

ORANGE HOOPS DATA SCIENCE CHALLENGE

BRADLEY-TERRY MODEL FOR CLUTCH
PERFORMANCE IN BASKETBALL

PLAYER PERFORMANCE
QUESTION

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INTRODUCTION

- **OBJECTIVE** – Select a team and choose who should take the final shot
- **KEY METRIC** – Win Probability Added
- **APPROACH** – Bradley-Terry Model to compare players' abilities to perform in “clutch”



DATA

- Play by Play data for 23-24 College Basketball Season
 - Focused on final five minutes of regulation
- WPA – Measures a player's contribution to the team's chances of winning
 - Change in Win Probability based on shot outcome
- Focused on ETSU



BRADLEY-TERRY MODEL

- Model used to compare relative abilities of paired competitors based on their outcomes in pairwise comparisons
 - Estimates probability that one player will outperform another
- Used often in ranking systems
- Model used to predict which player is more likely to succeed in clutch moments



BRADLEY TERRY MODEL

- Each player treated as a competitor in pairwise comparisons
- Model estimates each players' relative ability
 - Indicates how likely they are to contribute positively to the teams success in final moments of game
- Analyzed how players performed compared to their teammates at the end of games



RESULTS

Bradley-Terry Model Summary

	Coefficient	Std..Error	z.Value	Pr...z..
Jaden Seymour	0.524	0.636	0.825	0.410
Jadyn Parker	-1.950	1.088	-1.793	0.073
Gabe Sisk	-53.114	9,372.262	-0.006	0.995
Karon Boyd	-34.199	5,251.416	-0.007	0.995
Allen Strothers	-0.305	1.281	-0.238	0.812
Maki Johnson	-16.760	3,713.312	-0.005	0.996
Quimari Peterson	0.679	0.600	1.133	0.257

