

Serving and Serve Reception in Women's College Volleyball

Eric Geisler



About The Organization

- John Carroll Women's Volleyball Team
- 2024 Regular Season Record: 20-10
- Deliverables:
 - 1) Analyze trends in serving data in relation to winning
 - 2) Compare these trends across divisions and conferences relevant to JCU
 - 3) Put these insights within the context of data for JCU this season



The Data

- Serving data for over 3,000 women's collegiate volleyball games (aces, missed serves, aces against, missed serves against) organized by team, division, and conference, and win/loss
- Updated serving and serve receiving data (and related statistics) from this season for John Carroll, organized by games, sets, and rotations

	Team	Conference	Division	Opponent	Home/Away	Win/Loss	W/L	Sets Won	Sets Lost	Total Service Aces	Total Missed Serves
1	Minnesota	Big Ten	1	Florida State	Neutral	W	1	3	0	8	5
2	Minnesota	Big Ten	1	North Carolina	Neutral	W	1	3	1	3	10
3	Minnesota	Big Ten	1	North Dakota State	Home	W	1	3	0	5	5
4	Minnesota	Big Ten	1	Georgia Southern	Home	W	1	3	0	5	0
5	Minnesota	Big Ten	1	Arkansas	Home	W	1	3	0	2	4
6	Minnesota	Big Ten	1	Oregon	Away	L	0	1	3	2	2
7	Minnesota	Big Ten	1	Stanford	Away	L	0	1	3	5	3



Overview

The Relationship Between Serving and Winning in Women's College Volleyball

Percentage of Aces in Game

52.4%

Percentage of Errors in Game

50.2%

Win/Loss

(All)

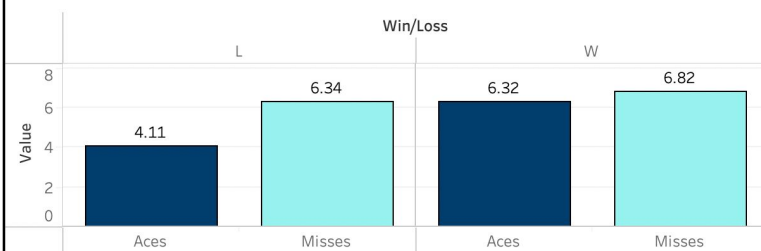
Sets Won

(All)

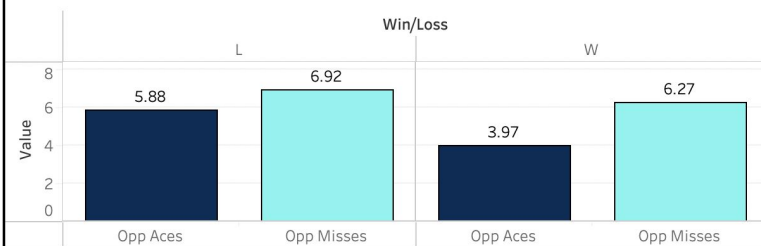
Sets Lost

(All)

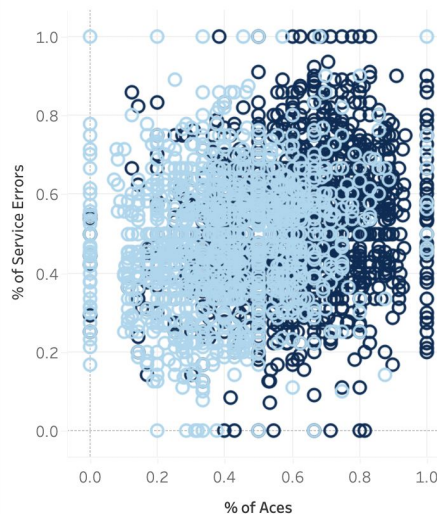
Total Aces and Missed Serves



Total Opponent Aces and Missed Serves



Percentage of Aces vs Percentage of Errors



Service Aces and Errors Overall Trends

Wins

Percentage of Aces in Game

61.5%

Percentage of Errors in Game

52.2%

versus

Losses

Percentage of Aces in Game

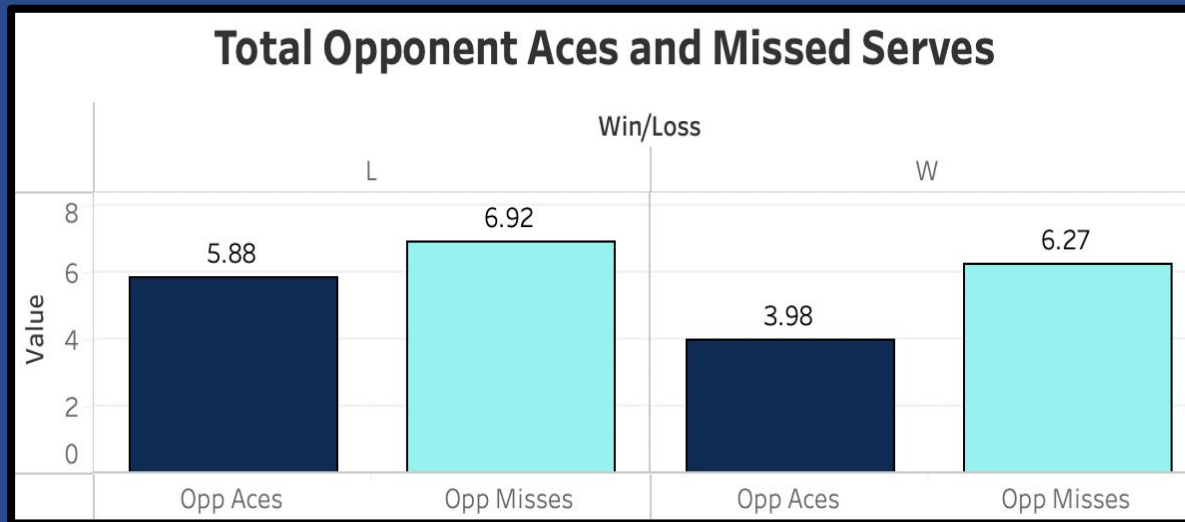
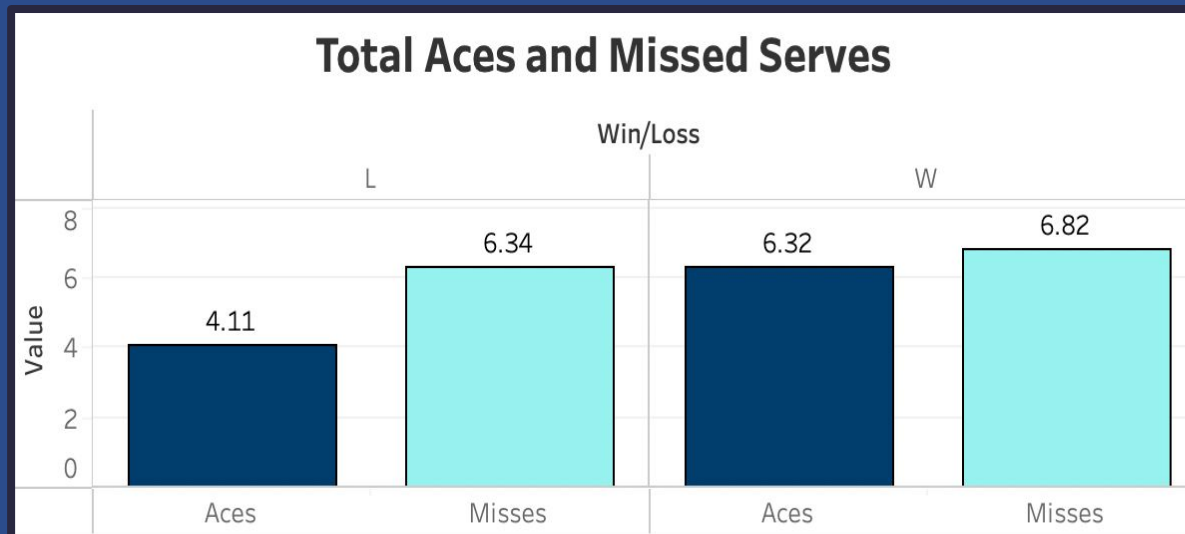
40.5%

Percentage of Errors in Game

47.6%

Totals

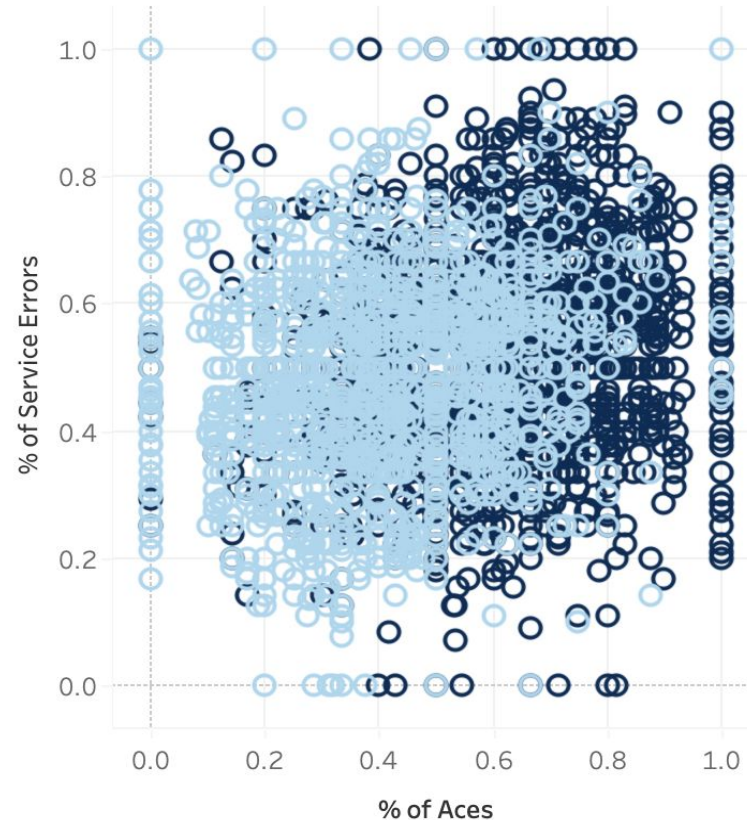
Difference between total aces in wins and losses is much higher than that of total missed serves both for and against, implying aces hold more value.



Comparing Percentages

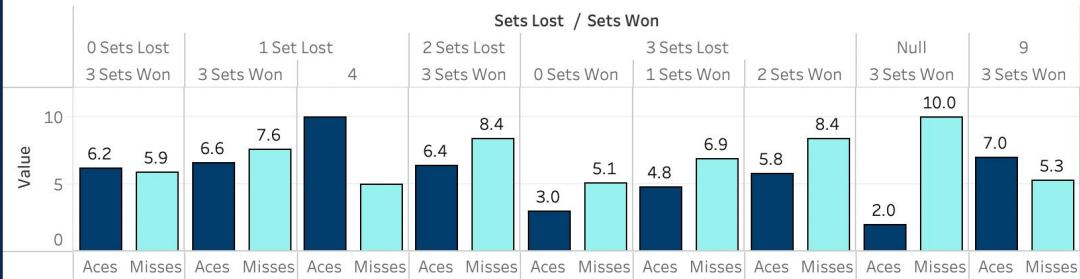
As the darker circles represent wins, we can see that a higher percentage of overall aces in a game predicts wins at a high rate regardless of the percentage of overall errors in a game.

Percentage of Aces vs Percentage of Errors



Division III Trend Analysis | Dashboard

Total Aces and Errors By Sets Won / Lost



Aces / Errors
Ratio in Wins

0.93

Aces / Errors
Ratio in Losses

0.65

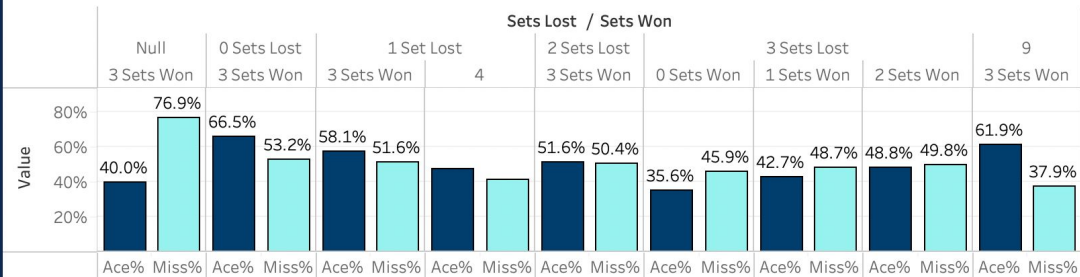
Aces / Errors
Difference in Wins

-0.50

Aces / Errors
Difference in Losses

-2.23

Ace and Error Percentage By Sets Won / Lost



Conference

(All)

Home/Away

(All)

Sets Won

(All)

Sets Lost

(All)

Division III / OAC Overall Trends

Division III:

Aces / Errors
Ratio in Wins

0.93

Aces / Errors
Ratio in Losses

0.65

Aces / Errors
Difference in Wins

-0.51

Aces / Errors
Difference in Losses

-2.23

OAC:

Aces / Errors
Ratio in Wins

1.31

Aces / Errors
Ratio in Losses

0.87

Aces / Errors
Difference in Wins

1.63

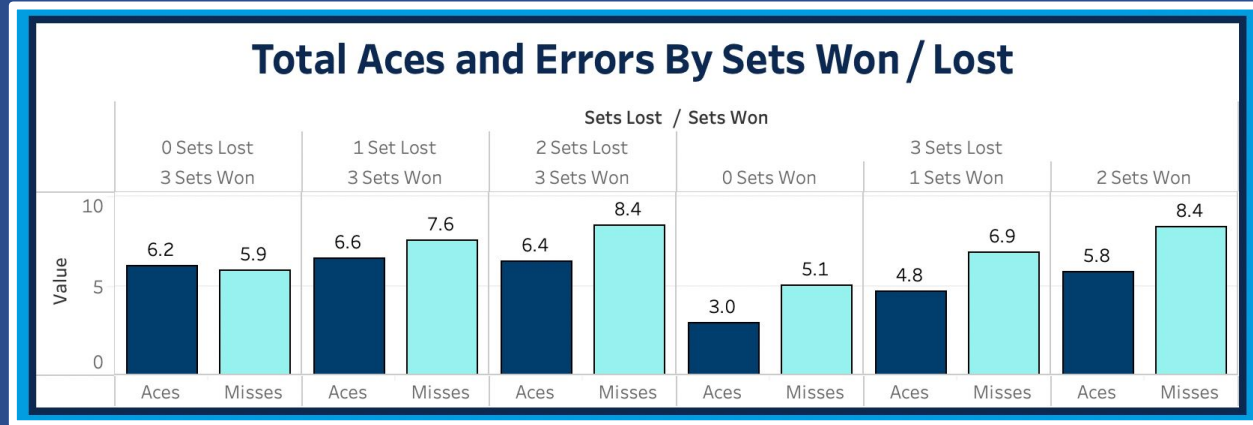
Aces / Errors
Difference in Losses

-0.70

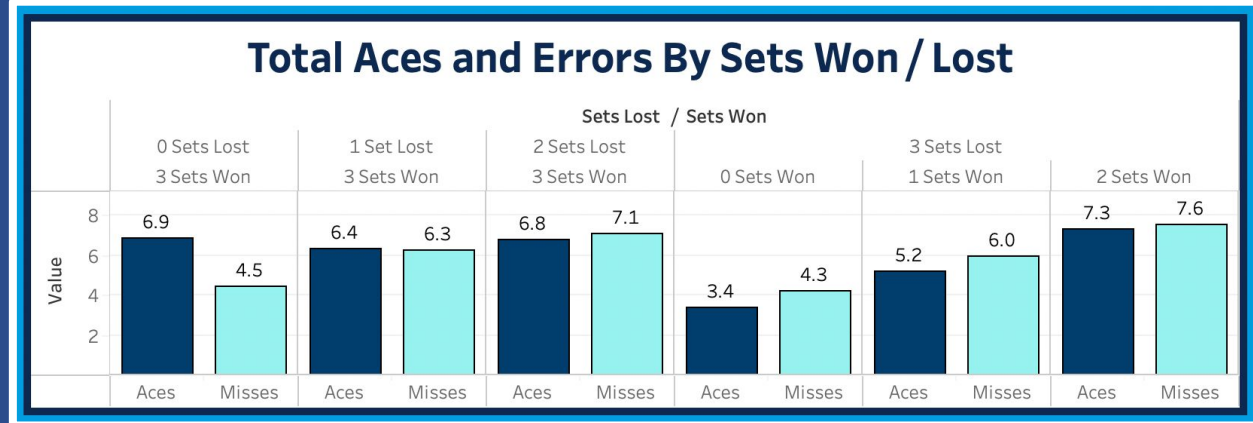
Winning in the OAC requires an above average ace/error relationship compared to Division III as a whole.

Adding in Set Outcomes to Totals

Division III:

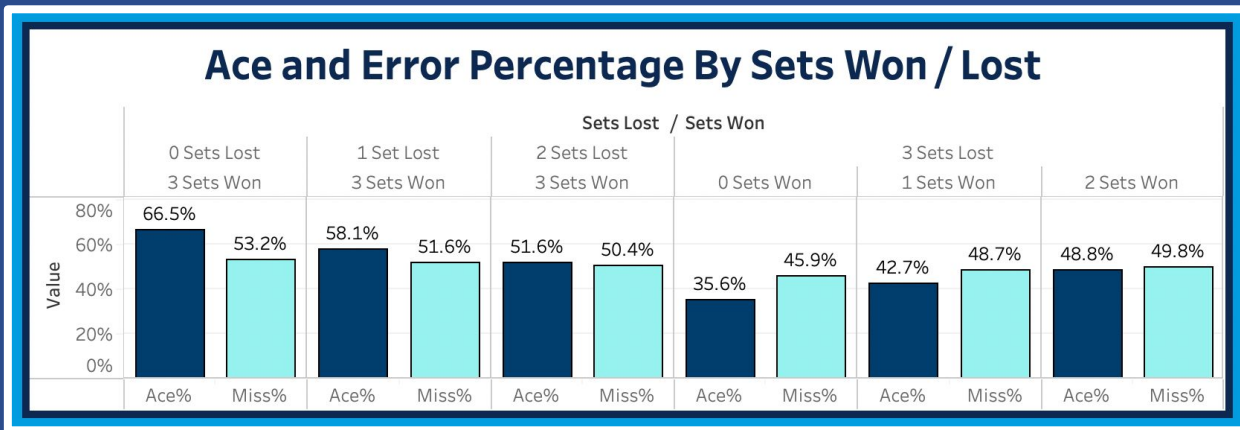


OAC:

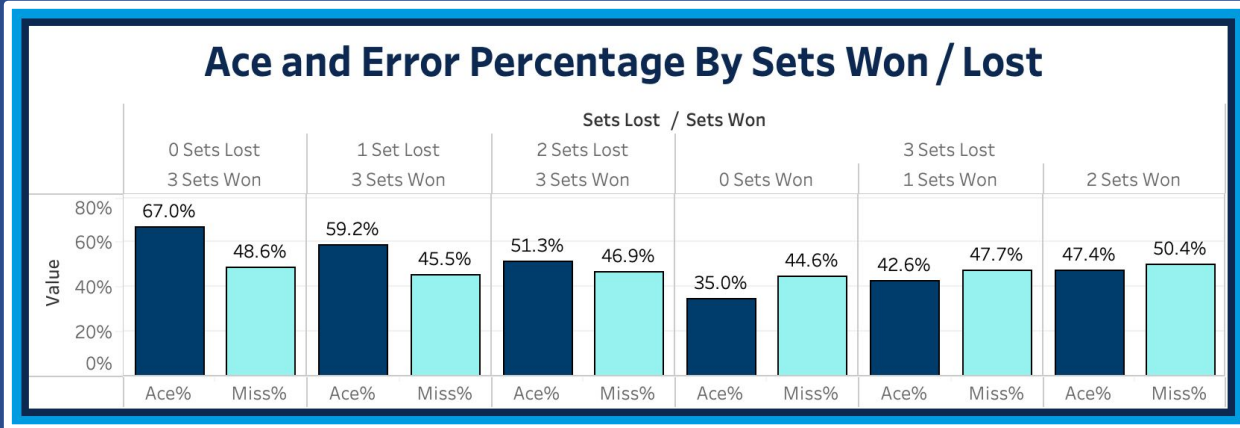


Adding in Set Outcomes to Percentages

Division III:



OAC:



In both Division III and OAC play, there is more variance across aces than misses in relation to set outcomes in a game.

Error totals are more correlated with the number of sets played, whereas ace totals are more correlated with outcomes.

JCU vs D3 Serving and Serve Reception | Dashboard



W/L (JCU)
(All)

W/L (D3)
(All)

JCU Aces
Per Game

6.6

JCU Opponent
Aces Per Game

5.5

JCU
Ratio

1.2

D3
Ratio

1.1

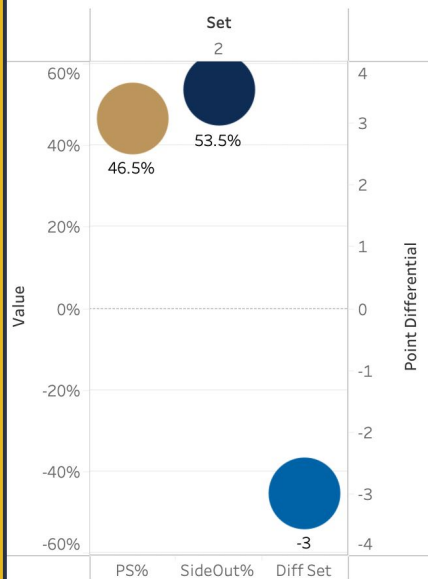
D3 Aces
Per Game

5.4

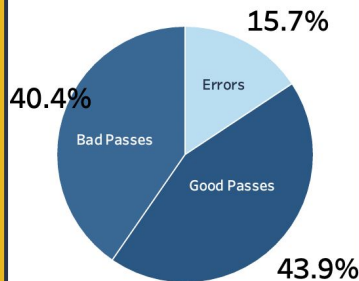
D3 Opponent
Aces Per Game

4.8

Points Scored Off Serve and Side Out
Percentage Per Set



Overall Pass Type By
Percentage



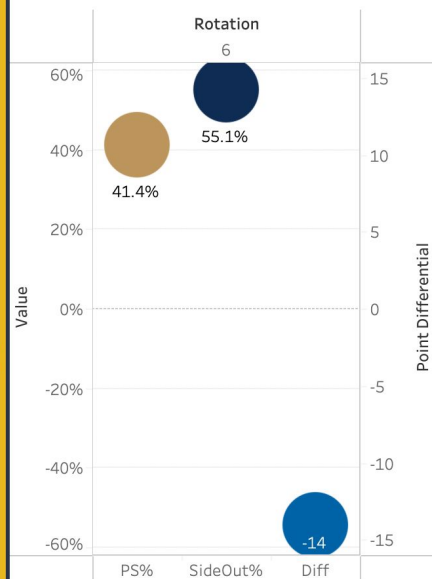
Set

- ☐ (All)
- ☐ 1
- ☒ 2
- ☐ 3
- ☐ 4
- ☐ 5

Rotation

- ☐ (All)
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☒ 6

Points Scored Off Serve and Side Out
Percentage Per Rotation



Comparing JCU to Division III

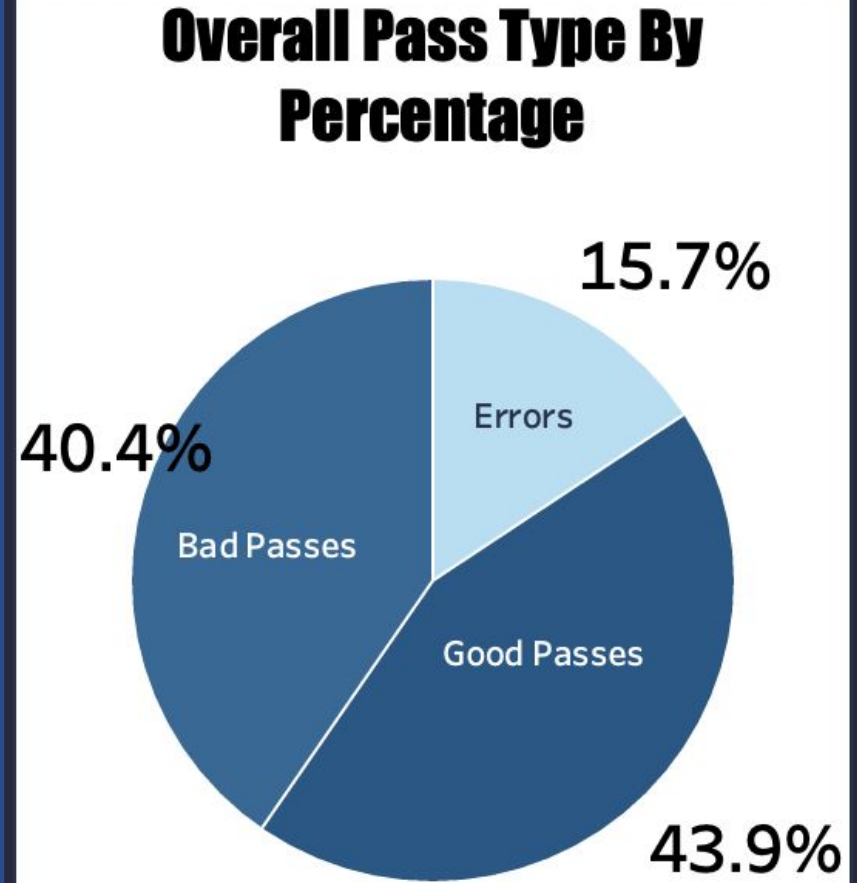
Wins:

JCU Aces Per Game	JCU Opponent Aces Per Game	JCU Ratio	D3 Ratio	D3 Aces Per Game	D3 Opponent Aces Per Game
7.1	4.9	1.4	1.6	6.3	4.0

Losses:

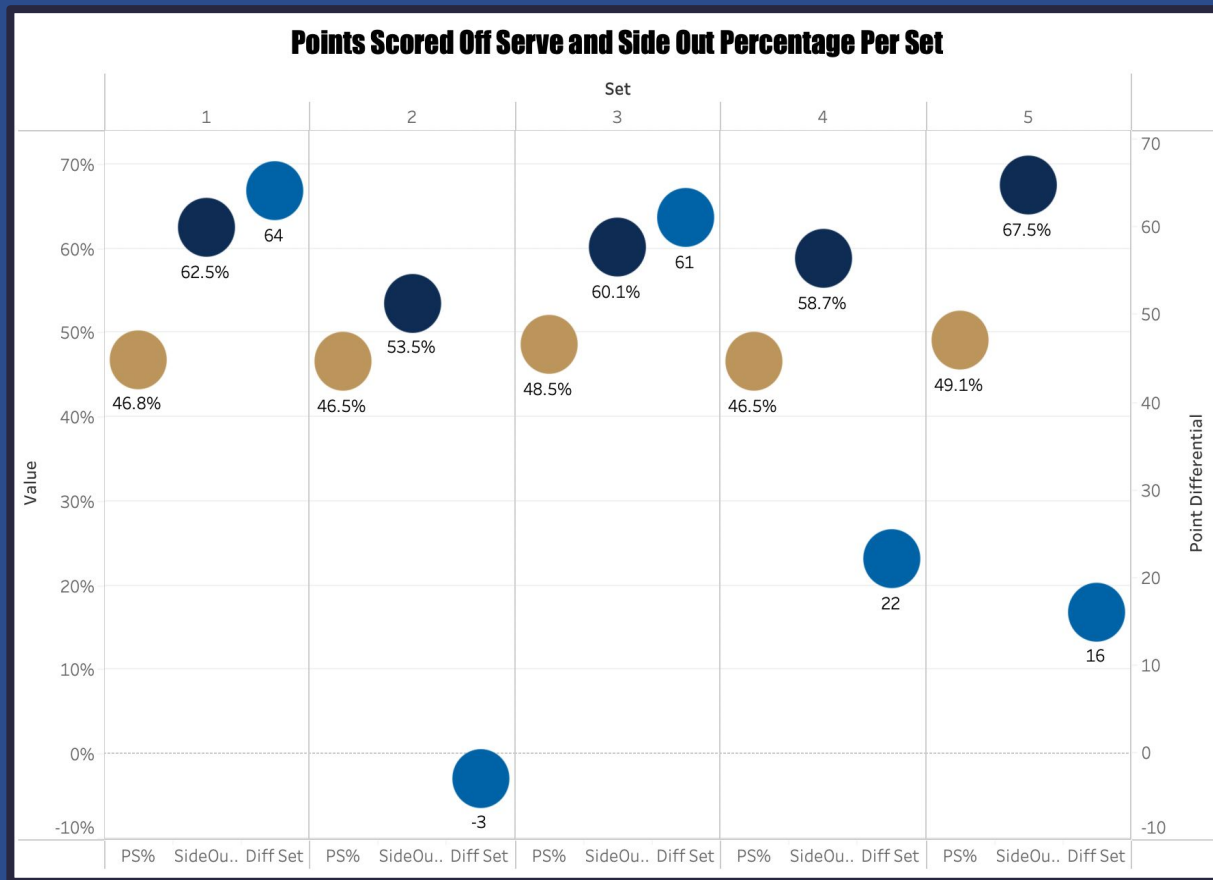
JCU Aces Per Game	JCU Opponent Aces Per Game	JCU Ratio	D3 Ratio	D3 Aces Per Game	D3 Opponent Aces Per Game
5.4	6.9	0.8	0.7	4.1	5.9

**Above average rate of
opponent aces is
reflected in serve
reception data.**



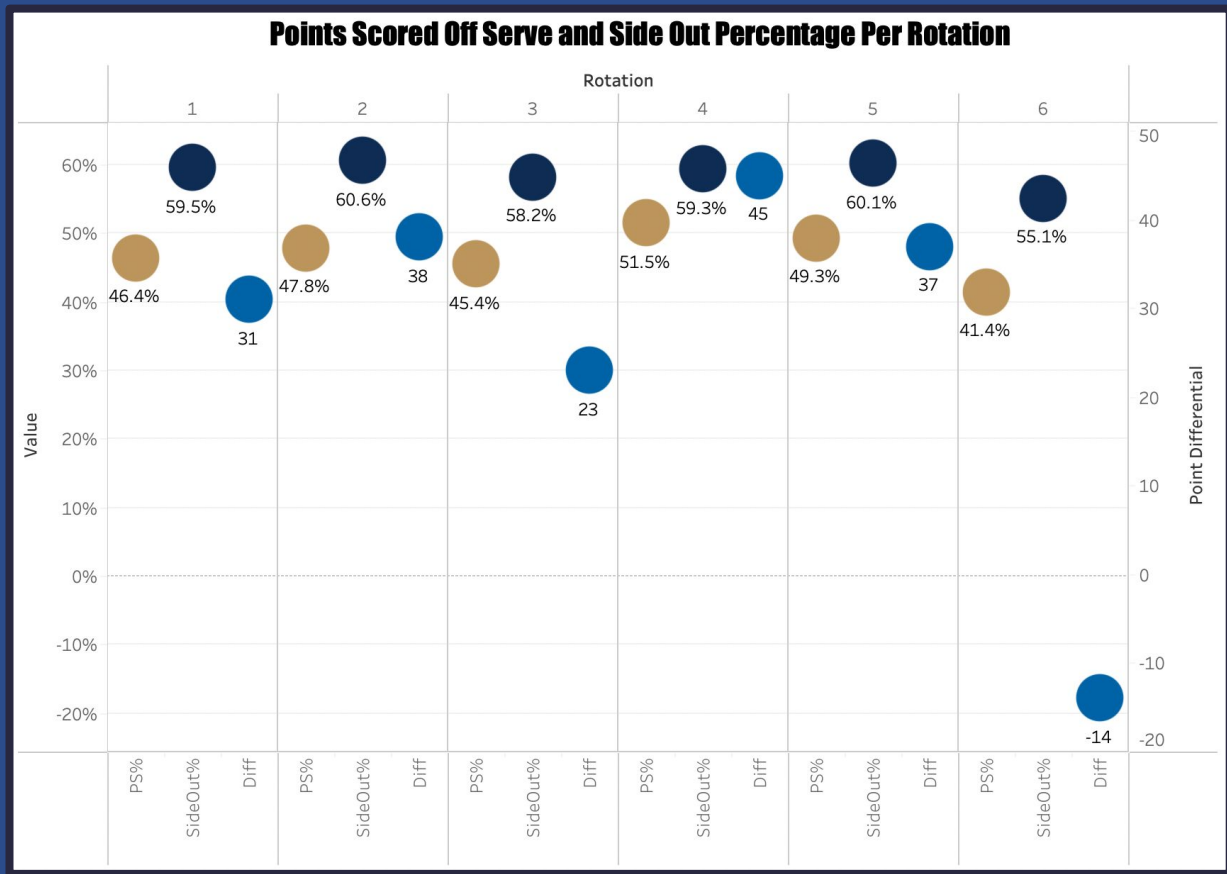
Serving, Serve Receiving, and Point Differential

Points scored off serves are consistent, but variance in points scored while receiving causes swings in point differential per set.



Serving, Serve Receiving, and Point Differential

Combination of decreased points scored off serves and points scored while receiving causes swings in point differential per rotation.



Conclusions

- 1) Aces hold more positive value than missed serves hold negative value, thus JCU must continue prioritizing aggressive serves.
- 2) JCU must limit their opponents' aces, specifically in the 2nd sets of games and in rotation 6.