



ASSESSING VALUE:

A CAP EFFICIENCY ANALYSIS OF MLB 1ST BASEMEN CONTRACTS

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STEP 0: INTRODUCTION

Q. Are the players worth their contract?

: Creating a measure on player cap efficiency, provide an analysis and supporting argument for whether there are any players who are not “worth” their contract for the past season (2023) in the league

SPORTS:



POSITIONS:











First Baseman



STEP 1: DATA SCRAPING

SELECTING FIRST BASEMEN

Utilizing 'spotrac.com' data, we chose 43 players designated as first basemen and scrap their salaries

<div><div></div><div>MLB 1st Base Spending - Cap A real-time look at how MLB teams are spending their 2023 cap dollars on 1st Bases. </div></div>		
RANK	PLAYER	2023 PAYROLL DOLLARS
1	 Christian Walker	\$6,500,000
2	 Matt Olson	\$21,000,000
3	 Ryan O'Hearn	\$1,400,000
4	 Ryan Mountcastle	\$738,400
5	 Bobby Dalbec	\$720,000
	 Jared Young	\$720,000
7	 Andrew Vaughn	\$760,000
8	 Joey Votto	\$25,000,000

PERFORMANCE METRICS

Data from 'baseball-reference.com' was extracted to compile the necessary performance metrics for evaluating cap efficiency among first basemen

Offensive Efficiency (OE)	Defensive Efficiency (DE)
Games Played (G) Plate Appearances (PA)	Games Played (G) Plate Appearances (PA)
On-Base Plus Slugging (OPS)	Fielding Percentage (Fld%)
Runs Batted In (RBI)	Total Zone Total Fielding Runs Above Average (Rtot)
Home Runs (HR)	Defensive Runs Saved (Rdrs)

STEP 2: ANALYSIS

<Formula>

- Normalized Value= (Value–Min) / (Max–Min)
- OE = 0.4 * OPS + 0.2 * HR + 0.2 * RBI + 0.2 * PA/G
- DE = 0.4 * Fld% + 0.3 * Rdrs + 0.2 * Rtot + 0.1 * G/PA

<Ranking and Performance Analysis>

Salary Tier	Salary Range (\$)	Example Players
Tier 5	0 - 1,000,000	"Ryan Noda", "Mike Ford"
Tier 4	1,000,001 - 5,000,000	"Christian Walker", "Nathaniel Lowe"
Tier 3	5,000,001 - 10,000,000	"Josh Naylor", "Wilmer Flores"
Tier 2	10,000,001 - 20,000,000	"Pete Alonso", "Jose Abreu"
Tier 1	Over 20,000,000	"Matt Olson", "Freddie Freeman"

Value Judgment =

$$\begin{cases} \text{"Worth Contract"} & \text{if Performance Rank} \leq \text{Median Rank of Tier} \\ \text{"Questionable Value"} & \text{otherwise} \end{cases}$$

NORMALIZATION

- To facilitate direct comparison and aggregation of different metrics, the data underwent Min-Max normalization, rescaling values within a 0 to 1 range.

OFFENSIVE EFFICIENCY (OE)

- Our Offensive Efficiency formula for first basemen prioritizes OPS, HR, RBI, and PA/G, emphasizing power, run production, and consistent lineup presence.

DEFENSIVE EFFICIENCY (DE)

- Our Defensive Efficiency metric combines Fld%, Rdrs, Rtot, and PA/G, highlighting reliability, run prevention, overall defensive value, and consistency.

PAYROLL SALARY

- For traded players, we analyzed statistics based on the team that paid their salary, ensuring accurate assessment of financial value.

RANKING AND PERFORMANCE ANALYSIS

- Players are assigned to salary tiers and evaluated against the median performance rank within their tier, receiving a 'Worth Contract' designation if above median or 'Questionable Value' if below, summarizing their value relative to salary.

STEP 3: FINDINGS

RESULTS

- **Tier 1 Excellence:** Top-tier earners like Matt Olson and Freddie Freeman validate their high salaries with superior performance, proving their contracts' worth.
- **Emerging Value in Lower Tiers:** In Tier 5, emerging talents like Ryan Mountcastle, Andrew Vaughn, and Joey Meneses are recognized for offering substantial value on minimal salaries, showcasing their untapped potential and cost-effectiveness.
- **Questionable Value Concerns:** Players such as Carlos Santana (Tier 3) and Josh Bell(Tier 2) are labeled "Questionable Value" due to their performance not aligning with their higher salary within their respective tiers

INSIGHTS

The cap efficiency analysis provides General Managers with a data-driven method to identify high-value players, negotiate fair contracts, and optimize team composition based on performance relative to salary. It aids in distinguishing between undervalued talents and potential overpays, facilitating strategic financial planning and talent acquisition. This approach ensures resources are allocated efficiently, supporting informed decisions that enhance team competitiveness and fiscal health.

Name	Performance Rank	2023 Payroll Dollars	Salary Tier	Value Judgment
Matt Olson	1	21000000	Tier 1	Worth Contract
Pete Alonso	2	14500000	Tier 2	Worth Contract
Freddie Freeman	3	27000000	Tier 1	Worth Contract
Christian Walker	4	6500000	Tier 3	Worth Contract
Nathaniel Lowe	5	4050000	Tier 4	Worth Contract
Yandy Diaz	6	6000000	Tier 3	Worth Contract
Paul Goldschmidt	7	26000000	Tier 1	Worth Contract
Bryce Harper	8	27538462	Tier 1	Questionable Value
Josh Naylor	9	3350000	Tier 4	Worth Contract
Ryan Mountcastle	10	738400	Tier 5	Worth Contract
Wilmer Flores	11	6500000	Tier 3	Worth Contract
Vladimir Guerrero Jr	12	14500000	Tier 2	Worth Contract
Carlos Santana	13	6725000	Tier 3	Questionable Value
Dominic Smith	14	2000000	Tier 4	Worth Contract
Andrew Vaughn	15	760000	Tier 5	Worth Contract
Joey Meneses	16	723300	Tier 5	Worth Contract
Brandon Belt	17	9300000	Tier 3	Questionable Value
Jose Abreu	18	19500000	Tier 2	Worth Contract
Spencer Torkelson	19	723100	Tier 5	Worth Contract
Garrett Cooper	20	4200000	Tier 4	Worth Contract
Josh Bell	21	16500000	Tier 2	Questionable Value
Ryan Noda	22	720000	Tier 5	Worth Contract