October Regression: Explaining Why Some Hitters Fall Off in the Postseason

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Google Colab Link:

https://colab.research.google.com/drive/1cvcSkDoREBK_Ji4ZBewllt_4wG44V3zD?usp=sharing

1 Introduction

For decades, traditional baseball wisdom battled with modern analytics to answer the question of postseason performance. Traditionalists argue that October baseball ("the playoffs") is a fundamentally different game, requiring "clutch" hitting, ball-in-play skills, and a departure from the "Three True Outcomes" (Home Runs, Walks, Strikeouts) that dominate the regular season. On the other hand, more recent sabermetric literature argues that "clutch" is largely a myth. The studies argue that any perceived drop in performance is simply variance or the result of facing superior pitching.

Recent academic literature has attempted to quantify this decline more rigorously. In a longitudinal study spanning 109 years within the MLB, Otten and Barrett (2013) analyzed the relationship between "pressure" and performance. Their research confirmed a statistically significant drop in offensive metrics during the postseason compared to the regular season. Unlike previous studies that attributed this solely to better pitching, Otten and Barrett utilized "clutch" performance definitions to argue that the high stakes environment itself contributes to the decline, effectively creating a "pressure tax" on offensive production.

Building on this, Conforti et al. (2021) looked to address the "Regression to the Mean" phenomenon. Their mixed-model analysis revealed that "excellent" regular season performers suffered the steepest declines in hitting performance during the postseason. Specifically, they found that excellent batters saw their Weighted Runs Created Plus (wRC+) drop from an average of 117.0 in the regular season to 94.8 in the postseason. This supports the hypothesis that elite hitters have the furthest to fall. Still, it leaves open the question of which specific skills are most vulnerable to this regression.

In this paper, we look to investigate which offensive skills translate the best when moving from the regular season to the postseason. By modeling Postseason OPS as a function of four distinct regular-season components, we aim to identify which specific traits are resilient to playoff pressure and which ones depreciate.

2 Methodology

For our calculation, we considered all MLB seasons from 1969 to 2024, excluding the 1981, 1994, 1995, and 2020 seasons. We selected 1969 as the starting year because it marked the incorporation of a new playoff system that expanded beyond the traditional two-team World Series. The 1981, 1994, 1995, and 2020 seasons were classified as irregular seasons due to disruptions caused by player strikes or the COVID-19 pandemic.

As noted in previous literature, predicting playoff performance is challenging due to the limited sample size inherent in postseason data. In fact, our initial screening of the data revealed that 52.92% of players had 10 or fewer at-bats (ABs) per postseason, resulting in low reliability for single-season analysis. Hence, this study aggregates player statistics at the career level rather than the season level, considering career statistics in our calculations. To reduce noise, we filtered for players who played the equivalent of at least 2 to 3 full postseason series, giving a minimum threshold of 50 career postseason plate appearances. This threshold is beyond the minimum criteria (15 PA) utilized in comparable academic studies (Conforti et al., 2021).

2.1 Predictor Variables

To avoid overlap between predictor variables, we considered four distinct, non-overlapping components. This ensures that each variable measures a specific skill without double counting events.

- **Batting Average (AVG):** Hits divided by At-Bats (H/AB)
  Purpose: Measures the player's contact ability.
- **Isolated Power (ISO):** Slugging Percentage minus Batting Average ($SLG - AVG$)
  Purpose: Measures the player's raw power.
- **Walk Percentage (BB%):** Bases on Balls divided by Plate Appearances (BB/PA)
  Purpose: Measures the player's plate discipline.
- **Strikeout Percentage (SO%):** Strikeouts divided by Plate Appearances (SO/PA)
  Purpose: Measures the player's whiff tendency.

2.2 Model

$$PostOPS = \beta_0 + \beta_{AVG}(AVG_{reg}) + \beta_{ISO}(ISO_{reg}) + \beta_{BB}(BB\%_{reg}) + \beta_{SO}(SO\%_{reg}) + \epsilon$$

Here, a coefficient of 1.0 for AVG would imply that contact ability is fully retained in the playoffs, while a coefficient of 0.5 for BB% would suggest that the statistical impact of walks is diminished by half relative to the regular season.

3 Results

Table 1: Regression Coefficients

Variable	Coefficient (β)	P-Value	Interpretation
ISO (Power)	1.0088	< 0.001	Power is the most robust skill, translating roughly 1-to-1 from the regular season to the postseason.
AVG (Contact)	0.8822	0.012	Contact ability retains roughly 88% of its regular-season value.
BB% (Discipline)	0.5654	0.008	Walk rate loses significantly in value, retaining only 56% of its weight.
SO% (Whiff)	-0.1835	0.239	Strikeout rate is not a statistically significant predictor.

The final dataset included career aggregates for 641 MLB players. The Multiple Linear Regression model achieved an R^2 of 0.164, explaining approximately 16.4% of the variance in career postseason performance.

The most significant finding is the coefficient for ISO (1.01). This refutes the traditional belief that "sluggers" struggle against elite pitching. In fact, raw power is the only skill that does not statistically depreciate in the postseason environment.

Conversely, BB% (0.56) shows a steep decline in value. While walks are still positively correlated with success ($P = 0.008$), a player who relies heavily on walks for their value will see a larger drop in production than a player who relies on extra-base hits. Finally, the high P-value for SO% (0.239) suggests that strikeout rate is insignificant.

Table 2: OLS Regression Results

OLS Regression Results			
Dep. Variable:	Post_OPS	**R-squared:**	0.164
Model:	OLS	**Adj. R-squared:**	0.159
Method:	Least Squares	**F-statistic:**	31.31
Date:	Fri, 21 Nov 2025	**Prob (F-statistic):**	8.05e-24
Time:	18:46:53	**Log-Likelihood:**	369.11
No. Observations:	641	**AIC:**	-728.2
Df Residuals:	636	**BIC:**	-705.9
Df Model:	4		
Covariance Type:	nonrobust		

	coef	**std err**	**t**	**P> |t|**	**[0.025**	**0.975]**
const	0.2924	0.104	2.824	0.005	0.089	0.496
AVG	0.8822	0.348	2.533	0.012	0.198	1.566
ISO	1.0088	0.156	6.472	0.000	0.703	1.315
SO_Percent	-0.1835	0.156	-1.179	0.239	-0.489	0.122
BB_Percent	0.5654	0.212	2.665	0.008	0.149	0.982

Omnibus:	12.042	**Durbin-Watson:**	1.969
Prob(Omnibus):	0.002	**Jarque-Bera (JB):**	12.233
Skew:	0.313	**Prob(JB):**	0.00221
Kurtosis:	3.258	**Cond. No.**	77.1

4 Discussion

A future expansion of this project should introduce a "Pitching Quality Adjustment." The current model treats all postseason plate appearances as equal, but facing a 5th starter in April is different from going against an Ace in October. By introducing a control variable for the opposing pitcher, such as Zone% (percentage of pitches in the strike zone), velocity, or the pitcher's regular season statistics, we could separate the hitter's intrinsic performance from the effects of the opposing pitcher. This would allow us to determine if the depreciation of certain skills is a flaw in the hitter's approach or simply a natural consequence of facing superior velocity and command.

References

[1] Conforti, C. M., Crotin, R. L., & Oseguera, J. (2021). An Analysis of Playoff Performance Declines in Major League Baseball. *Journal of Strength and Conditioning Research*, 35(12S), S36–S41.

[2] Otten, M. P., & Barrett, M. E. (2013). Pitching and clutch hitting in Major League Baseball: What 109 years of statistics reveal. *Psychology of Sport and Exercise*, 14(4), 531–537.