15 Seconds to Pitch

Evaluating how the MLB pitch clock affected the 2023 season

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Introduction

Aaron Sorkin — the award-winning screenwriter — used a scene about baseball to advance the plot of *The Newsroom.* A British character is watching a highlight of an American college football game. She asks why there are two clocks. The other character in the room, Will McAvoy, explains that one represents a play clock while the other is a game clock.

"We don't have that in soccer," the Brit jokingly responded. She then inquires whether baseball has enforced pacing. McAvoy responds: "No, pitchers commonly go for a sandwich between pitches."

And that used to be true! While pitchers wouldn't actually take a bite to eat between pitches, they would take forever to get the ball across home plate. They'd fiddle with their hair, hats, and mitts. They'd play around with the baseball.

No more. The rule changed starting with the 2023 Major League Baseball season. Under the new rules, a pitcher only receives 15 seconds to throw the ball toward the plate to their catcher. The time limit is extended to 20 seconds if there is a runner on base.

After league officials announced the rule, baseball purists did not contain their disgust. Some players, such as then-Nationals pitcher Max Scherzer, said it would mess "with the fabric of the game."

Scherzer's statement that it would mess with the "fabric of baseball" is a normative statement that I don't look to question or answer. However, I do remain interested in whether or not the pitch clock is having an effect on the game. That is the question this paper aims to answer: as we enter the "dog days" of June and July, **is the pitch clock *actually* having a negative effect on pitchers to a statistically significant degree?**

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Methodology

Ahead of our data collection process, I selected five statistics, two from a pitcher's statistics sheet and three from a batter's. Because pitchers directly oppose batters, there are valuable statistics on each sheet that matter to this analysis.

The five statistics I selected are:

- **Strikeout Rate** (K%): the frequency with which a pitcher strikes out a batter. This statistic is derived by dividing the number of strikeouts by the total number of batters faced.
- **Walk Percentage** (BB%): the frequency with which a pitcher throws four "balls" and walks the batter. This statistic is derived by dividing the number of batters walked by the total number of batters faced.
- **Hits Per At-Bat** (HitPerAB): the number of times a player gets a hit for each plate appearance.
- **Home Runs Per At-Bat** (HRPerAB): the number of home runs for each plate appearance. This is a flipped version of At Bats Per Home Run, a more commonly used statistic.
- **On-Base Percentage** (OBP): the frequency with which a player reaches a base.

The first two statistics are found on a pitcher's statistics sheet, while the remaining three are found on a batter's. My full dataset is available upon request.

There are a minimum number of pitches required to be included in the analysis

I collected the data from the MLB Statcast database. This is official data from the league. Quickly, I realized there are a great number of players who have only taken a few at-bats in a given season.

In order to prevent just one at-bat (that could've resulted in a variety of outcomes — all the way from a strikeout to a home run) from skewing our analysis, a pitcher must have thrown a minimum number of 100 pitches to be included in the data. Additionally, for a batter to be included, he must have faced 100 pitches in the season.

The data for the 2023 season was downloaded at July 14, 2023, at 10:00 PM Eastern Time. Data not included on Statcast past that time is not included in the analysis.

If any core piece of data was missing from Statcast, the player was removed. In three instances, Statcast did not include data for a given variable, so I removed the players from the analysis as a whole.

The statistics for the 2023 season only covered part of the season

I wanted to preview how the pitch clock was affecting pitchers and batters. Instead of waiting until the end of the 2023 season, I took statistics through a given date. Included in Table 1 is the number of players reviewed in each category for each season.

	Batters	**Pitchers**
2022	542	631
2023	497	590

Table 1: Number of Batters and Pitchers Reviewed in 2022 and 2023

Statistics are compared year to year using a T-Test

Because the MLB implemented the pitch clock between the 2022 and 2023 seasons, I will compare the mean of each statistic from the 2022 and 2023 seasons.

Then, I completed a two-group, two-tailed T-Test for each statistic. That formula is as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$\bar{x}_1$ represents the mean of the statistic for the 2022 season. For example, if three pitchers held a strikeout rate of 30%, 40%, and 50% in 2022, respectively, $\bar{x}_1$ would be 40% (represented as .400). $\bar{x}_2$ is the same calculation for the 2023 season.

s_1 is the standard deviation for a given statistic in the 2022 season. s_2 follows the same calculation for the 2023 season. Standard deviation is calculated as follows:

$$s = \sqrt{\frac{\sum_{i=1}^{n_1}(x_i - \bar{x})^2}{n - 1}}$$

n_1 represents the sample size of the first group. In this case, that will be the number of players reviewed for each statistic in the 2022 season. Similarly, n_2 will be the sample size of the second group: the 2023 season.

The last necessary formula is degrees of freedom (df). I consider these two groups to have equal variances. Therefore, it is calculated with this formula:

$$df = n_1 + n_2 - 2$$

Table 2 shows the degrees of freedom for the pitching statistics and the batting statistics, respectively. These are the values used to determine what the necessary critical T Value.

Pitching Data	**Batting Data**
1219	1037

Table 2: Degrees of Freedom by Data Type

Results

Table 3 displays the mean of each value in the respective season. I rounded each value to four decimal places for the sake of simplicity.

Statistic	**2022**	**2023**
K%	0.2241	0.2254
BB%	0.0855	0.0902
HitPerAB	0.2318	0.2371
HRPerAB	0.0294	0.0313
OBP	0.2982	0.3057

Table 3: Player Statistics Comparison: 2022 vs. 2023

In essence, I evaluated five different T-Tests based on the data above. **I use a 95% confidence interval.** The P values for each statistic are displayed in Table 4:

Statistic	**P Value**
K%	0.7
BB%	0.01733
HitPerAB	0.05324
HRPerAB	0.1194
OBP	0.01121

Table 4: P Values for Each Measured Statistic

Conclusion and Commentary

Based on the calculations from our Results section, we can conclude that some — but not all — of the statistics changed to a statistically significant degree.

Batters are generally getting on base more often, according to the data. The average on-base percentage in 2023 is just over 30.5%, an increase from 2022's 29.92%. While, on its face, that looks like a relatively minor increase, it is statistically significant. We reach this conclusion by evaluating the P Value against our confidence interval ($p = .05$). In other words, if our P-Value is less than .05, we conclude it is significant.

There was also a statistically significant increase in walk percentage. Considering that the number of times a player is walked directly correlates to that player's on-base percentage, it makes sense that these two metrics operate in tandem. The P-Value for walk percentage is .01733.

In retrospect, it may have not been the most effective approach to consider both of these statistics, considering how related they are. However, I thought it best to publish all of the data I collected rather than eliminate an entire variable after the collection and analysis phase. My methodology is not — and should not be — changed retroactively once I obtain my data and results. Doing so would be, in my opinion, unethical.

Nevertheless, there is some evidence the pitch clock's rule change made a difference in the performance of batters. Of course, there is no expectation it will always be this way. It is entirely possible — likely even — that pitchers will adjust over time to this new reality and change their pitching styles to match it.

There's another interesting question at play here: are the pitch clock changes going to be good for baseball in the long run? I don't really seek the answer that question in this study. Regardless, there is evidence that games are shorter in the 2023 season than they were in the 2022 season. Shorter games might be better for baseball. It might be better for the fans and for television ratings; I imagine it will surely be better for the players stepping onto a diamond 162 times a season.

If we consider the increase in walks a bad thing — which, for the record, I do not — a captivating, necessary economic question arises: is the marginal cost of ”more walks” higher than the marginal benefit of “shorter games,” “better television ratings,” or “a more enjoyable nine-inning experience for fans”?

Once again, I don't aim to answer that question. Hopefully, however, this study can serve as a positive analysis for interested sports fans to answer that normative question.