

The Data-Driven Dugout

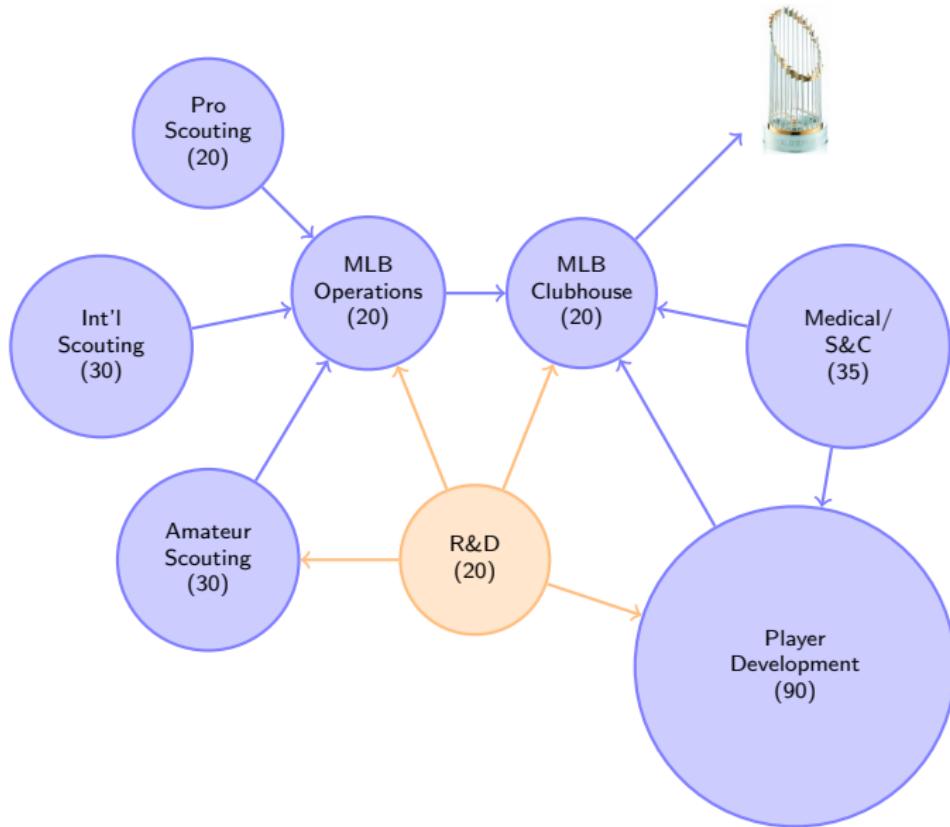
Scott Powers

Los Angeles Dodgers

November 13, 2019



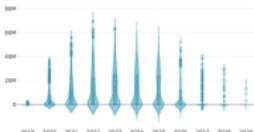
Organization of Baseball Operations



Applications of Data Science

Player Evaluation

Executives use modeling results to decide which players to target in trades and in free agency.



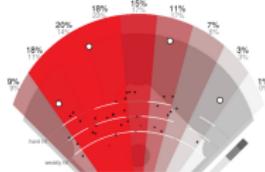
Player Development

Players use data-driven insights to tweak their game and achieve greater levels of performance.



In-Game Strategy

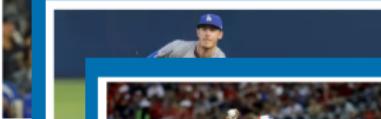
Coaches use analytics tools to position fielders and decide when to make substitutions.



Player Evaluation



Dodgers let Giancarlo Stanton get away



Cody Bellinger should be playing first base



The case for trading for Jacob deGrom



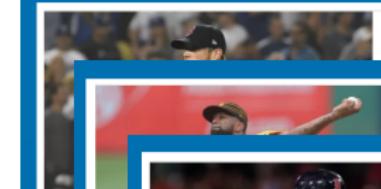
Trading for a catcher could make sense



Let's talk about the Dodgers and J.T. Realmuto



Does it make sense to switch out Pollock for Pederson?



Dodgers should sign Craig Kimbrel



MLB Trade Deadline: Dodgers frustratingly strike out

Dodgers should be first in line for a Mookie Betts trade

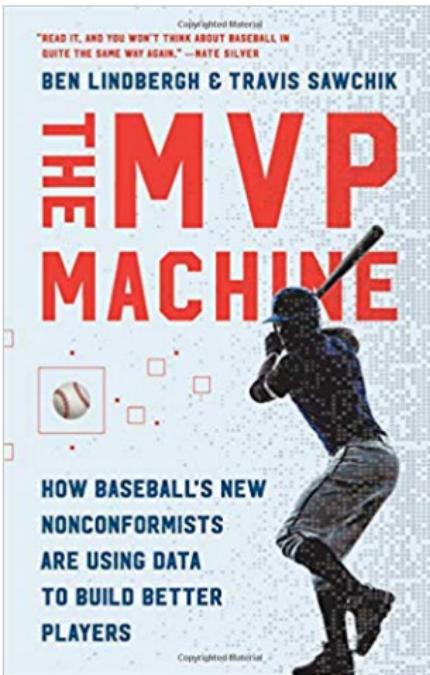
Players like him don't become available often

By [Dustin Nosler](#) | November 6 | 222 comments

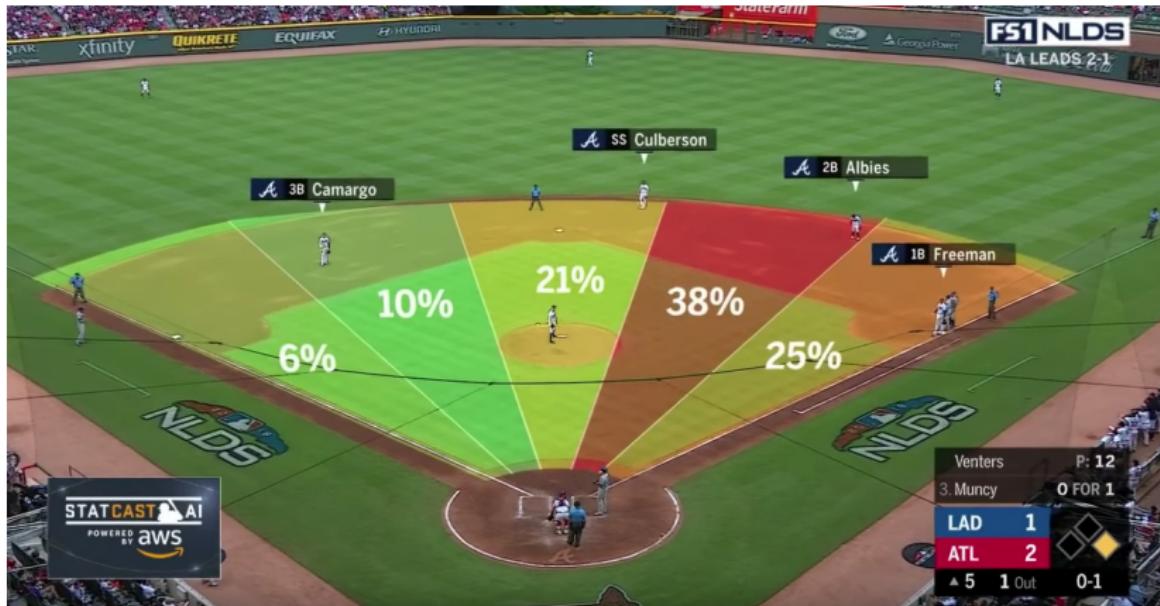
Player Development



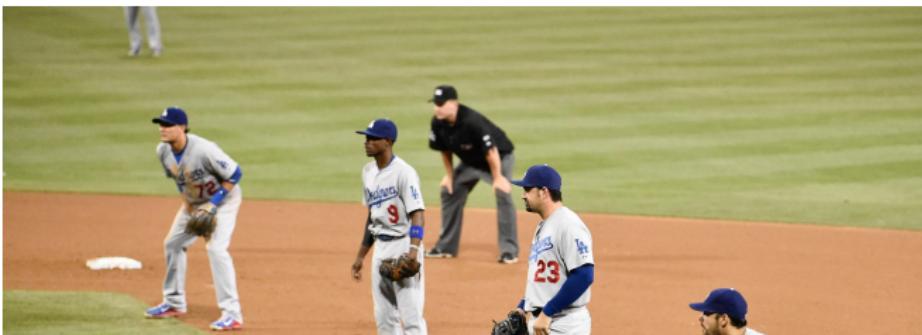
Player Development



In-Game Strategy



In-Game Strategy



Let's talk about positioning

The Dodgers struggled in multiple facets of their game in the first two contests this World Series. If they are to go back to Boston, they'll need to adjust their outfield positioning.

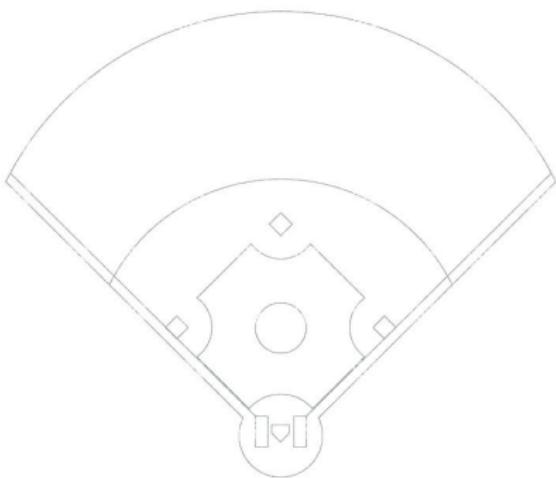
By [Dustin Nosler](#) | October 26, 2018 | 15 comments



Exercise #1

Let's talk about positioning

Let's talk about positioning

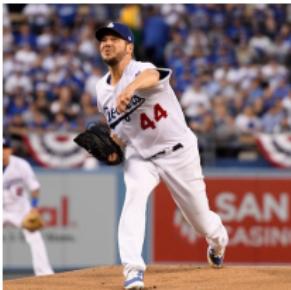


- Two separate models:
 - How often will ball be hit on trajectory z ?
 - If fielder starts at location x and ball is hit on trajectory z , how often will fielder make play?
- Nontrivial modeling challenges!
 - Need to predict distribution of trajectories, not just average
 - Mixing qualitative (player) and quantitative (trajectory) features
 - How will batters respond?
(Causal inference!)

Exercise #2
2018 World Series Game 4

October 27, 2018

After Game 3: Red Sox 2, Dodgers 1



	1	2	3	4	5	6	7	8	9
 Boston Red Sox	0	0	0	0	0	0	0	0	0
 Los Angeles Dodgers	0	0	0	0	0	0	4	0	0

When should we pull Rich Hill?

Red Sox Upcoming Batters			2018 wRC+
5	R	Xander Bogaerts	133
6	R	Eduardo Núñez	78
7	L	Brock Holt	109
8	R	Christian Vázquez	42
9		[Pitcher]	
1	R	Mookie Betts	185
2	L	Andrew Benintendi	122
3	R	Steve Pearce	140
4	R	JD Martinez	170

*Rich Hill thru 6 innings:
82 pitches, 6 strikeouts, 2 walks, 1 hit
(currently facing 3rd time thru order)*

Available Pitchers		2018 xFIP	vLHB	vRHB
L	Rich Hill	4.83	3.33	
L	Scott Alexander	2.35	4.06	
L	Alex Wood	2.59	4.15	
R	Kenley Jansen	3.74	3.40	
R	Dylan Floro	3.78	3.72	
R	Ryan Madson	4.78	3.35	

Red Sox Available Batters			2018 wRC+
L	Mitch Moreland	101	
L	Rafael Devers	90	
L	Jackie Bradley Jr	90	
S	Blake Swihart	64	
S	Sandy León	34	

Exercise #3
2019 MLB Trade Deadline

August 26, 2019

NL West Standings

NL West		W	L	PCT	GB	E#	WCGB	L10	STRK	RS	RA	DIFF	X-W/L
 LA Dodgers		86	46	.652	-	-	-	5-5	L1	719	505	+214	87-45
 San Francisco		65	65	.500	20.0	12	4.0	5-5	W2	577	627	-50	60-70
 Arizona		65	66	.496	20.5	11	4.5	4-6	W1	671	613	+58	71-60
 San Diego		60	69	.465	24.5	8	8.5	5-5	W1	571	621	-50	60-69
 Colorado		58	73	.443	27.5	4	11.5	4-6	L4	690	768	-78	59-72

538 MLB Predictions

TEAM $\frac{\Delta}{\Delta}$	DIVISION $\frac{\Delta}{\Delta}$	AVG. SIMULATED SEASON				POSTSEASON CHANCES			
		TEAM RATING $\frac{\Delta}{\Delta}$	1-WEEK CHANGE $\frac{\Delta}{\Delta}$	RECORD $\frac{\Delta}{\Delta}$	RUN DIFF. $\frac{\Delta}{\Delta}$	MAKE PLAYOFFS $\frac{\Delta}{\Delta}$	WIN DIVISION $\frac{\Delta}{\Delta}$	WIN WORLD SERIES $\frac{\Delta}{\Delta}$	
 Dodgers 86-46	NL West	1590	-2	105-57	+250	>99%	>99%	23%	

Who should we trade for a reliever?



Edwin Díaz, Mets

'18-'19: 41% K, 7% BB, 2.40 xFIP



Felipe Vázquez, Pirates

'18-'19: 33% K, 7% BB, 2.93 xFIP

Dodgers Top 15 Prospects

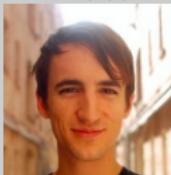
1	SS/2B	Gavin Lux
2	RHP	Dustin May
3	C	Keibert Ruiz
4	RHP	Josiah Gray
5	SS	Jeter Downs
6	RHP	Tony Gonsolin
7	RHP	Mitchell White
8	RHP	Dennis Santana
9	C	Diego Cartaya
10	OF	DJ Peters
11	SS/2B	Jacob Amaya
12	RHP	Michael Grove
13	2B/SS	Omar Estevez
14	3B	Miguel Vargas
15	2B/3B	Devin Mann

Madison Hobbs
Scripps '19
The Aerospace Corp



ZipRecruiter®

Tim Schaaf
Pomona '17



AEROSPACE



Jake Coleman
Pomona '13
Duke PhD Statistics '19
Dodgers



LA
DODGERS

Panel Discussion

Thursday, November 14, 2019

4:15 – 5:30pm

Emmy Noether Room, Millikan 1021

in

Kevin Kannappan
Pomona '16
LinkedIn
UCSD MS Data Science



Melissa Hooke
Pomona '19
JPL



JPL

Jet Propulsion Laboratory

Questions?