

# Pitching Chaos Report – Summary

- **Context:**
  - The 2024 Detroit Tigers were 50-53 on July 25<sup>th</sup> with very low playoff chances.
  - Starting on July 26<sup>th</sup>, the Detroit Tigers adopted a new strategy called “Pitching Chaos” and finished 86-76. They advanced to the ALDS.
- **Key Change:**
  - “Pitching Chaos” is referred to as using a mix of bullpen games, bulk relievers, and short starts for their starting pitchers.
  - Starting pitchers under this strategy will typically face the opposing batting order a maximum of 2 times per game to maximize efficiency.
  - Post July 25, the starting pitchers of the Detroit Tigers averaged 3.7 innings per start – the lowest number in the MLB.
- **Reasoning/Strategy Behind It:**
  - Reducing innings pitched by the starting pitcher minimizes injury and fatigue.
  - Batting stats, such as AVG, OPS, SLG, and OBS, all increase the more times they face a pitcher throughout the game.
- **Machine Learning Model:**
  - Random Forest Model created to analyze and predict team performance based on starting pitcher performance stats.
  - Metrics, such as BB/9, H/9, K/BB, WHIP, ERA, K/9, BABIP, and HR/9, were used in the model.
  - The model calculated a “score” metric, defined as a numerical value that represents the predicted performance score for each team based on their starting pitching statistics, and predicted wins based on starting pitching performance.
  - The Predicted Wins Equation is based on the weighted contributions of each statistic:
    - $Predicted\ Wins\ (W) = (w1 \times BB/9) + (w2 \times H/9) + (w3 \times K/BB) + (w4 \times WHIP) + (w5 \times ERA) + (w6 \times K/9) + (w7 \times BABIP) + (w8 \times HR/9)$
  - Feature Importance: The model identified BB/9 and H/9 as the most important statistics for starting pitchers' impact on team wins.
  - The Dodgers, Guardians, Giants, and Brewers, teams who placed in the top six of the MLB for lowest number of innings pitched by starting pitchers per start, all had a very high starting pitching “score”, emphasizing their reliance and rise of this new system.
- **Future Implications:**
  - How will this strategy impact MLB Free Agents?
  - How will this strategy impact MLB Trades?
  - What will be the impact on team strategies going forward?