

Spotlighting under-the-radar performers in college women's volleyball

Scott Powers

Assistant Professor, Sport Analytics, Statistics



RICE UNIVERSITY
Sport Analytics

Background

Data Volley

- Developed in Italy in early 2000s
- Charts location, quality of touches



Brigham Young University

- Carl McGown
 - Men's volleyball coach 1990-2002
- Gil Fellingham
 - Statistics professor 1990-present
 - Published 4 volleyball papers in *JQAS*



“Carl pioneered the application of scientific rigor to the way we coach our sports.” –Hugh McCutcheon

Background, continued

Volleymetrics

- Est. 2014; acquired by Hudl 2017
- Multiple speakers at SSAC 2017
 - Founder Giuseppe Vinci (BYU 2008-2015)
 - Corley Bagley & Brett Ware research paper



volleydork.com (Chad Gordon)

- Calculates “Expected Value Added”

Collaborators



Luke Stancil

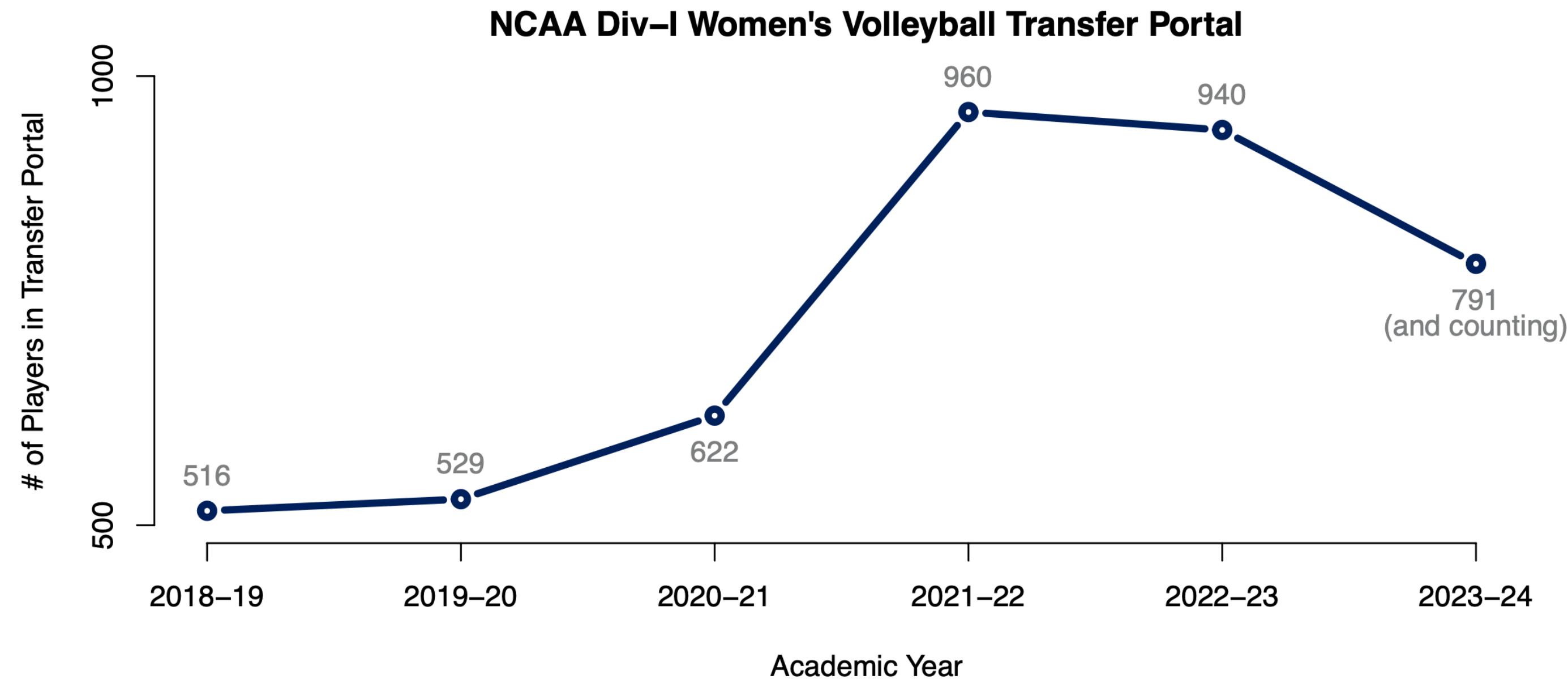
- Student Manager, Rice Volleyball
- B.A. Computational & Applied Mathematics and Economics expected 2024
- @ SSAC for Startup Competition!



Naomi Consiglio

- Student Manager, Rice Volleyball
- Sport Head (Volleyball), Rice Sport Analytics Team
- B.A. Statistics and Sport Analytics expected 2025

The Problem



With 6,000 players across Div-I (and 1,000 in the transfer portal),
how can we highlight standout performers,
particularly those from smaller conferences?

The Data

4,147 matches from 2022 NCAA Division I season

- 600,000+ points and 5,000,000+ touches

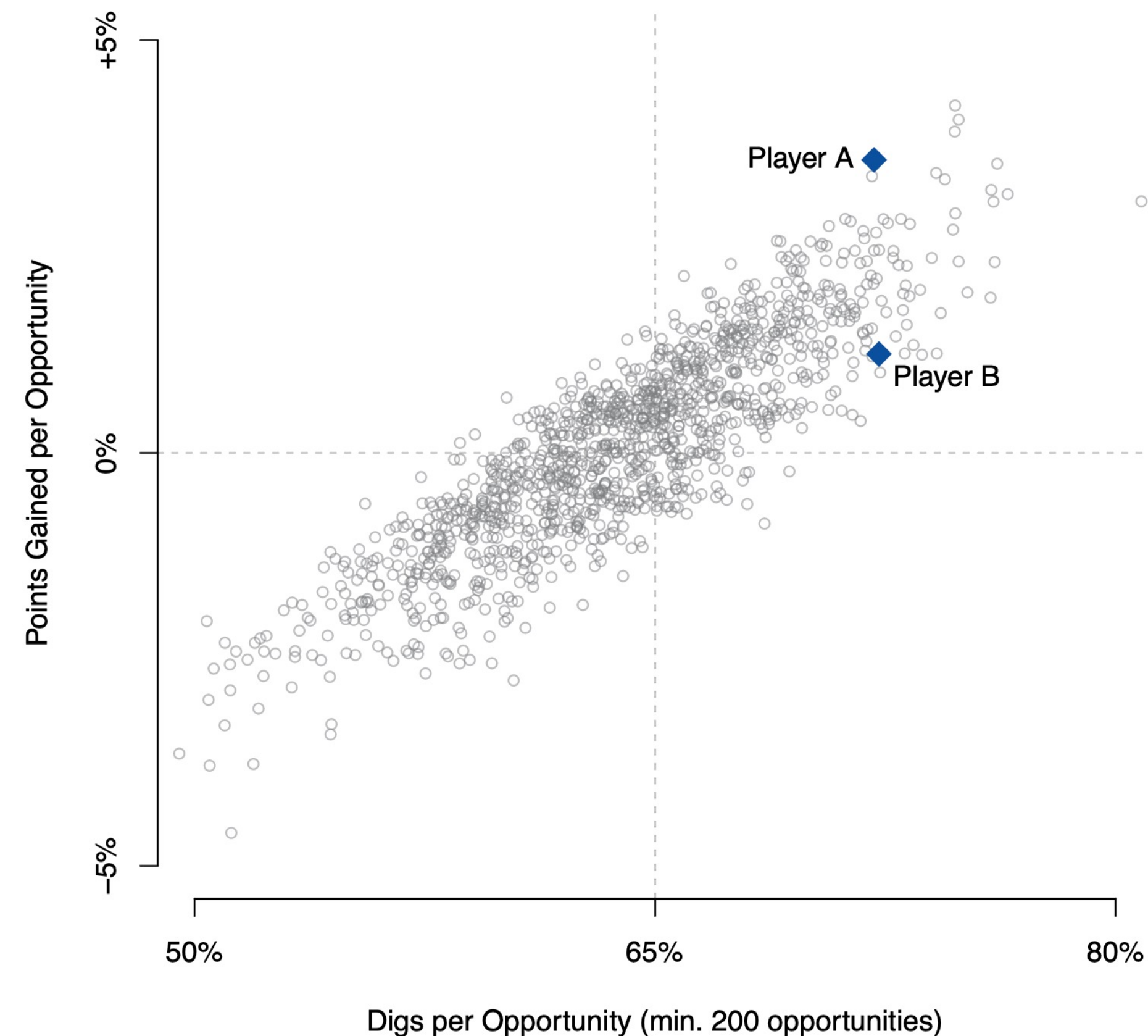
Possession	Player	Team	Skill	Eval	(X, Y)	Attack Code	End Zone
1	Anna Deeber	Louisville	Serve	–	(2.99, -0.13)		
2	Emma Halter	Texas	Reception	#	(0.93, 5.80)		
2	Saige K.-Torres	Texas	Set	#	(2.13, 3.13)		
2	Molly Phillips	Texas	Attack	–	(3.33, 3.20)	X6	9
3	Raquel Lazaro	Louisville	Dig	+	(0.86, 4.98)		
3	Elena Scott	Louisville	Set	#	(2.99, 1.65)		
3	Claire Chaussee	Louisville	Attack	–	(0.63, 2.83)	V5	9
4	Kayla Caffey	Texas	Block	+	(3.26, 3.43)		
5	Phekran Kong	Louisville	Dig	!	(0.89, 3.13)		
5	Raquel Lazaro	Louisville	Set	#	(0.97, 2.61)		
5	Claire Chaussee	Louisville	Attack	#	(0.67, 2.91)	X5	5

Sample data from first point of 2022 NCAA National Championship match

The Approach

1. Estimate point win probability model using Markov chain
 - State: sequence of touches (including quality) during current “possession”
 - Win probability updates as each touch occurs
2. Aggregate changes in win probability due to players’ touches
 - Serve, Receive, Set, Attack, Block, Dig all measured in units of points
3. Estimate strength of schedule using hierarchical linear model
 - Players are nested within teams; teams are nested within conferences
 - Strength of schedule for each touch depends on specific players involved

The Results: Points Gained



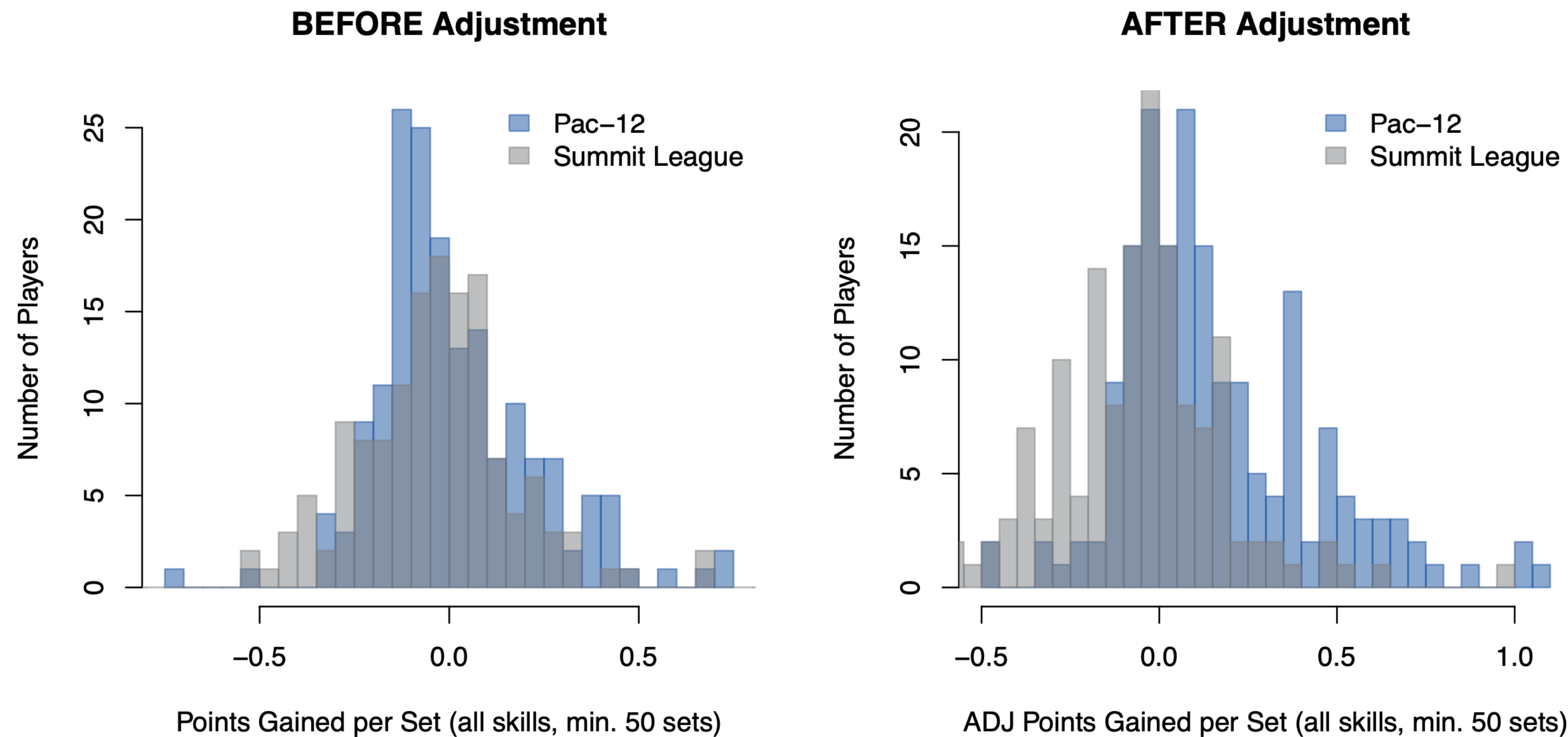
Digs per opportunity

- Player A: 72%
- Player B: 72%

Points Gained per opportunity

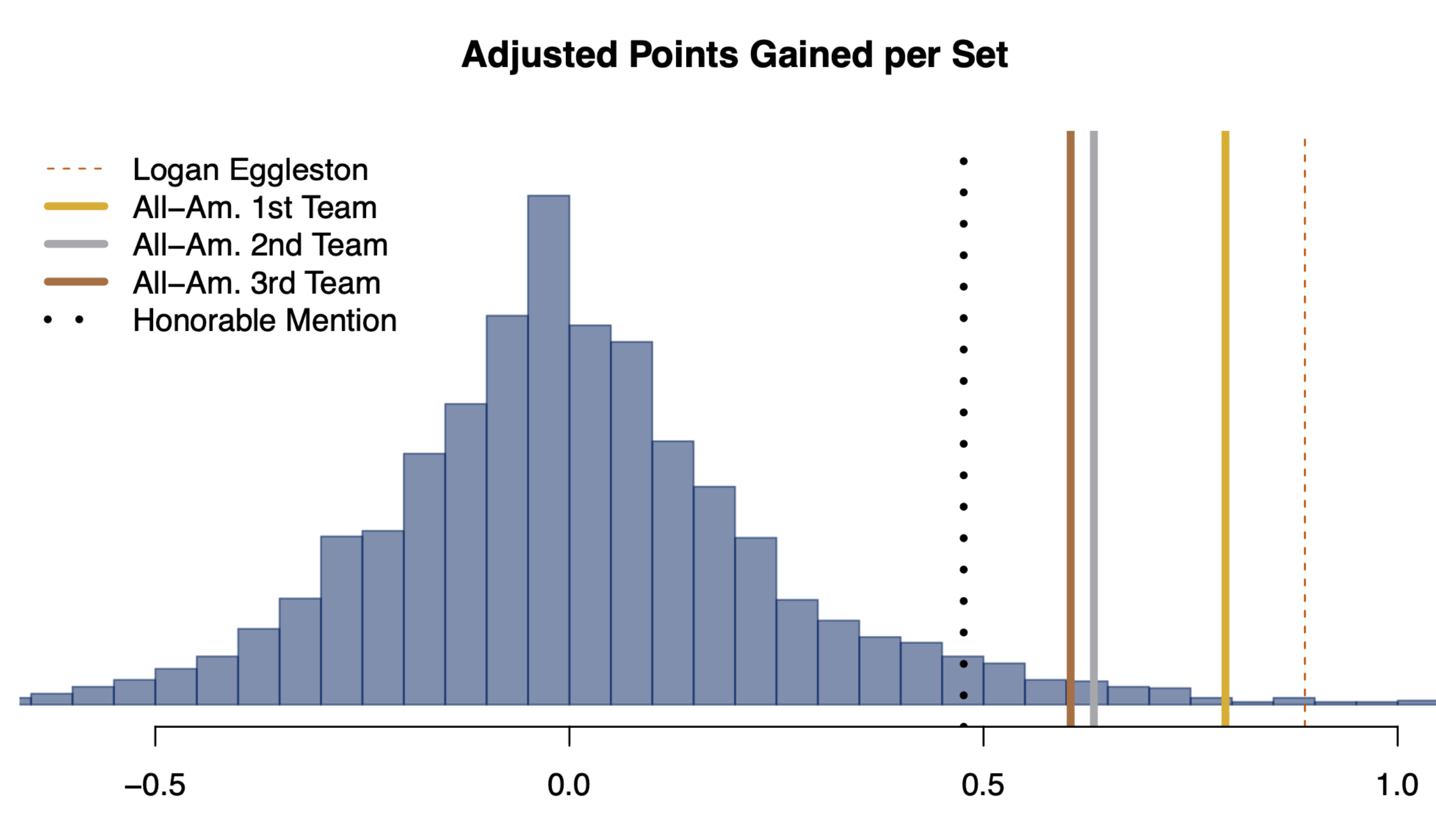
- Player A: +3.6%
 - 85% no block touch, 48% perfect dig
- Player B: +1.2%
 - 66% no block touch, 36% perfect dig

The Results: Strength of Schedule



Comparison of Pac-12 and Summit League player performances before and after strength-of-schedule adjustment.

The Results: SoS-Adjusted Points Gained







Distribution of adjusted Points Gained per set for all NCAA players (minimum 50 sets played).

The Standouts



Outside Hitters

	Jess Mruzik ^{‡*}	+0.96
	Bianca Bertolino [*]	+0.87
	Gabby Gonzales ^{‡*}	+0.85
	Kenna Sauer [‡]	+0.84



Middle Blockers

	Leyla Blackwell	+0.63
	Rylee Rader	+0.58
	Kaitlyn Hord	+0.57
	Rachel Langs	+0.57



Opposite Hitters

	Callie Martin [*]	+0.71
	Gabby Waden	+0.62

Setters

	Melani Shaffmaster	+0.86
	Amber Olson	+0.75

Liberos

	Hannah Grant	+0.79
	Yelianiz Torres ^{‡*}	+0.78

Top performances (adj. Points Gained per set) w/o 2022 All-America recognition

[‡] Player transferred between 2022 and 2023

^{*} Player earned 2023 All-America recognition

The Future

Pro Volleyball Federation

- Launched January 2024
 - 1st match set attendance record in pro women's volleyball (11,624)
 - Atlanta, Columbus, Grand Rapids, Omaha, Orlando, San Diego, Vegas



League One Volleyball

- Set to launch November 2024
 - Atlanta, Austin, Houston, Madison, Omaha, Salt Lake

LOVB

The Takeaways

1. Volleyball lends itself very well to statistical analysis
 - There is A LOT of information that is not in the box score
 - Outside hitters are easiest to evaluate; setters are hardest
2. Outside hitters dominate the Points Gained leaderboard
 - Top middle blockers accumulate less PG per set but *more* PG per point
 - Blocker responsible for 52% of attack outcome, even when no block touch
3. Results largely align with subjective evaluation by coaches
 - BUT we also spotlight some players not recognized by All-America awards

Thank you!

Find the details of this and other work on my website: saberpowers.github.io



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