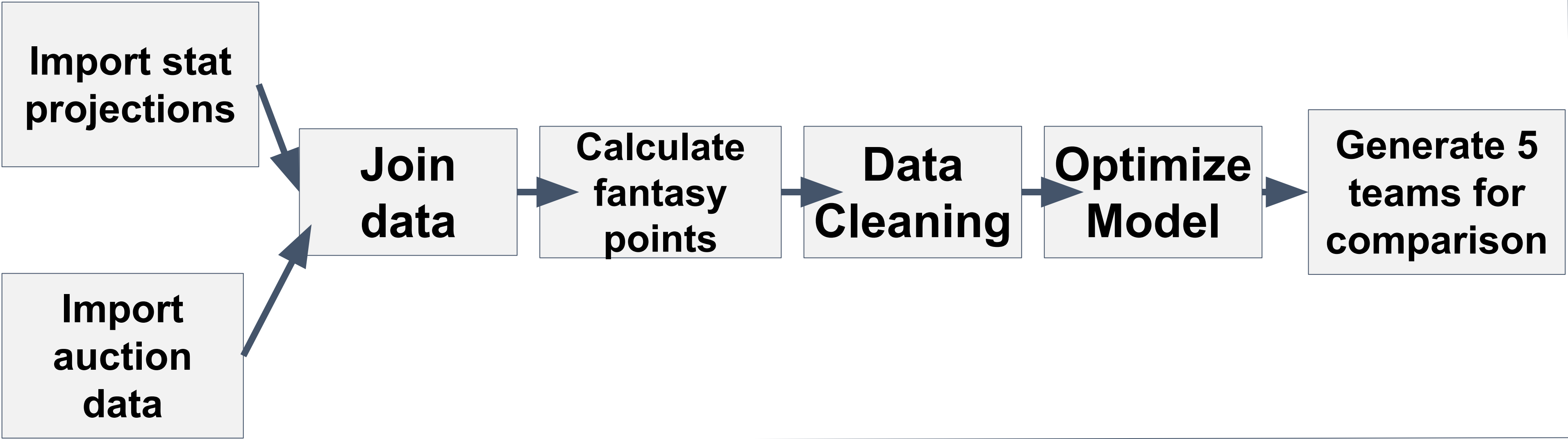


Abstract

The use of optimization in fantasy sports is transforming how teams are drafted, allowing for data-driven decision-making. There is a growing need for strategies that efficiently allocate budget while maximizing fantasy point potential. However, given the constraints of auction-based drafting and the complexity of balancing positional constraints with player projections, drafting an optimal team can be challenging. **In this poster, I share how I applied optimization techniques to construct a fantasy baseball team.**

Process Overview



Data Sources



The Auction values were taken from Razzball.com, a great source for fantasy baseball projections and player valuations.



The stat projections were taken from FanGraphs. FanGraphs offers detailed projections and performance metrics, making it a valuable resource for fantasy managers seeking to make informed, data-driven decisions.

Data Cleaning

This project was a great opportunity to refine my data cleaning skills, as I encountered several challenges along the way. First, I noticed that some players had dollar values of \$0 or less, which didn’t make sense since all drafted players should have a minimum value of \$1. I adjusted any values below \$1 to be equal to \$1.

Next, I addressed issues with players who had multiple positions listed. Since the model couldn't handle multiple positions due to positional constraints, I manually adjusted these in Excel to ensure each player had one listed position.

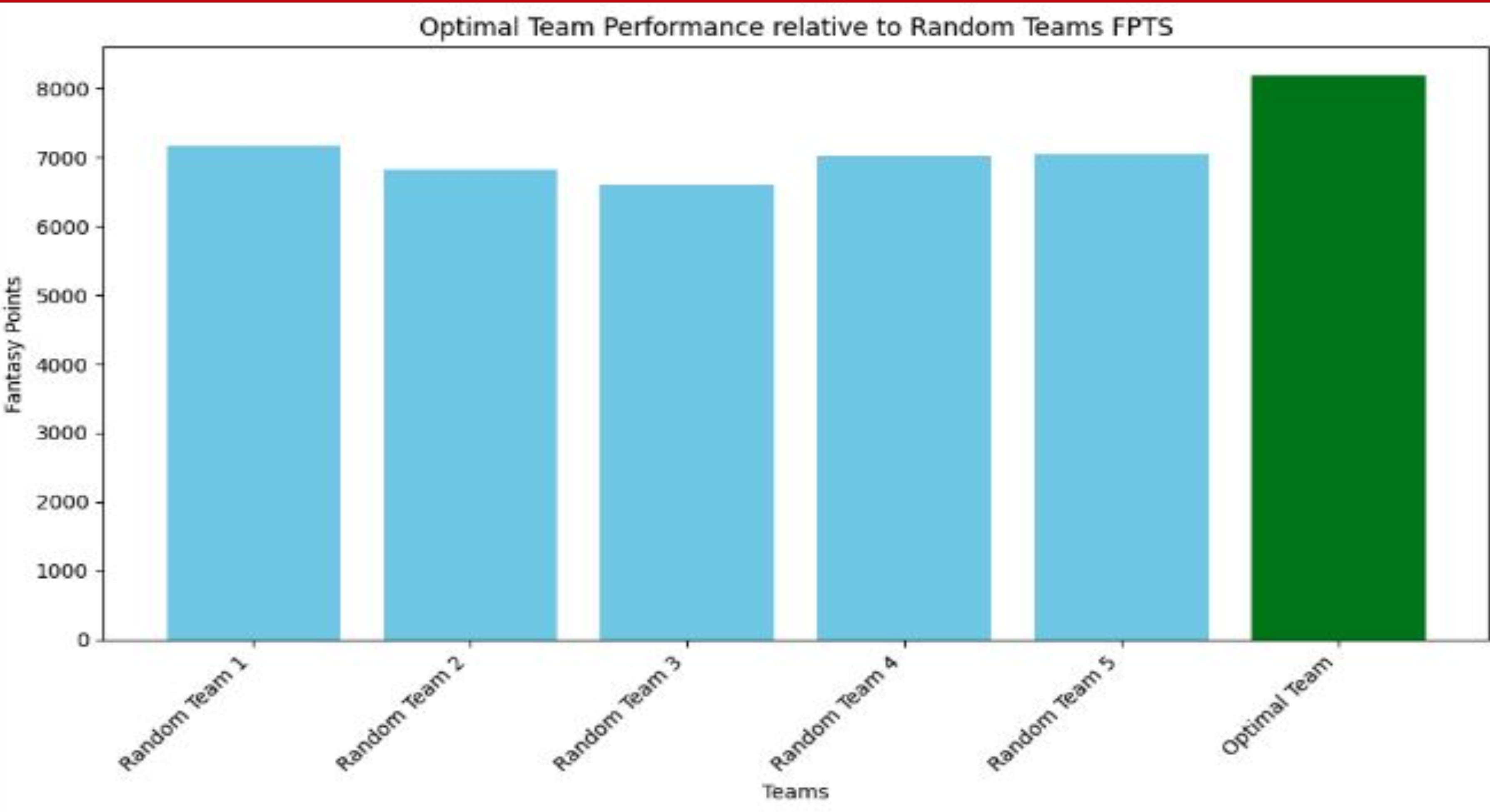
Finally, I accounted for Shohei Ohtani’s unique two-way player status. Since he appears in FanGraphs projections as both a pitcher and a hitter, he was duplicated in my dataset, leading to double counting in the model. To fix this, I removed one instance of him.

Final Team

	Name	Team	POS	Dollars	FPTS	HR	RBI	W	SV	P_SO
3	Aaron Judge	NY Yankees	OF	36.901578	345.0580	45.9684	112.6790	0.0000	0.000	0.0000
4	Aaron Nola	PHI	SP	14.649254	573.1294	0.0000	0.0000	12.1914	0.000	192.4510
8	Alejandro Kirk	TOR	C	1.000000	140.3926	10.6661	48.5591	0.0000	0.000	0.0000
45	Bryson Stott	PHI	2B	2.674383	190.5927	14.5706	66.0966	0.0000	0.000	0.0000
53	Carlos Correa	MIN	SS	4.599377	189.2762	19.3895	68.6677	0.0000	0.000	0.0000
60	Christian Yelich	MIL	OF	7.646555	210.6292	18.0504	67.7047	0.0000	0.000	0.0000
72	Corey Seager	TEX	SS	19.890204	257.6140	28.9046	80.6724	0.0000	0.000	0.0000
95	Emmanuel Clase	CLE	RP	16.210041	394.5050	0.0000	0.0000	3.8126	34.380	71.6869
103	Framber Valdez	HOU	SP	15.422552	574.0831	0.0000	0.0000	12.4739	0.000	187.3760
104	Francisco Alvarez	NY Mets	C	1.000000	140.6129	21.1903	62.1449	0.0000	0.000	0.0000
187	Kevin Gausman	TOR	SP	11.828550	556.2091	0.0000	0.0000	11.6361	0.000	193.3300
195	Kyle Schwarber	PHI	OF	12.351650	249.6893	39.9736	87.4156	0.0000	0.000	0.0000
204	Logan Webb	SFG	SP	13.444659	585.2670	0.0000	0.0000	12.3465	0.000	174.9110
231	Max Muncy	LAD	3B	1.000000	170.8967	24.4554	70.9933	0.0000	0.000	0.0000
242	Mike Trout	LAA	OF	4.089047	206.2153	30.7435	84.8089	0.0000	0.000	0.0000
256	Nico Hoerner	CHC	2B	1.775840	181.8291	8.2486	55.8259	0.0000	0.000	0.0000
273	Raisel Iglesias	ATL	RP	14.095108	382.4416	0.0000	0.0000	3.8636	32.070	77.5475
284	Royce Lewis	MIN	3B	6.215447	176.0432	26.4949	76.2944	0.0000	0.000	0.0000
292	Ryan Walker	SFG	RP	18.384451	398.9695	0.0000	0.0000	3.9233	31.721	85.4000
299	Seth Lugo	KCR	SP	1.000000	525.6086	0.0000	0.0000	11.3505	0.000	172.0960
303	Shohei Ohtani	LAD	OF	44.432398	811.5880	43.0829	104.4030	9.9046	0.000	162.7550
309	Spencer Steer	CIN	1B	1.000000	189.5142	19.4956	70.4780	0.0000	0.000	0.0000
325	Triston Casas	BOS	1B	5.570224	212.8843	28.3308	85.9714	0.0000	0.000	0.0000
352	Zach Eflin	BAL	SP	4.737170	530.4423	0.0000	0.0000	11.6731	0.000	155.8090

Team Results

Statistic	Optimal Team	Average among 5 random teams
Dollars Spent	259.91	259.08
Fantasy Points	8193.49	7015.31
HR	379.57	323.77
TB	3521.27	3602.39
RBI	1142.71	1108.16
W	93.17	74.24
K	1473.36	1280.75
SV	98.17	67.11



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