Edwin Diaz Pitcher Analysis

2025-04-18

Intro

This project will be an analysis into Edwin Diaz across 2022, 2024, and 2025 seasons (so far), looking into his decline in effectiveness and his changing approach. His 2022 season was historical, and while his metrics from 2024 indicate a strong campaign, his 2025 season has gotten off to a troubling start (NOTE: this is being made with data through 4/17/2025, 7.2 IP / 8 G into the season for Diaz).

Data and Plots

Before discussing, it's important to look into some relevant ready-available metrics to evaluate Diaz's 2022, 2024 and 2025 seasons in comparison and to understand why there are concerns.

- Over the past 3 seasons, Diaz's velocity has declined. Average velocities by year:

    - 2022 - Fastball = 99.1 MPH, Slider = 90.8 MPH
    - 2024 - Fastball = 97.5 MPH, Slider = 89.6 MPH
    - 2025 - Fastball = 96.3 MPH, Slider = 88.2 MPH

- Over the past 3 seasons, Diaz's FirstPitchStrike% has declined. FirstPitchStrike% by year:

    - 2022 - 71.4%
    - 2024 - 63.0%
    - 2025 - 45.7%

- Over the past 3 seasons, Diaz's HardHit% has increased. Defining HardHit% as percent of balls in play hit 95MPH or more, by year:

    - 2022 - 38.1%
    - 2024 - 30.3%
    - 2025 - 50.0%

- Over the past 3 seasons (with the implementation of the Pitch Clock in 2023, the season Diaz missed with injury), Diaz has had to speed up his time between pitches. With Average Pitch Tempo defined as average time between pitches, and Fast% being the percentage of pitches with 15 seconds or less between pitches (data below displays statistics for pitches with no runners on base):

    - 2022 - Average Pitch Tempo = 17.4 seconds, Fast% = 24.4%
    - 2024 - Average Pitch Tempo = 13.8 seconds, Fast% = 71.6%
    - 2025 - Average Pitch Tempo = 13.5 seconds, Fast% = 63.6%

These figures are significant and will be paired with the further data and visualizations through analysis below.

First, I want to visualize Diaz's different pitches. We can see that he only has thrown a fastball and slider over these three years (can see this by doing `unique(diaz$pitch_type)`).
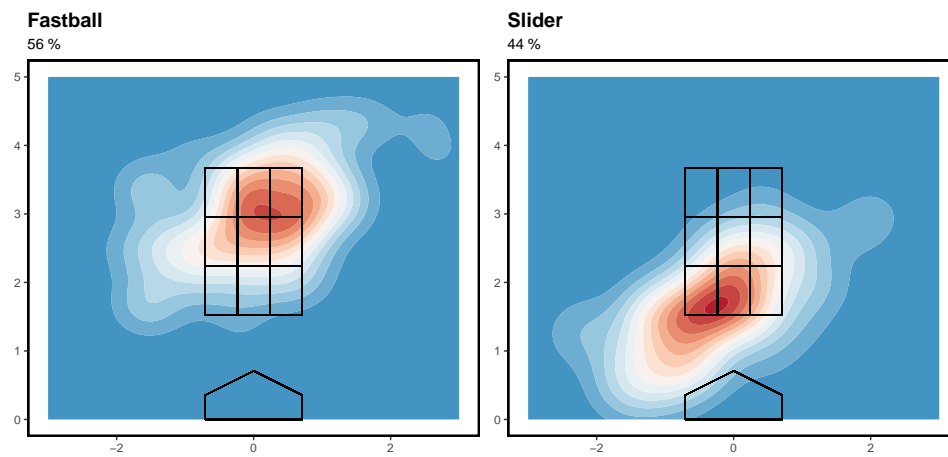
Diaz 2022 (Contour)

Fastball
42 %

Slider
58 %

Diaz 2024 (Contour)

Fastball
52 %
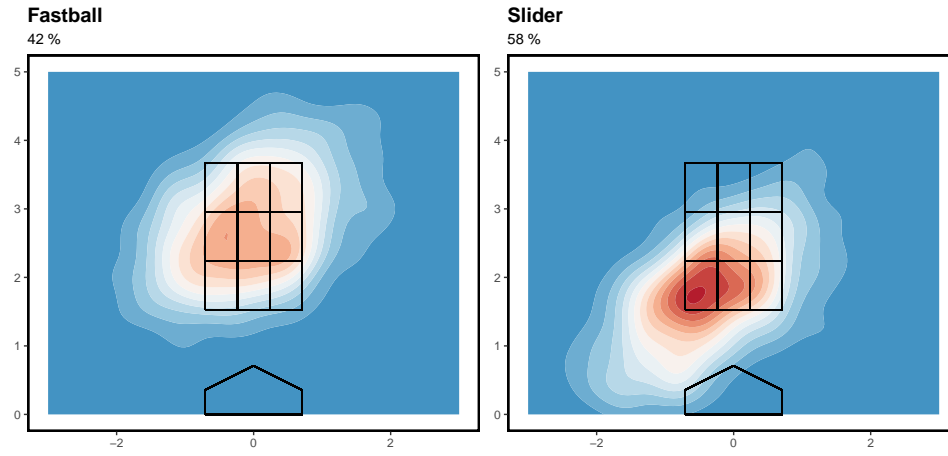
Slider
48 %

Diaz 2025 (Contour)
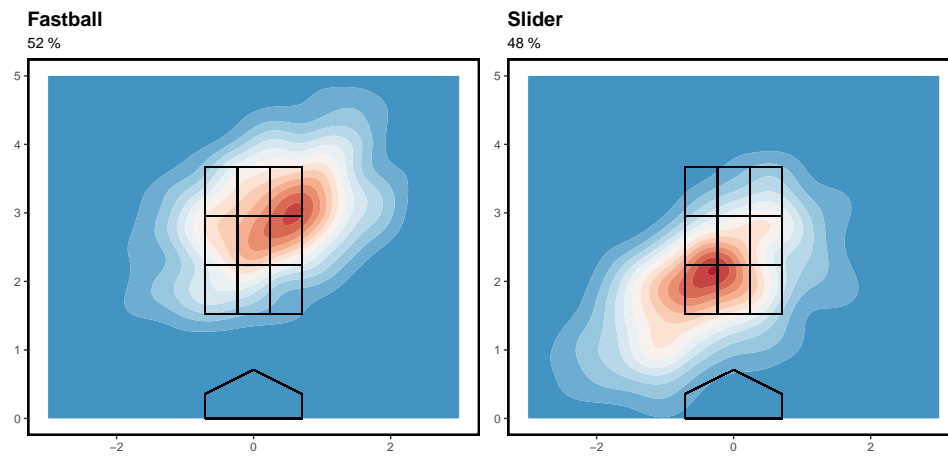
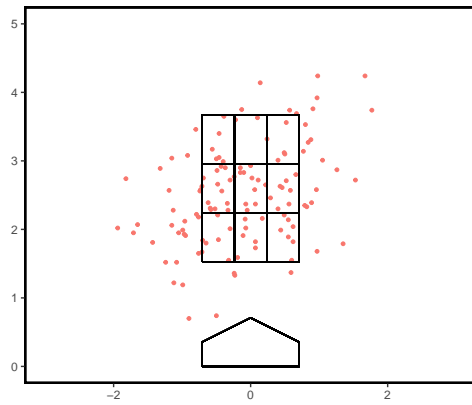**Fastball**
56 %

Slider
44 %

Diaz is less reliant on his slider compared to 2022, and his fastball has begun to creep up higher in the zone. With the fastball climbing up in the zone, instead of tunneling effectively in the left half of the zone with fastball and slider, he seems to just be trying to blow fastballs by hitters up and away. This likely doesn't work as well with the decrease in velocity as mentioned before. I also think that this shift is related to changes in control, relating back to the decrease FirstPitchStrike% as mentioned before.
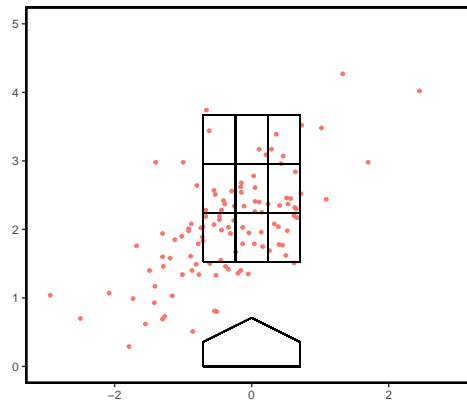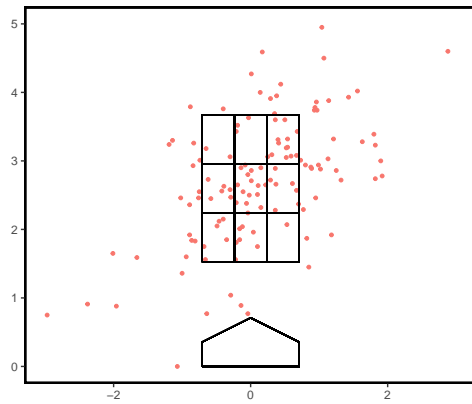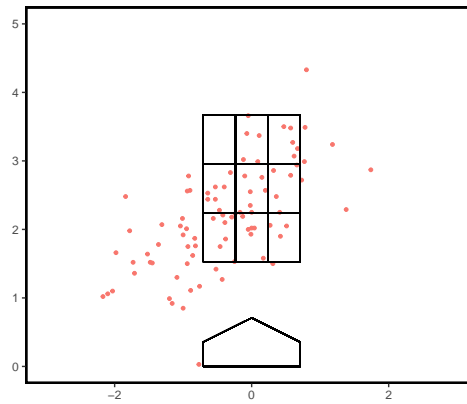
Fastball
52 %

Slider
48 %

Fastball
58 %

Slider
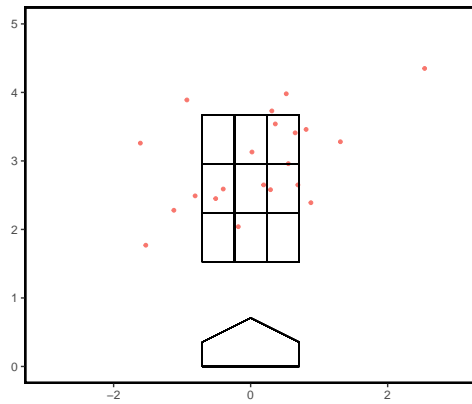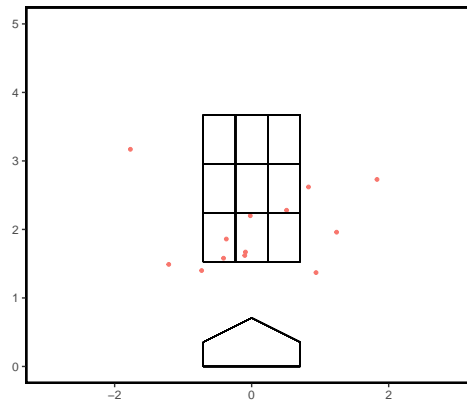42 %

Fastball
64 %

Slider
36 %

The trend of increasing fastballs shows up here still, and his fastball is moving upwards in these 0-0 counts. 2025 is tough to judge, but after 2022 his fastball seemed to be trending up in the zone further and his slider in 2025 is hitting the wrong side of the plate (inside on RHH).

Table 1: Diaz Whiff and Chase by Count Type

game_year	count_type	pitch_type	total	chases	whiffs	chase_perc	whiff_perc
2022	0-0	FF	121	10	15	8.3	12.4
2022	0-0	SL	113	17	21	15.0	18.6
2022	ahead	FF	130	24	31	18.5	23.8
2022	ahead	SL	230	83	72	36.1	31.3
2022	behind	FF	97	6	12	6.2	12.4
2022	behind	SL	104	23	25	22.1	24.0
2022	even	FF	41	8	6	19.5	14.6
2022	even	SL	92	39	36	42.4	39.1
2024	0-0	FF	125	12	10	9.6	8.0
2024	0-0	SL	89	11	16	12.4	18.0
2024	ahead	FF	143	25	27	17.5	18.9
2024	ahead	SL	147	43	26	29.3	17.7
2024	behind	FF	127	13	18	10.2	14.2
2024	behind	SL	110	23	27	20.9	24.5
2024	even	FF	80	12	11	15.0	13.8
2024	even	SL	91	25	20	27.5	22.0
2025	0-0	FF	23	0	0	0.0	0.0
2025	0-0	SL	13	1	1	7.7	7.7
2025	ahead	FF	27	4	4	14.8	14.8
2025	ahead	SL	15	4	2	26.7	13.3
2025	behind	FF	26	1	2	3.8	7.7
2025	behind	SL	30	6	8	20.0	26.7
2025	even	FF	10	1	2	10.0	20.0
2025	even	SL	9	3	3	33.3	33.3

Diaz 2022, 0–0 Chases
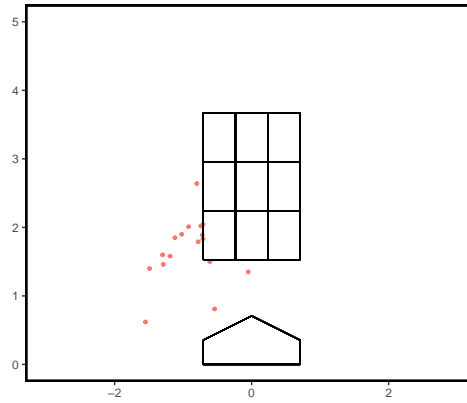
Fastball
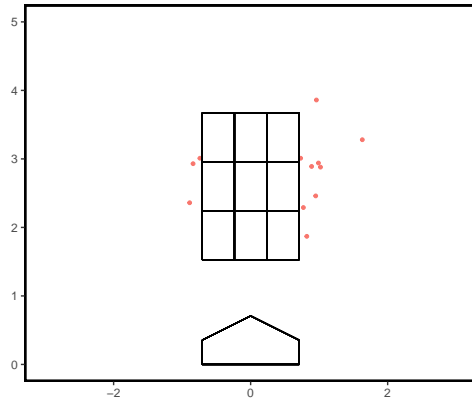0–0 Chase Percentage: 8.3 %
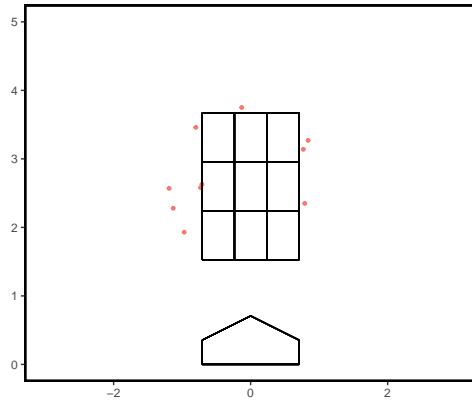
Slider
0–0 Chase Percentage: 15 %

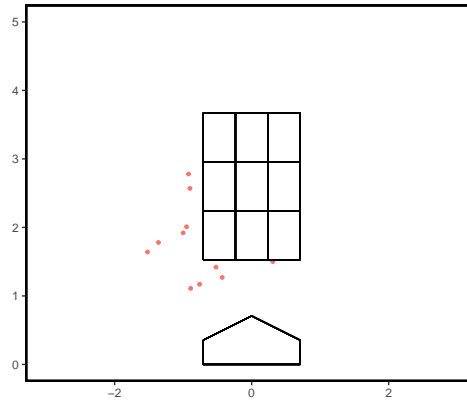*Diaz 2024, 0–0 Chases*

Fastball
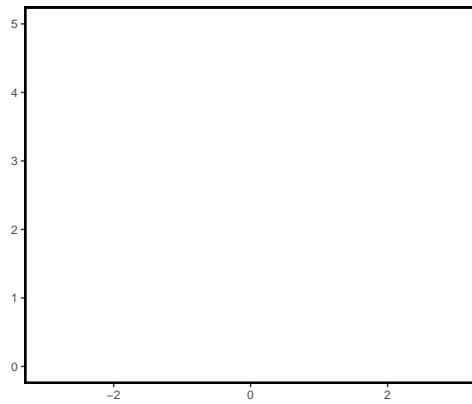0–0 Chase Percentage: 9.6 %

Slider
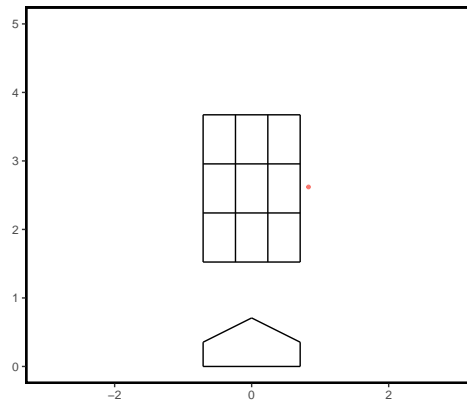0–0 Chase Percentage: 12.4 %

Diaz 2025, 0–0 Chases

Fastball
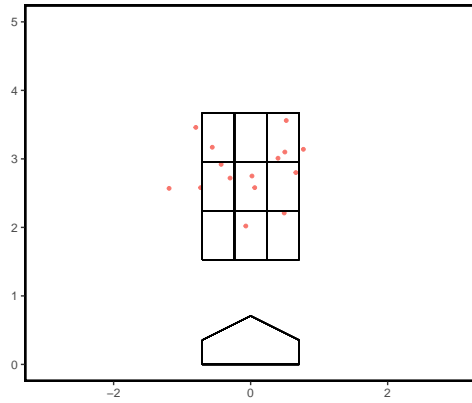0–0 Chase Percentage: 0 %

Slider
0–0 Chase Percentage: 7.7 %

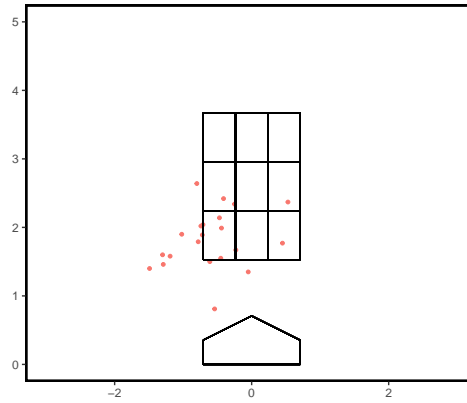*Diaz 2022, 0–0 Whiffs*

Fastball
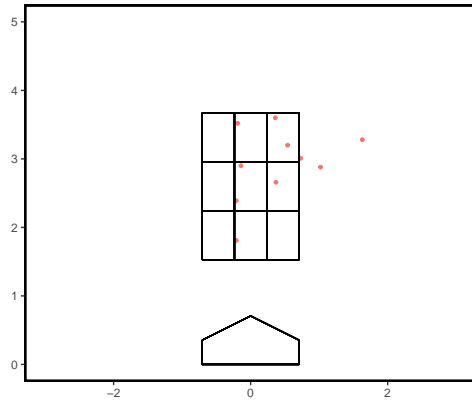0–0 Whiff Percentage: 12.4 %

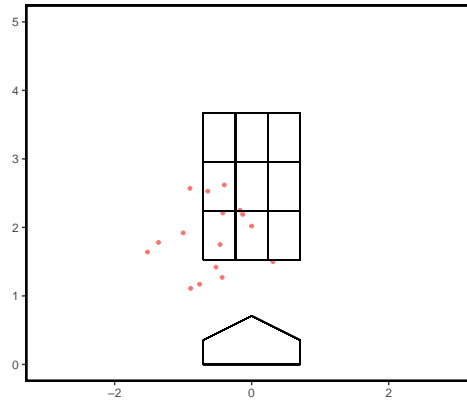**Slider**
0–0 Whiff Percentage: 18.6 %

Diaz 2024, 0–0 Whiffs

Fastball
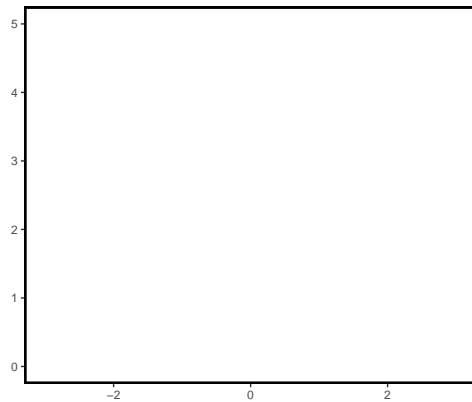0–0 Whiff Percentage: 8 %

Slider
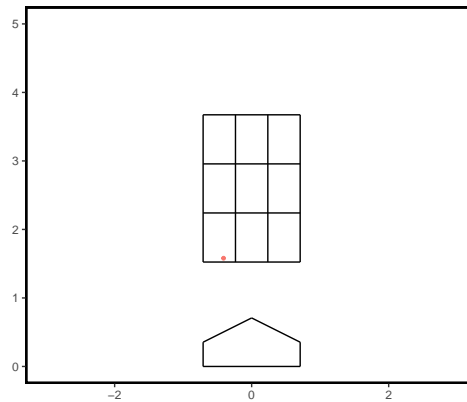0–0 Whiff Percentage: 18 %

Diaz 2025, 0–0 Whiffs

Fastball
0–0 Whiff Percentage: 0 %

Slider
0–0 Whiff Percentage: 7.7 %

Takeaways from the data and plots:

- Most strikingly, the 0-0 count chase and whiff rate fall off in 2025 is stark, with the fastball not having generated any chases or whiffs at all in 0-0 counts and slider significantly down

- Based on the plots, the 2022 fastball whiff rate in 0-0 comes from fastballs more up in the zone; with declining velocity, this may be a reason for this declining trend

- The slider chases and whiffs come from low and away according to plots; the fastball chases were most prevalent on the outer/up part in 2022

- When ahead and even in the count, the slider has remained the most effective pitch in terms of chase and whiff rates; 2022 saw the highest rates for each of these, 2024 was better ahead in the count than 2025 but 2025 has so far been better when even

- His fastball behind in counts has consistently been less successful in chase/whiff scenarios, but 2025 shows the worst performance in these spaces; 2024 was the best, with 2022 behind this

Overall: declining slider effectiveness, notably when ahead; fastball not generating as many whiffs, and not effective when behind at all.

One more area to check out is HardHit%. The improvement in 2024 and middling performance in 2022 compared with the rough start in 2025 begs the question of where this hard contact is coming from.

Table 2: Diaz Hard Hit by Count Type

| game_year	count_type	pitch_type	total	hardhit	hardhit_perc
2022	0-0	FF	11	4	36.4
2022	0-0	SL	13	6	46.2
2022	ahead	FF	12	5	41.7
2022	ahead	SL	26	10	38.5
2022	behind	FF	6	0	0.0
2022	behind	SL	12	6	50.0
2022	even	FF	4	2	50.0
2022	even	SL	12	4	33.3
2024	0-0	FF	12	4	33.3
2024	0-0	SL	7	1	14.3
2024	ahead	FF	12	3	25.0
2024	ahead	SL	27	10	37.0
2024	behind	FF	10	6	60.0
2024	behind	SL	20	4	20.0
2024	even	FF	7	3	42.9
2024	even	SL	14	2	14.3
2025	0-0	FF	1	1	100.0
2025	0-0	SL	1	0	0.0
2025	ahead	FF	2	0	0.0
2025	ahead	SL	2	0	0.0
2025	behind	FF	2	1	50.0
2025	behind	SL	4	3	75.0
2025	even	FF	3	3	100.0
2025	even	SL	1	0	0.0

Diaz 2022, HardHit

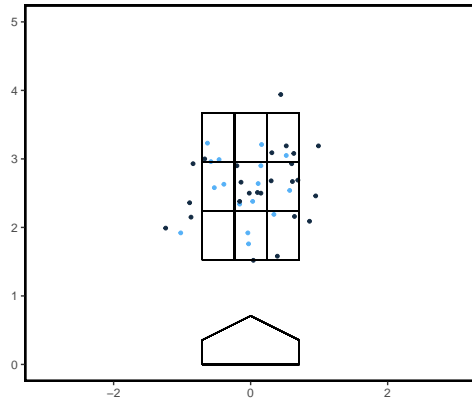**Fastball**
HardHit Percentage: 33.3 %
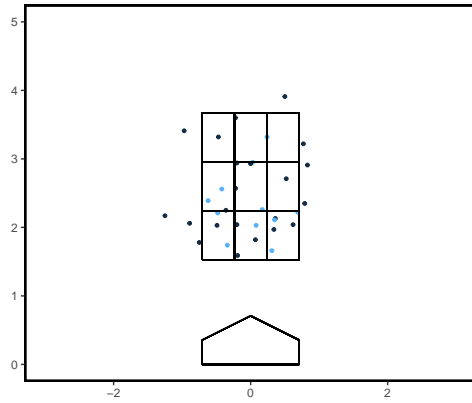
Slider
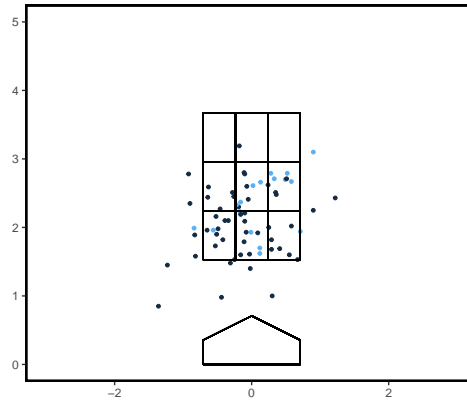HardHit Percentage: 41.3 %
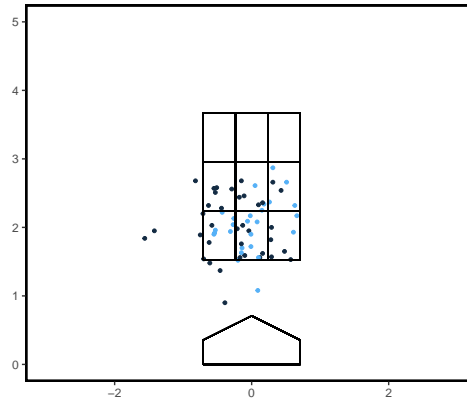
Diaz 2024, HardHit

Fastball
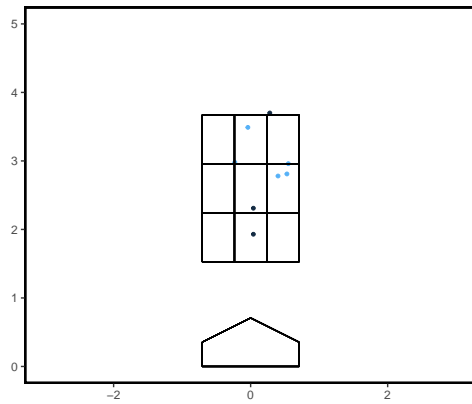HardHit Percentage: 39 %

Slider
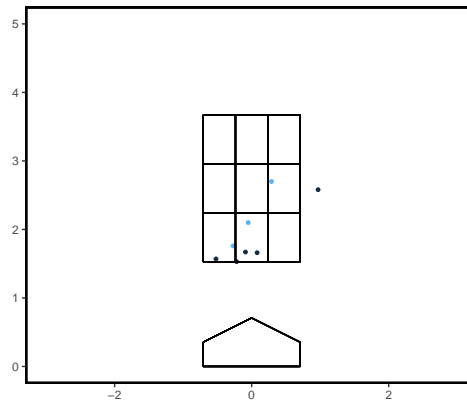HardHit Percentage: 25 %

Diaz 2025, HardHit

Fastball
HardHit Percentage: 62.5 %

Slider
HardHit Percentage: 37.5 %

Takeaways from data and plots:

- Even though the 2025 sample size is very small, the disparity with HardHit% on both fastball and sliders when behind in the count is significant - he was much better at inducing weaker contact behind in the count in 2022 compared to 2024 and 2025

- When even in the count, the slider has remained the less hard hit pitch of the two, consistent over all seasons

- Again with small sample size, but when ahead he has been good in 2025 about not drawing hard contact on either pitch - 2022 ahead in the count was not optimal for HardHit% but 2024 he was good (second to the small 2025 sample size)

- From plots, as fastball has gravitated upwards the HardHit% has gone up - could be related to both location and the declining velocity - can't blow the pitches past guys as easily

- For slider, 2022 seemed to be the highest HardHit% - he stayed in the middle of the plate for a lot of those balls in play, which likely was a factor - 2024 he elevated a little but tried working sides of the plate

Overall: increasing HardHit% when behind in the count especially; slider has been more averse to hard hit over three seasons, especially in even counts; ahead in the count he seems to be limiting harder contact; fastball harder hit as it rises (possibly with less velo) and potentially when slider is too middle.

Summary/Recommendations

Putting together these observations, it is clear that Diaz has had a decline in performance over several key areas over the past three seasons. Based on the findings discussed regarding his pitch locations, 0-0 count performance, Chase%, Whiff%, and HardHit%, along with other previously discussed key metrics, there are some important findings and recommendations that Diaz may benefit from in shifting his approach.

- Work on bringing the fastball down in the zone; with decreased velocity, staying at the top of the zone is more dangerous

- Ensure that the slider is able to be located not too high (where it seems to get hit harder), and can remain on the outer edge of the zone; for this reason, tunneling with the fastball on the left side of the plate would be ideal, which brings the fastball down as well

- Across all counts, though 0-0 especially when possible, try to be more effective at mixing in sliders; this can increase the opportunity for chases and whiffs that is much harder when the hitter can instead sit on the fastball

- Locating in 0-0 counts and staying in the zone early is necessary; when ahead in the count he is successful with the slider, but when behind he is fighting an uphill battle, especially with the fastball as hitters can more easily "predict" it coming

- When possible, practice pacing as to eliminate this as a factor; while it might not be a significant impact on his performance, the numbers suggest a radical shift in timing between pitches, and ensuring that this is not disrupting performance is key