

# *Pitching Chaos: Did the Detroit Tigers Change Baseball?*

By Andrew Wolfe

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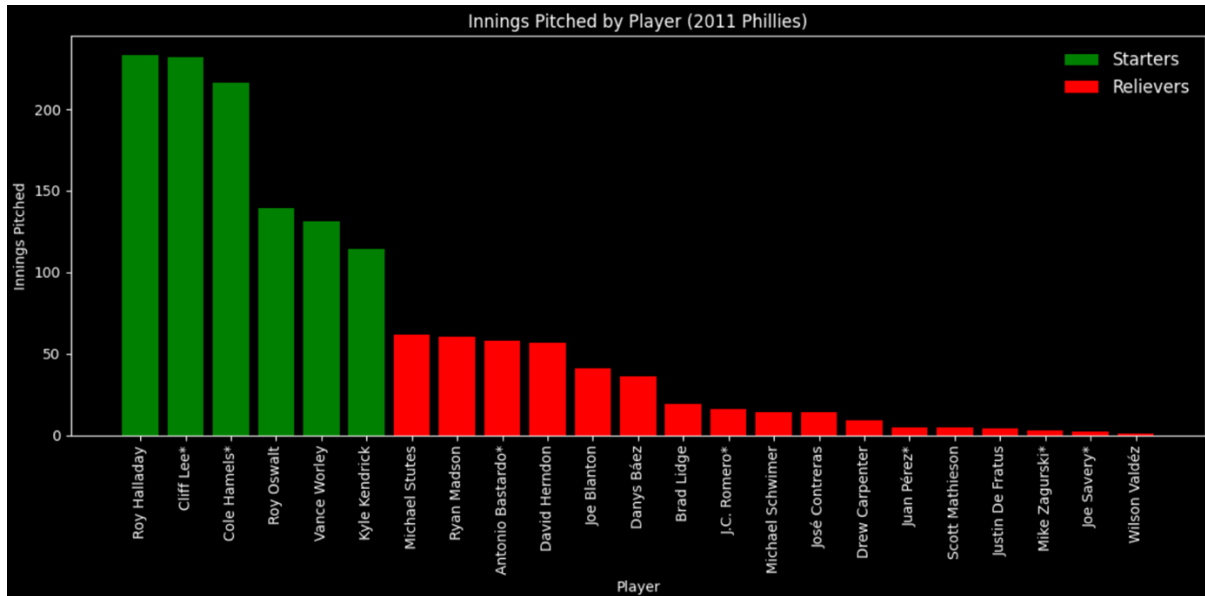
## **Introduction**

On July 25, 2024 the Detroit Tigers were 50-53 and had less than 1% chance to make the playoffs. Three of their top five starting pitchers, Kenta Maeda, Reese Olson, and Jack Flaherty, were no longer in the rotation. However, at the end of the regular season, the Detroit Tigers had a record of 86-76. So, what changed? Pitching. Since August 2024, the Tigers had the best ERA in the MLB. Other than Tarik Skubal, there were no other real known names on this pitching staff. This is the result of the new pitching strategy adopted by a few MLB Teams recently. It was referred to by various names, including “Pitching Chaos” or “Opener-Bulk Reliever Strategy”. The strategy involved relying on a mix of bullpen games, bulk relievers, or just regular starters, particularly not letting pitchers face the opposing batting lineup more than 2 times. It kept teams on their toes, not knowing what pitcher they would face. With this strategy, the Tigers allowed close to the fewest runs in the MLB and went on a Cinderella run to the ALDS where they lost in a winner-take-all Game 5. With this in mind, it is fair to ask: Will this become the new norm in the MLB?

## **Where it all started**

First, lets take you back to the 2011 Phillies. The 2011 Phillies finished with a 102-60 record and had four of the best starting pitchers in the MLB: Roy Halladay, Roy Oswalt, Cliff Lee, and Cole Hamels. In *Figure 1*

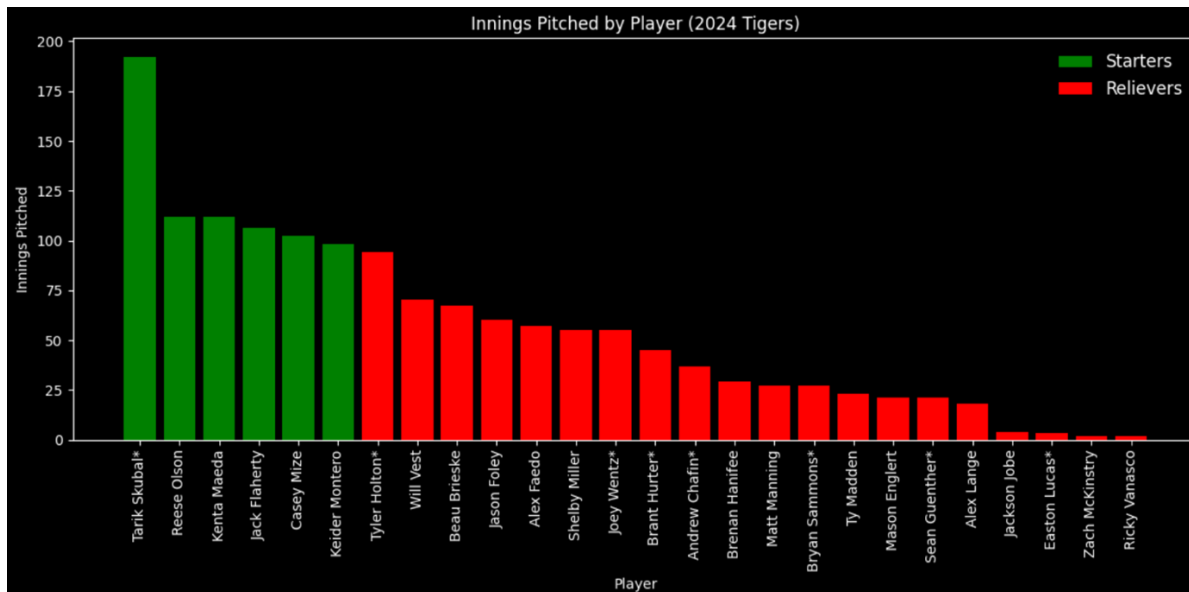
below, we see that these 4 pitchers pitched the majority of innings for the Phillies. The bullpen pitchers, labeled in red, pitched much fewer innings than them.



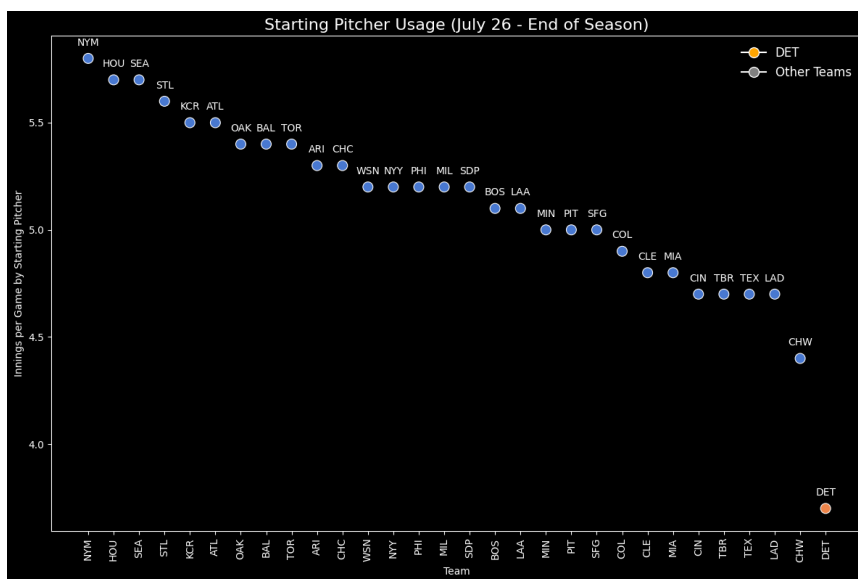
**Figure 1:** 2011 Phillies Pitching Staff

## 2024 Detroit Tigers

Now when we turn to the Detroit Tigers 2024 pitching staff, we see an entirely different graph. In *Figure 2* below, we see that the Detroit Tigers had a variety of pitchers who all pitched a similar total of innings. Quite the opposite in comparison to *Figure 1*! Besides their ace in Tarik Skubal, there appears to be no large difference in the number of innings pitched for the 2024 Detroit Tigers.



**Figure 2:** 2024 Tigers Pitching Staff



**Figure 3:** July 26 – End of Season Starting Pitcher Usage

This idea is further proved when looking at Figure 3. Compared to the rest of the Major League after July 26th, the starting pitchers of the Detroit Tigers were pitching an average of 3.7 innings per start. As seen on the graph, this was the lowest in the entire MLB. We can even see this emphasized further by looking at Figure 4, where a distribution lays out all of the starting pitchers the Detroit Tigers used from July 25 and

on. The Tigers had over 12 starting pitchers used in that timeframe.

2024 DET Tigers: Number of Starts July 25 - End of Season	
Player	Count
K.Montero	11
T.Skubal	11
B.Brieske	11
T.Holton	7
A.Faedo	5
C.Mize	4
B.Haniffee	3
R.Olson	3
T.Madden	1
B.Hurter	1
M.Englert	1
K.Maeda	1

**Figure 4:** Number of Starts July 25 – End of Season

## The Reasoning Behind This

It is very fair to ask: What was the reasoning behind all of this? Why were the Tigers using ‘pitching chaos’ and avoiding (for the most part) having their pitchers not face their opponent's starting lineup more than twice? The reasoning is shown below in *Figure 5*.

When looking below, we can see that when pitchers face the opposing batting order for the 2<sup>nd</sup>, 3<sup>rd</sup>, or even 4<sup>th</sup> time in a game, the opponent's batting averages, on-base percentages, slugging percentage, and OPS all increase. Generally, as the batters get more accustomed to the pitchers they are facing and the pitchers begin to throw more pitches and become more tired, the batters find more success.

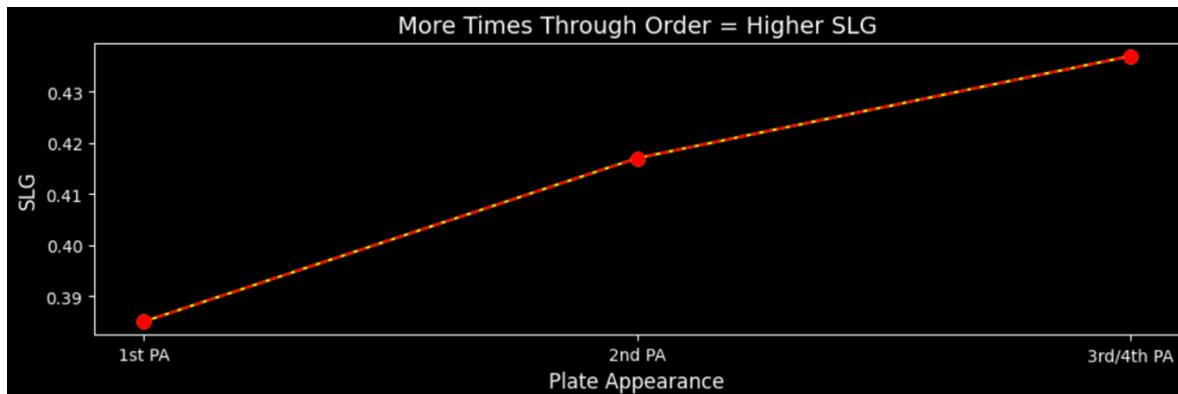
2024 MLB Pitching Breakdown						
	BA	OBP	SLG	OPS	K%	BB%
1st PA in G, as SP and RP	0.236	0.309	0.385	0.694	26.6%	10%
2nd PA in G, as SP and RP	0.251	0.313	0.417	0.730	23.3%	8%
3rd/4th PA in G, as SP and RP	0.262	0.325	0.437	0.761	21.6%	9%

**Figure 5:** 2024 MLB Pitching vs Batters Breakdown

This is shown again in *Figure 6* and *Figure 7* as OPS and slugging percentages all generally increase the more times they go through a batting order. Obviously, there might be a few outliers with certain pitchers and certain conditions, but it seems like there is a solid case for limiting the number of times a pitcher faces a batting order throughout the game.



**Figure 6:** 2024 – Plate Appearances vs OPS



**Figure 7:** 2024 – Plate Appearances vs SLG

We can also see this with K% in Figure 8. It appears that as pitchers face the batting order more times throughout the game, strikeout rates decrease. This would make sense as pitchers tend to get more tired as the game winds down and their pitch count increases. Batters also can get more comfortable throughout the game and have a better understanding of what to expect from the specific pitcher on that given night. Moreover, similar to above, there might be a few outliers with certain pitchers and their durability, but there seems to be a correlation between these two variables.



**Figure 8:** 2024 – Plate Appearances vs K%

### Teams with the Lowest IP/GS

The top 6 teams with the lowest innings pitched per start were the: Tigers, Giants, White Sox, Brewers, Dodgers, and Guardians. Not surprisingly, 4 of the 6 teams noted below in *Figure 9* made at least the Divisional Series of the 2024 MLB Playoffs.

The 2024 Tigers placed very well in HR/9, K%, and BB%, representing their success of the pitching chaos strategy. The Cubs found success in similar areas and the Dodgers and Guardians also faired very well with their starting pitching, having a high K% and an average BB%. The White Sox can be ruled out as an outlier in this case as they were one of the worst teams in MLB history and their starting pitchers were simply not performing at an efficient level.

2024 MLB Starting Pitching Data				
TEAM	IP/GS	HR/9	K%	BB%
Tigers	4.65 (1st)	0.99 (4th)	23.5 (8th)	6.6 (3rd)
Giants	4.81 (2nd)	0.97 (3rd)	23.6 (6th)	8.9 (22nd)
White Sox	4.82 (3rd)	1.37 (22nd)	21.1 (23rd)	9.0 (24th)
Brewers	4.9 (4th)	1.41 (23rd)	21.7 (16th)	8.0 (17th)
Dodgers	4.92 (5th)	1.35 (20th)	22.8 (10th)	8.0 (17th)
Guardians	5.0 (6th)	1.42 (24th)	22.2 (12th)	8.4 (20th)

*Figure 9:* 2024 – MLB Starting Pitching Data

### Pitching ML Model

To complete this analysis, I created a machine-learning model to predict and categorize team performance based on their starting pitchers’ statistical profiles. The model provides insight into how

various pitching statistics and the length of each pitcher's start contribute to the overall team record. The model also gives a predicted win total for each team based on their starting pitching.

The provided data below consists of starting pitching data for MLB teams, outlining key metrics including a calculated "score", predicted wins, actual wins, and innings pitched per game by the starting pitcher. The calculated "score" in this context refers to the predicted performance score for each team based on their starting pitching statistics. The model used feature importance to identify how much each individual statistic (feature) contributes to the predicted number of wins. Essentially, the Random Forest Model evaluates how well each feature predicts total team wins and assigns a higher importance number to those features that are more predictive.

The Random Forest Model was trained using the following statistics: ERA, K/9, BB/9, K/BB, HR/9, WHIP, BABIP, and H/9. The feature importance values are calculated based on how much each statistic decreases the prediction error of the model. The final "score" then for each team is determined by summing the weighted contributions of each statistic. The Predicted Wins equation with the associated weights and Random Forest Model information can be found below:

$$\text{Predicted Wins (W)} = (w1 \times \text{BB}/9) + (w2 \times \text{H}/9) + (w3 \times \text{K}/\text{BB}) + (w4 \times \text{WHIP}) + (w5 \times \text{ERA}) + (w6 \times \text{K}/9) + (w7 \times \text{BABIP}) + (w8 \times \text{HR}/9)$$



Statistic	Random Forest Model Feature Importance
BB/9	0.173967
H/9	0.152826
K/BB	0.13725
WHIP	0.131554
ERA	0.131488
K/9	0.124485
BABIP	0.088184
HR/9	0.060247

**Figure 10:** Random Forest Model Feature Importance Scale

Random Forest: Starting Pitching Model				
TEAM	score	Predicted Wins	Actual Wins	IP/GS
Twins	4.2406877	89.13	82	5.26
White Sox	4.1834877	53.45	41	4.82
Nationals	4.1681545	74.68	71	5.26
Guardians	4.1632144	89.3	92	5.00
Giants	4.1626375	84.11	80	4.81
Dodgers	4.0955589	94.71	98	4.92
Braves	4.0872679	87.63	89	5.58
Brewers	4.0734873	90.64	93	4.90
Athletics	4.0573808	65.09	69	5.18
Yankees	4.0513822	91.19	94	5.38

**Figure 11:** Random Forest: Starting Pitching Model Score and Predicted Wins

By looking at *Figure 10* above, we see that BB/9 and H/9 were the most important variables for starting pitchers in relation to wins. This does make the most logical sense as avoiding walking batters and allowing hits are major components for the success of a starting pitcher and its team.

Figure 11 contains “score”, “Predicted Wins”, “Actual Wins”, and “IP/GS” for MLB Teams, sorted by the rank of “score” (just top 10). A key takeaway is the average number of innings pitched by starting pitchers for each team. Pitching too many innings can cause fatigue and injury, which impacts the team's performance and effectiveness. In Figure 11, we see that the Dodgers, Guardians, Giants, and Brewers, teams who were in the top six of the MLB for the lowest number of innings pitched by starting pitchers per start, all placed in the top 10 in the MLB for starting pitching “score” and effectiveness. This reemphasizes the importance of managing workloads and focusing on key efficiency metrics, such as BB/9 and H/9, for starting pitching and improving your teams’ chances of success.

## **Conclusion**

In conclusion, the 2024 Detroit Tigers unexpected turnaround in 2024 was largely driven by a shift in pitching strategy, often referred to as “Pitching Chaos”. Despite having a rotation with one of the best pitchers in the MLB (Tarik Skubal), the Tigers used a mix of short starts by their starting pitchers and bullpen games to optimize the efficiency of their pitchers and opposing batting matchups. Supporting data has revealed that pitcher’s efficiency usually declines as they face the opposing batting lineup for the second and third times and is at its best in the early innings. After implementing this strategy, the Detroit Tigers finished as one of the best teams in the MLB, advancing as far as the ALDS, and ranked near the top of the league in many pitching statistics. Many teams have implemented similar approaches in comparison to the Tigers, like the Dodgers, Guardians, Giants, and Brewers, helping increase their strikeout rate and decrease their walk and home runs allowed rates. All these implementations were factors in teams’ great success in terms of win-loss this past season. Moreover, the Random Forest Model highlighted the importance of this “Pitching Chaos”

strategy and emphasized managing workloads to decrease hit and walk rates in the future.

Moving forward, as more and more organizations continue to adopt this strategy, it is fair to question how this approach will change the game. How will it impact free agency and trades? Could this impact how organizations value certain position contracts? How will batters and opposing teams adjust to these strategies? Could this become the new norm of the MLB? Only time will tell.