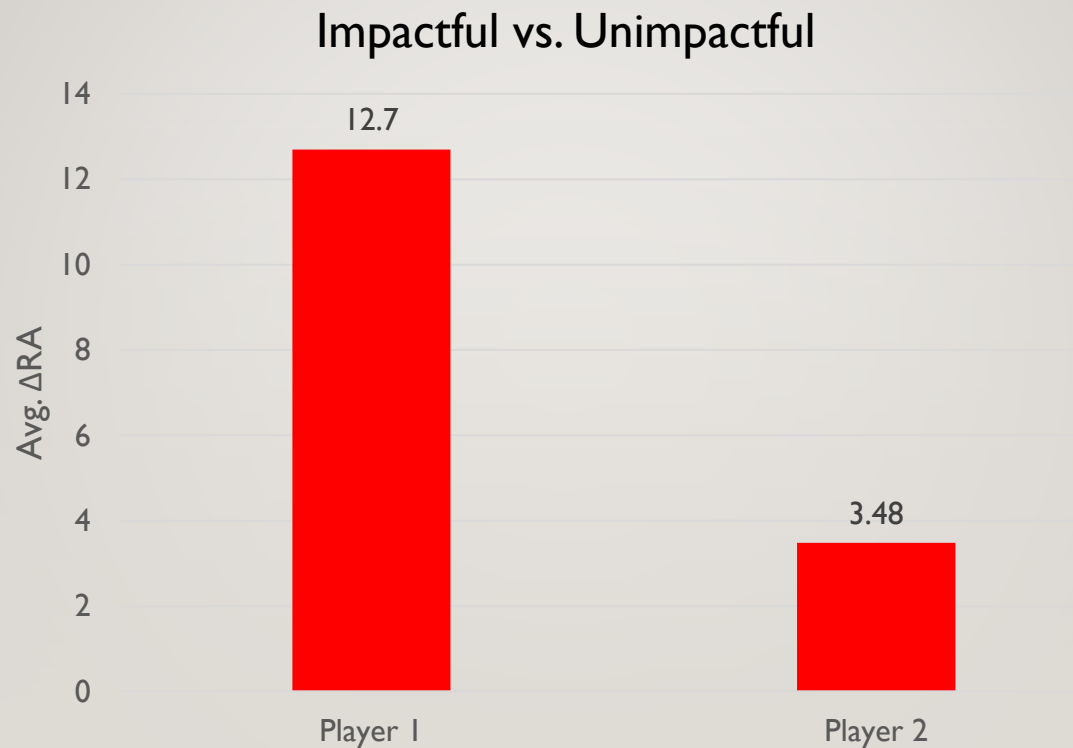


FINDINGS: SHOOTER CONSISTENCY

Consistent vs. Inconsistent



FINDINGS: DEFENDER IMPACT



PREDICTION USING LINEAR REGRESSION

Shooter Difference Score

0.15

Predicted Δ RA

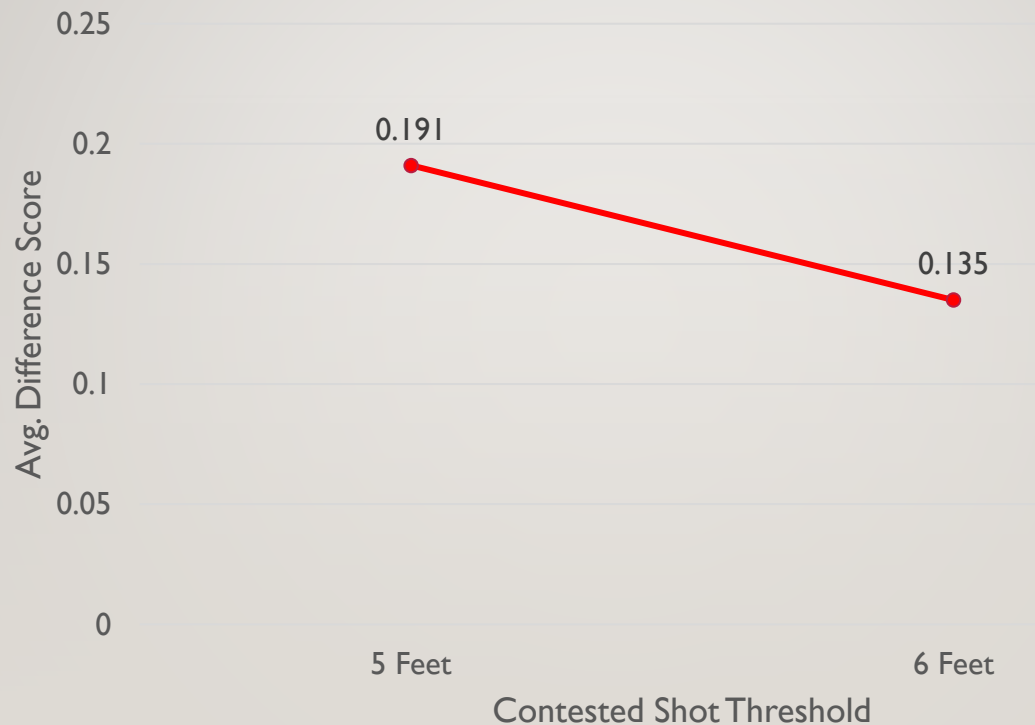
Defender Δ Avg. RA

9.2

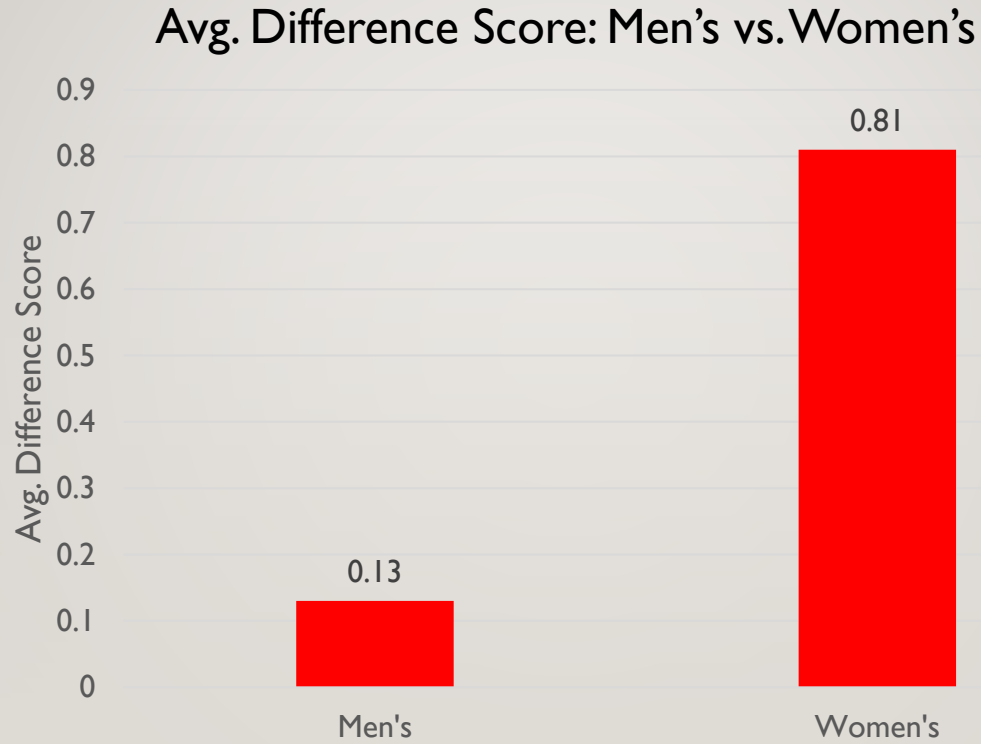
11.8



FINDINGS: DEF. DISTANCE VS. SHOOTER DIFFERENCE SCORE



CONSISTENCY: MEN'S VS. WOMEN'S



APPLICATION

- March Madness: likely no H2H record

Teams

- Optimize matchups when necessary
 - Shooting consistency ↑
 - Defensive impact ↑

Broadcasting

- Enhance storytelling
 - Predict & measure the marquee matchup
 - Fan engagement



FUTURE IMPROVEMENT

- Larger datasets
- Players' physical measurements
 - Height
 - Wingspan
 - Vertical

REFERENCES

- Beuoy, M. 2016. “Free Throw Deep Dives: Launch Angle.” <https://www.inpredictable.com/2016/03/free-throw-deep-dives-launch-angle.html>. Accessed March 5th, 2020.
- Daly-Grafstein, D. and L. Bornn. 2019. “Using In-Game Shot Trajectories to Better Understand Defensive Impact in the NBA.” ArXiv.org: Retrieved March 5th, 2020, from arxiv.org/abs/1905.00822.
- Lucey, P., A. Bialkowski, P. Carr, Y. Yue, I. Matthews., 2014. “‘How to Get an Open Shot’: Analyzing Team Movement in Basketball using Tracking Data.” <http://www.iaim.com/publications/Lucey2014-How/paper.pdf>. Accessed March 5th, 2020.

