# Moneyball in the Midwest: Analyzing Salary Efficiency in the AL Central

# Team Members

Maggie Murphy

# Executive Summary of the Final Project

This project analyzes the relationship between team payroll, player salaries, and performance outcomes in the American League Central Division for the 2024 MLB season. Using comprehensive salary and performance data, the analysis reveals significant disparities in how efficiently teams converted financial resources into on-field success. The Cleveland Guardians emerged as the division’s most efficient team, winning the division title with the fourth-highest payroll. The Chicago White Sox demonstrated extreme inefficiency with the highest payroll yet the worst record in the division. This analysis provides valuable insights for baseball operations departments, showing that strategic resource allocation often trumps total spending in achieving competitive success.

# Target Users or Analysis Consumers

This analysis targets several stakeholders in baseball operations. Some of these people that targets are front office executives making payroll and player acquisition decisions, MLB team owners evaluating front office performance, sports analysts and journalists covering baseball economics, and fantasy baseball managers seeking edge in player valuation. The project delivers actionable insights that can inform contract negotiations, player development strategies, and roster construction.

# Technical Summary

My primary software tool was Microsoft Excel. I used some advanced Excel features such as pivot tables, VLOOKUP, data validation, conditional formatting and range names. These all helped simplify my analysis and helped make it a smooth process. One technical shortcoming I noticed was that my visualization options limited compared to specialized tools like Tableau.

# Data Needs and Sources

The team payroll data is from Spotrac, the player performance metrics are from Baseball Reference and the team standing are from MLB.com. I extracted the data into CSV format from multiple online sources. I implemented data validation to ensure consistency throughout. My data is stored in multiple worksheets in my Excel workbook. I hid the sheets with each team data to make the Excel workbook more neat and easier to see my optimization model and the charts.

# Outputs

Some of my key analytical outputs include the division standing analysis (visualization showing team performance relative to division ranking), payroll disparity analysis (chart comparing total team payrolls), salary efficiency metric (calculation showing dollar spent per win), Position player salary vs. WAR (scatter plot revealing outliers), pitcher salary vs. WAR (scatter plot identifying pitching staff efficiency), WAR contribution by Player Type (comparative analysis of position player vs. pitcher value), Optimization model trying to maximize WAR (pie chart- % increase per team, bar chart- optimized vs current WAR). I used color coding for consistency for team colors used across all visualizations. I used a dropdown for my optimization model. All my axes and data points are properly labeled for understanding. I believe I used the appropriate chart types for each data relationship.

# Benefits to Target Audience

This analysis provides several benefits to baseball operations professionals. It helps teams identify optimal salary distribution across positions. It allows comparison of team efficiency against division rivals. It highlights overperforming and underperforming contracts and informs future contract negotiations and player acquisition strategies.

# Challenges

One main challenge I encountered was no salary data found for some of the players, which made some of the analysis difficult. The extreme outlier case of Chicago made some visualizations difficult to scale appropriately. One analytical challenge I faced was separating player value from team effects in performance metrics and determining appropriate efficiency metrics that account for team context.

# Personal Learning

I gained expertise in baseball analytics and player valuation methodologies while enhancing my skills in Excel that I learned throughout this semester. I have improved data visualization techniques for presenting quantitative insights. I also have an enhanced understanding of the relationship between financial resources and performance outcomes in professional sports.

# Closing Thoughts

The “Moneyball” philosophy popularized by the Oakland A’s in the early 2000s remains highly relevant in today’s MLB, perhaps nowhere more clearly than in the 2024 AL Central. The Guardian’s ability to win the division while spending efficiently. In contrast, Chicago’s last-place finish despite the highest payroll serves as a cautionary tale about inefficient spending.