# The Sophomore Jinx Case Study One
## Student Name: Doha Zaky

This report examines the existence of the 'Sophomore Jinx' in Major League Baseball, a phenomenon suggesting that players often perform worse in their second season after an exceptional rookie year. Using performance data for Rookie of the Year award winners, we tested whether a significant decline occurs in sophomore-year statistics.
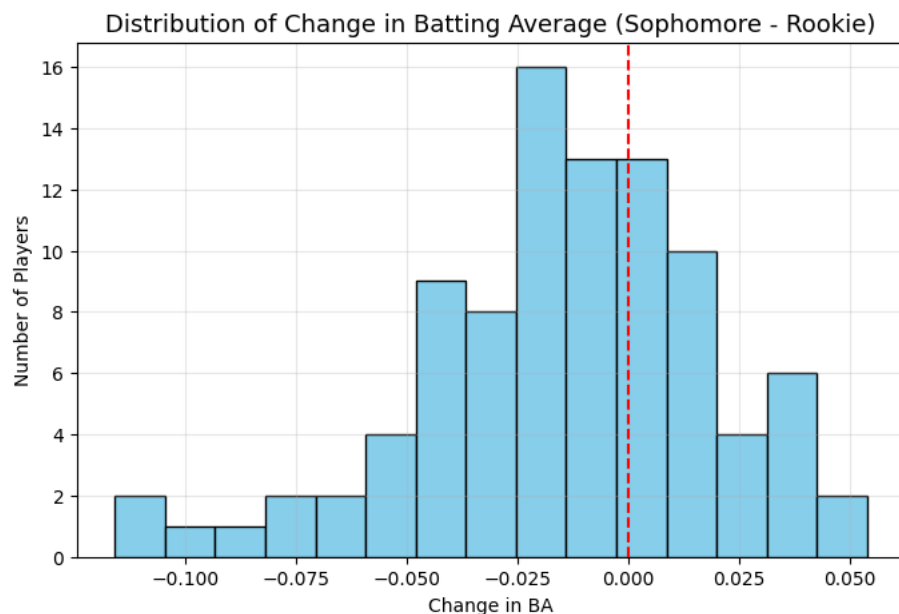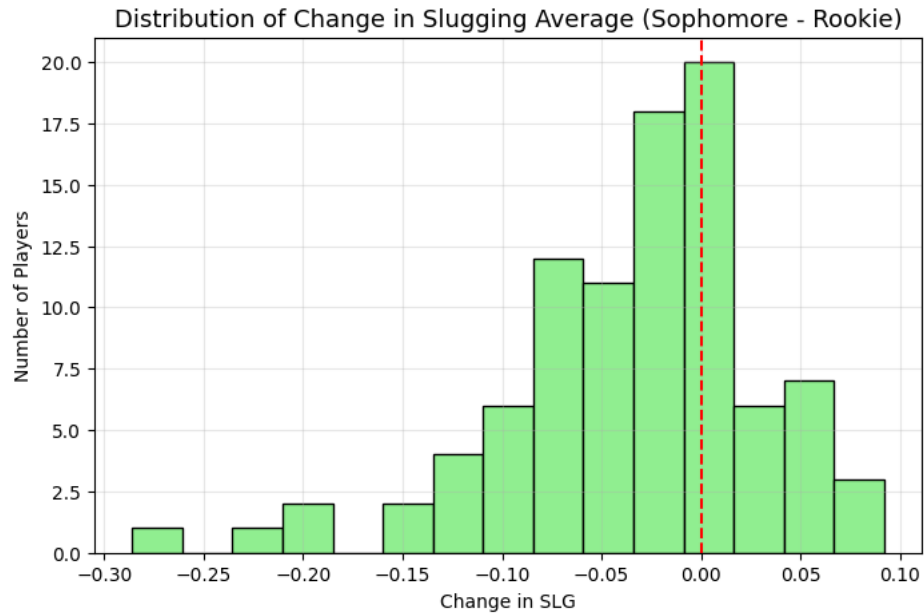
### 1. Quantitative Analysis

To test the hypothesis, we conducted paired t-tests comparing rookie-year and sophomore-year performance metrics:

- o   Batting Average (BA) and Slugging Average (SLG).
- o   Calculate the T-statistic and P-value.

**Results:**
• Batting Average (BA): t = -4.22, p = 0.0000568
• Slugging Average (SLG): t = -4.95, p = 0.0000033



Distribution of Change in Batting Average (Sophomore - Rookie)

Distribution of Change in Slugging Average (Sophomore - Rookie)

Both tests show p-values well below 0.001, indicating a statistically significant decline in performance between the two seasons. Histograms of the differences in batting and slugging averages reveal that most players experienced a negative change, reinforcing this trend of the Jinx.

- Both p-values < 0.001 → we reject $H_0$

## 2. Reflection on the Phenomenon

The findings provide strong statistical evidence supporting the existence of the Sophomore Jinx. However, the explanation lies less in superstition and more in natural performance dynamics. Players who perform exceptionally well as rookies are likely to regress toward the mean in subsequent seasons. Additionally, opposing teams adapt to their playing style, and heightened media pressure may further affect performance. Thus, while the jinx appears real in data, it reflects predictable psychological and statistical factors rather than luck.

## Conclusion

The analysis confirms that rookie performance tends to decline in the sophomore year. Understanding this effect is valuable for coaches and analysts, highlighting the importance of managing player players.

**Thank you so much for your time and efforts.**

**Warmly, Doha.**