

On Sinkers and “Two-Seam” Fastballs

Key Takeaways

- There is, at best, a soft distinction that can be made between what counts as a “two-seam” fastball and a “true sinker.” However, the differences that do exist may still have minor applications for pitch design and in-game pitch selection.
- “Two-seam” fastballs can be operationally defined as: sinkers whose average vertical movement lacks separation from the same pitcher’s four-seam fastball (i.e. below median vertical movement deviation).
 - Under this definition, the majority of pitchers with two-seam fastballs have on average higher arm angles and vertical movement (Figure 1). As a rule of thumb, pitchers in this group tend to have an arm angle around 45 degrees or higher (Figure 2).
 - Within the group of two-seam fastballs, those with below median horizontal separation perform meaningfully worse in terms of wOBA (Table 1). We can conclude movement separation from a pitcher’s four-seam matters in general, but horizontal separation matters especially for two-seams. This is further supported when comparing expected run value (xRV) predictions for sinkers with and without four-seam movement deviation values in the model (Figures 3-4).
- Two-seams have only minor differences in performance compared to “true sinkers,” including:
 - Slightly higher Foul / Contact%, but substantially higher wOBA below league-average (Table 1)
 - Slightly higher CSW% on the corners of the zone to opposite-handed hitters (Figures 5-6)
 - Higher CSW% to opposite-handed hitters at the bottom of the zone, in part due to hitters swinging less frequently to the same location relative to “true sinkers” (Figures 5-6, 9-10)
 - Marginally lower wOBA up-and-in, higher wOBA low-and-away in general (Figures 13-16)
- Given sinkers’ effectiveness on the inner third of the plate to same-handed hitters, candidates for adding or increasing sinker usage can be found based on performance to that specific location. Included is a table of pitchers who seem to qualify based on a criteria of above league-average wOBA, four-seam usage above 30%, and sinker usage below 20%. Players are also highlighted in green or yellow depending on if they are “likely” or “potential” candidates for a two-seam given their arm angle.

Methodology

- Dataset: Statcast pitch data from 2023-2025 (Through 1st Half)
- Key Measures
 - Median Vertical Movement (IVB) Deviation from Four-Seam: -5.3 in.
 - Median Horizontal Movement (HB) Deviation from Four-Seam: 6.8 in.
- Key Summary Statistics Analyzed (with averages vs. sinkers)
 - CSW% (Average: 28.3%)
 - wOBA (weights from [Fangraphs’ Guts!](#), Average: 0.383)
 - Foul / Contact% (Average: 46.1%)
- Additional Models/Tools
 - GAM model to smooth summary statistics over two-dimensions (e.g. pitch movement, pitch location) to create a heatmap
 - Two basic xRV “Stuff” models, one with and one without four-seam fastball movement deviations

Visuals, Tables

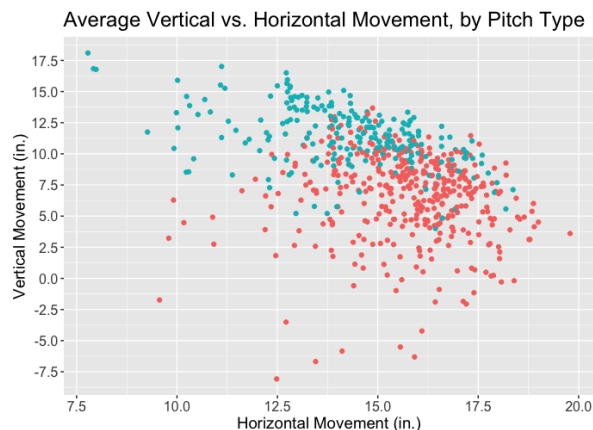


Figure 1: Average Pitch Movement by Pitch Type

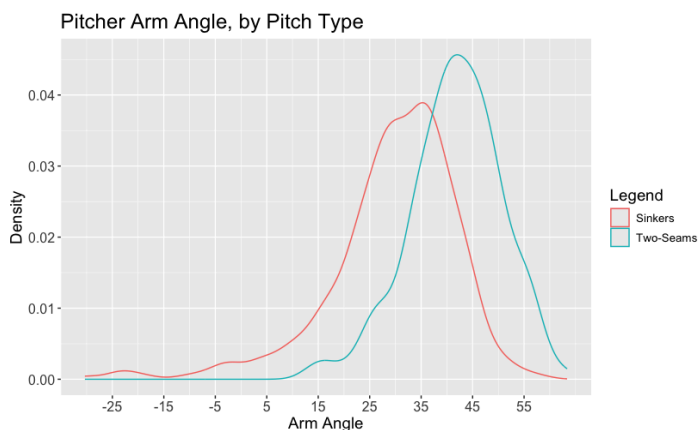
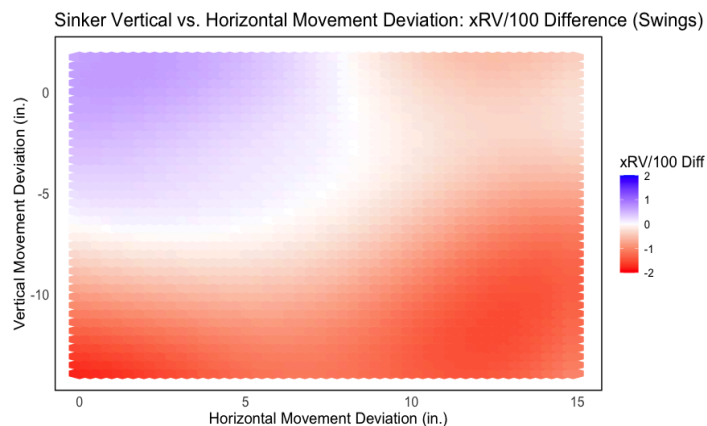
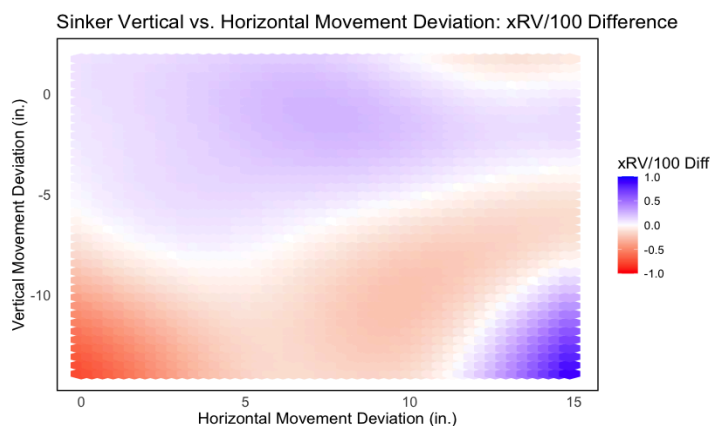


Figure 2: Distribution of Pitcher Arm Angle by Pitch Type

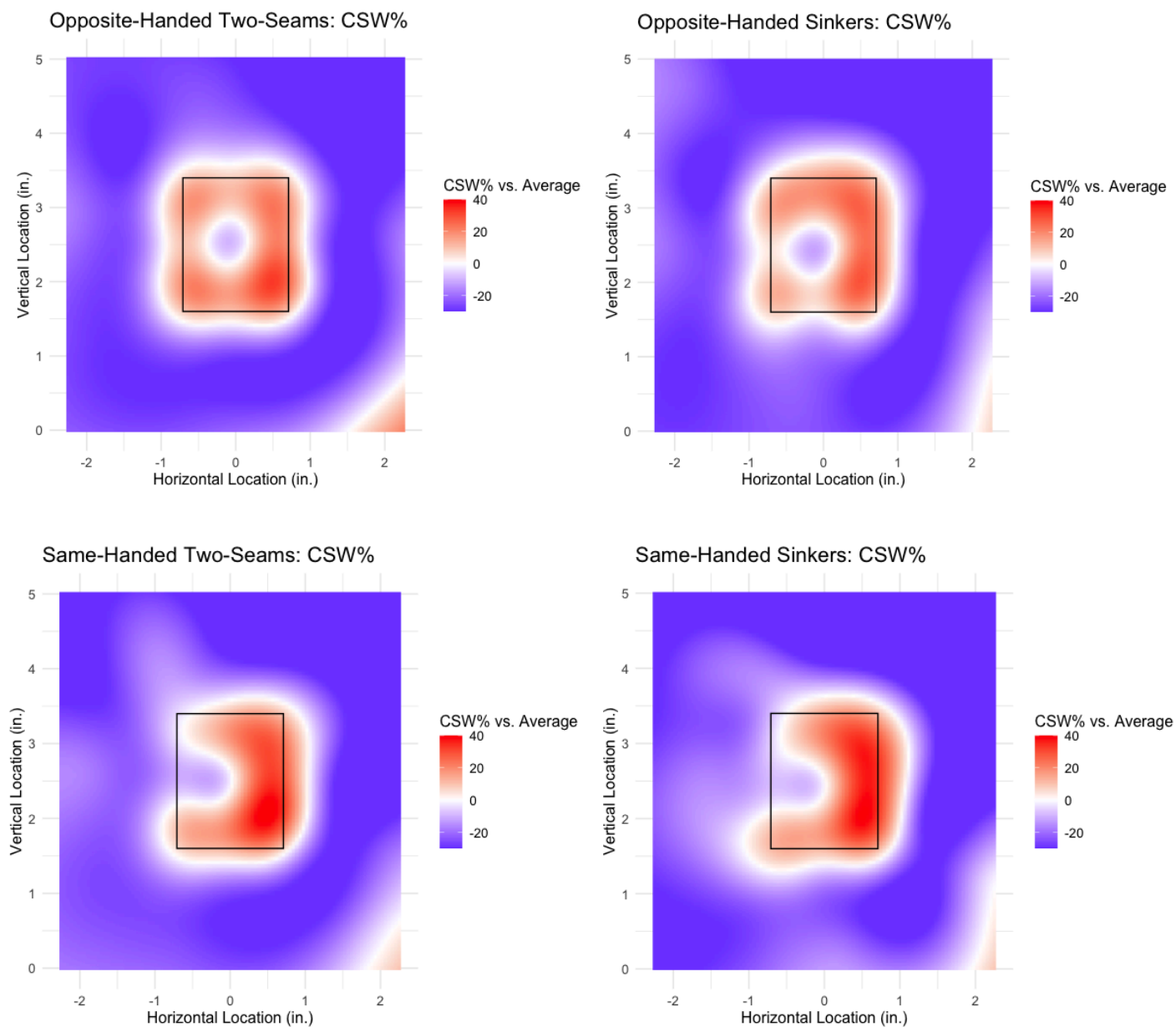
Table 1: Sinkers, by Bins of Vertical/Horizontal Movement Deviation from Four-Seam

Below Median IVB Deviation	Above Median HB Deviation	N	Whiff%	CSW%	wOBA	wOBA - lgAvg wOBA	Foul / Contact%
No	No	42,140	14.3%	27.4%	0.397	0.014	49.1%
No	Yes	42,236	14.2%	28.5%	0.371	-0.012	47.3%
Yes	No	59,772	12.4%	27.3%	0.372	-0.011	43.6%
Yes	Yes	77,816	14.1%	28.6%	0.346	-0.037	44.6%

Median IVB Deviation from Four-Seam: -5.3 in.
Median HB Deviation from Four-Seam: 6.8 in.

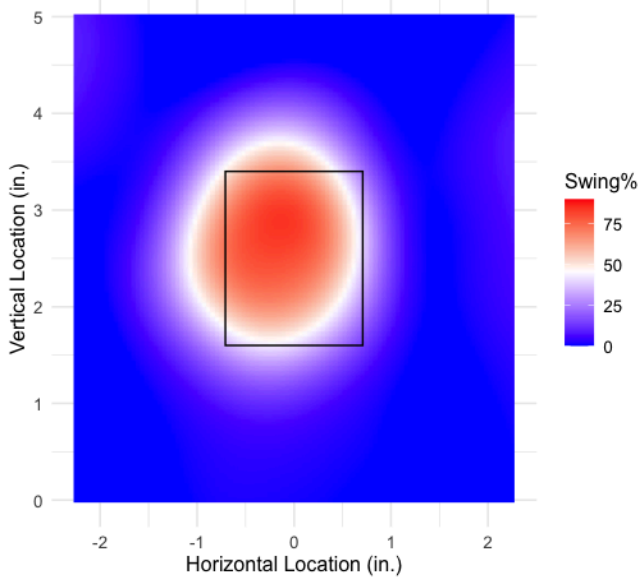


Figures 3-4: xRV/100 Difference, by Vertical and Horizontal Movement Deviation From Four-Seam Average

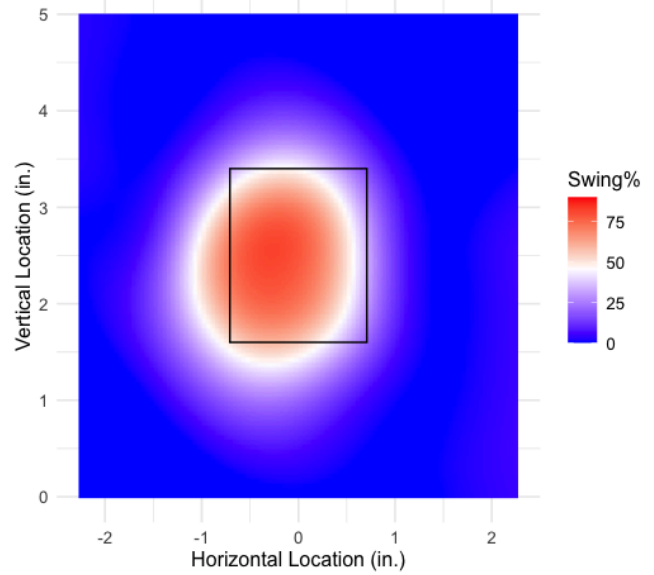


Figures 5-8: CSW% vs. Pitch Location, Grouped by Pitch Type & Handedness Matchup

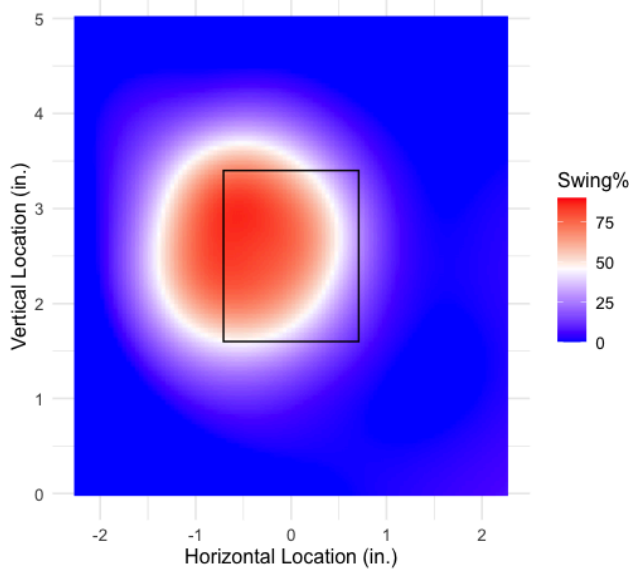
Opposite-Handed Two-Seams: Swing%



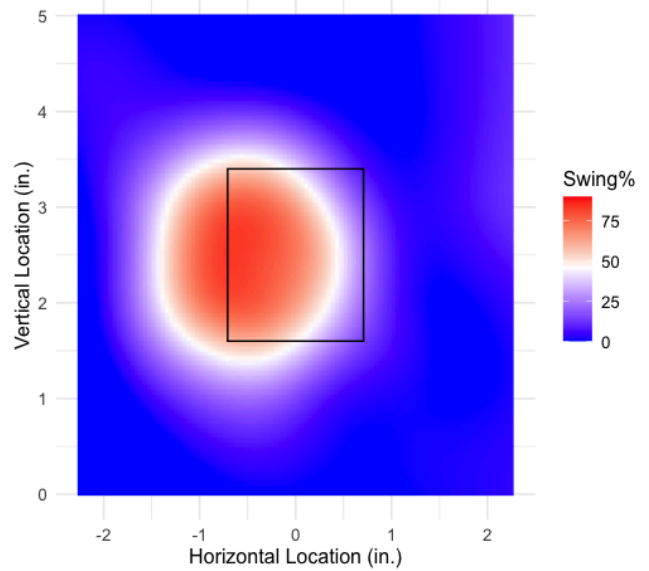
Opposite-Handed Sinkers: Swing%



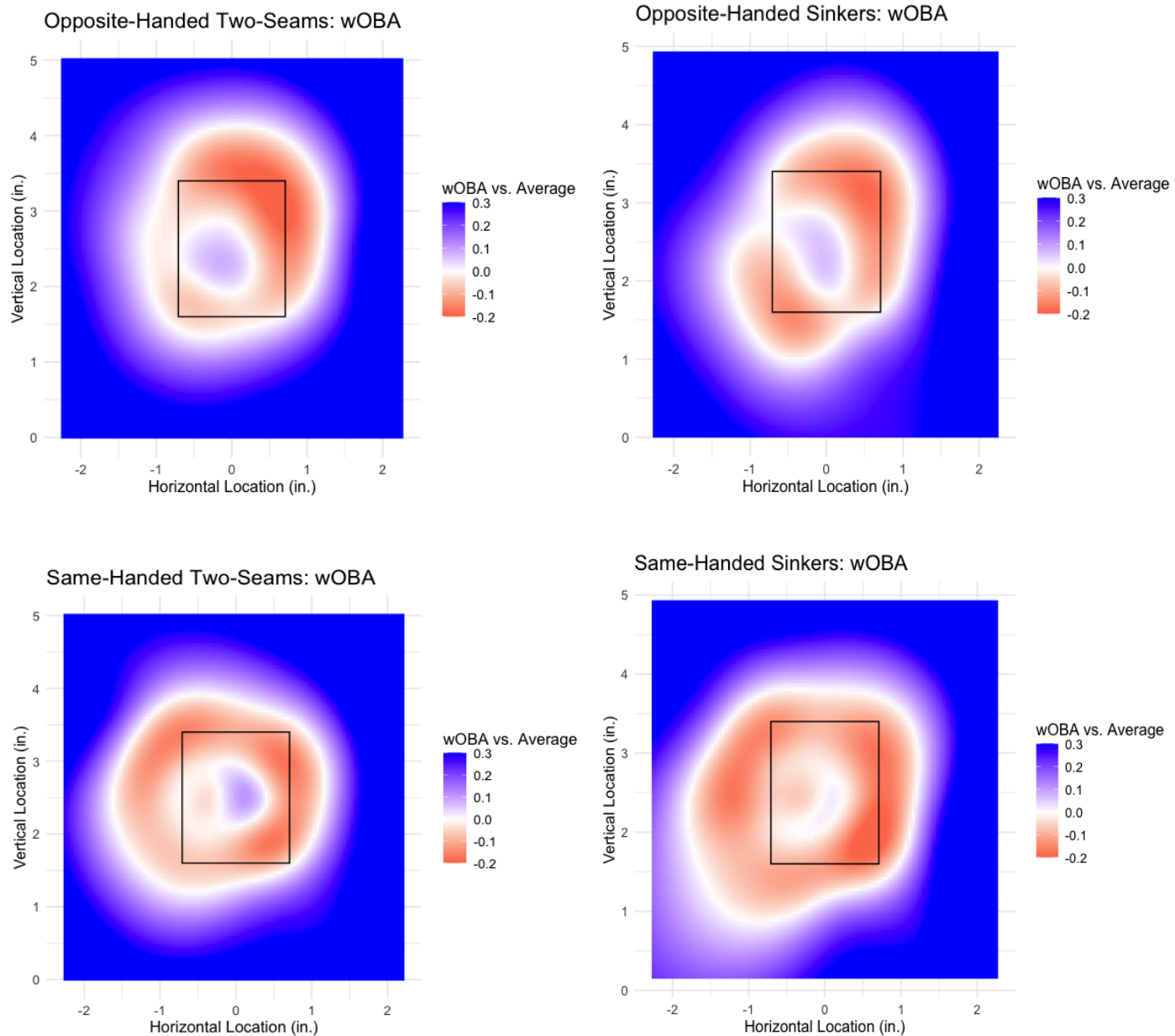
Same-Handed Two-Seams: Swing%



Same-Handed Sinkers: Swing%



Figures 9-12: Swing% vs. Pitch Location, Grouped by Pitch Type & Handedness Matchup



Figures 13-16: wOBA vs. Pitch Location, Grouped by Pitch Type & Handedness Matchup

Appendix

2025 First Half Sinker Candidates, Performance vs. Same-Handed Batters (Inner Third)							
Name	Four-Seam IVB (in.)	Four-Seam HB (in.)	Arm Angle	Four-Seam%	Sinker%	wOBA	GB% (All Hitters)
Shane Baz	16.9	9.9	36	51.6%	0%	0.504	48.5%
Dylan Cease	18.4	3.4	53	48%	18.2%	0.764	36.4%
Mike Burrows	17.2	5.4	50	50%	0%	0.453	35.6%
Grant Holmes	15.2	5.3	38	46.6%	0%	0.417	46.5%
Spencer Strider	16.5	8.8	42	71.8%	0%	0.408	39.2%
Gavin Williams	15.8	10.8	35	38.8%	8.5%	0.572	43.4%
MacKenzie Gore	17.1	-6.1	43	51.6%	0%	0.417	37.8%
Antonio Senzatela	11.7	4.4	43	67.3%	9.2%	0.500	46.7%
Mitchell Parker	18.1	-5.2	64	59.9%	0%	0.419	38.3%
Ben Casparius	18.0	2.9	47	48.3%	0%	0.424	33.8%
Robbie Ray	18.3	-8.3	47	72.6%	0%	0.437	39.5%
Bowden Francis	18.2	7.6	39	62.8%	0%	0.395	34.4%
Chase Dollander	12.9	11.2	25	51.7%	18%	0.429	42.4%
Tyler Mahle	18.4	10.6	44	56.9%	0%	0.389	41.2%
Jack Flaherty	16.0	5.8	29	56.3%	10%	0.391	36.2%
Simeon Woods Richardson	18.6	5.3	48	49%	0%	0.411	33.8%
Hunter Greene	16.5	9.4	34	80.4%	0%	0.472	30.8%
<div>🟢: Likely Two-Seam Candidates</div> <div>🟡: Potential Two-Seam Candidates</div>							