

Are Baseball Games Getting Any Shorter?

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ABSTRACT

During the 2020 season, Major League Baseball implemented several rule changes to speed up games. In this paper, the authors examine the length of all nine-inning home games for each of baseball's thirty teams in 2021 and 2019 to determine the effectiveness of these rule changes. The 2020 season was omitted because it was shortened by the coronavirus pandemic. Nine-inning home games became longer for twenty-three teams. For eleven of these teams, many of which are located in the largest Nielsen TV markets, the increase was statistically significant. For only one team was the average length of a nine-inning game discernibly shorter in 2021 than it was in 2019.

Introduction

As early as 1909, American League founder and president Byron Bancroft "Ban" Johnson pledged to investigate why baseball games were taking so long. In 1925, when the average length of a game was exactly two hours, Ban Johnson wanted to know why some games were running over two hours [1]. In the 2021 season, the average game length was over three hours [2]. Despite the ongoing concerns over slow games expressed for more than a century, the major leagues have been largely unable to shorten baseball games. So why are long games such a problem, and what progress, if any, have the major leagues made?

Evening ballgames accommodate families who work or go to school during the day. But, these games frequently run late into the night, long past the bedtime of young baseball fans. The average baseball fan is 57 years old. If baseball wants to remain America's "favorite pastime," then the sport needs to grow a younger fanbase, many of whom cannot stay up late enough to watch a complete evening ball game [3].

There have been a few attempts in recent years to shorten games. Major League Baseball (MLB) commissioner Rob Manfred has (since 2014) imposed limits on the number of mound visits (five per team per nine innings) and allowed no-pitch intentional walks. During the coronavirus-shortened 2020 season, the MLB adopted new rule changes to speed up and shorten games. One change that was permanently implemented for the 2021 season was the three-batter minimum rule. Any pitcher who enters a game must face at least three batters or pitch to the end of a half-inning. This rule change will reduce the time spent on pitching changes, as each pitching change requires a television-advertising break and the new pitcher to warm up.

If these rule changes were successful, we would expect the average length of nine-inning games to be shorter in the 2021 season than in the previous full season. In this paper, we compare for each team the average length of a nine-inning game in the 2021 season to the average length of a nine-inning game in the 162-game 2019 season. This paper contributes to the existing literature by evaluating for each MLB team the impact of the newest rules adopted during the pandemic-shortened 2020 season and implemented in 2021.

The Data

All data for the years 2019 and 2021 on the length of each nine-inning home game for each of the thirty baseball teams were collected from baseball-reference.com [4]. For each team in each year, one can use baseball-reference.com to judiciously delete columns and rows to find only the time of all nine-inning home games. That is, one can delete all

road games and all home games in which other than nine innings were played, either extra-inning games or games cut short due to inclement weather.

The longest nine-inning game in either 2019 or 2021 took place in Fenway Park on Saturday, June 29, 2019 when the Boston Red Sox and New York Yankees played for four hours and 42 minutes in a night game; the shortest nine-inning game in either year took place in Marlins Park on Sunday, May 19, 2019 when the Miami Marlins and New York Mets played for one hour and 59 minutes in a day game.

For the year 2019, the last normal full season before the pandemic wreaked havoc on all sports, the three teams with the longest average nine-inning games were the Boston Red Sox (201.52 minutes), the Colorado Rockies (194.53 minutes), and the Los Angeles Angels (192.65 minutes); the three teams with the shortest averages were the San Francisco Giants (178.08 minutes), the Oakland Athletics (179.25 minutes), and the Houston Astros (179.44 minutes). In the year 2021, the three teams with the longest average times were the Philadelphia Phillies (197.51 minutes), the Chicago Cubs (197.13 minutes), and the San Diego Padres (196.73 minutes); the three teams with the shortest averages were the Tampa Bay Rays (180.8 minutes), the Texas Rangers (182.03 minutes), and the Cleveland Indians (182.2 minutes), whose name changed in 2022 to the Cleveland Guardians. That is, in 2021, the shortest average nine-inning game for any team exceeded three hours.

The three teams that experienced the largest increase in the average length of a nine-inning game between 2019 and 2021 (as a percentage of their average game length in 2019) were: the Houston Astros (9.27 percent), the San Diego Padres (7.87 percent), and the Cincinnati Reds (6.35 percent). The three teams that experienced the largest *decrease* in average game length were: the Texas Rangers (-4.99 percent), the Boston Red Sox (-2.40 percent), and the Colorado Rockies (-2.10 percent). Across all thirty teams, the average percent change was 2.49 percent. On average, nine-inning games got longer in 2021, about 5 minutes longer, than nine-inning games in 2019.

Methodology

The comparisons of average nine-inning home game length for each of the thirty teams use a two-sample *t*-test on the difference between two means. Under the null hypothesis, the two means are equal; under the one-tailed alternative hypothesis, we posit that the team average in 2019 is *less than* the average in 2021. If the rule changes, which were piloted in the 2020 season and implemented permanently in the 2021 season, were *not* effective, under our one-tailed alternative hypothesis game times in 2021 would be, on average, longer than those in 2019.

The Results

The results of the thirty 2-sample *t*-tests that compare the average length of a nine-inning home game of baseball in 2019 to the corresponding average in 2021 are reported in Table 1.

The average length of a nine-inning home game between 2019 and 2021 increased for twenty-three (or over 75 percent) of all teams. In eleven cases, the increase was statistically discernible (at better than the .05 level of significance). When MLB teams are ranked by Nielsen TV market size [5], six of the eleven teams (Chicago Cubs, Houston Astros, New York Mets, New York Yankees, Philadelphia Phillies, and San Francisco Giants) are located among the top eight television markets. Of the seven teams in 2021 that played shorter nine-inning home games, for only the Texas Rangers was the decrease statistically significant (at better than the .05 level).

Concluding Remarks

The total time it takes to play a nine-inning game of baseball increased for most teams between 2019 and 2021, despite deliberate attempts to improve the pace of play. For Major League Baseball, the rule changes implemented in 2021 to reduce game times were a swing and a miss.

In 2022, Major League Baseball allowed a catcher to use a pad with buttons on the wrist of his gloved hand to signal the type of pitch and location to his pitcher through a listening device. Not only will this device prevent opposing teams (especially their runners on second base or players banging on trash cans in the opposing team's dugout) from stealing signs, but the new technology may improve the pace of play. A pitch clock that reduces the time between pitches, used for the first time in 2022 in the minor leagues, has shaved minutes off game times and may be destined for use in the big leagues as early as the 2023 season. Major League Baseball may also decide to limit the number of times a pitcher can attempt to pick off a baserunner.

Future research of seasons with new rule changes adopted after the 2021 season will determine whether baseball games move quicker. Yet, some diehard baseball fans will continue to argue that their length need not render games any more tedious or less entertaining. Finally, more impatient baseball fans may find solace in the fact that cricket matches are played over three to five days, six hours a day.

Table 1. Average Length of Nine-Inning Games in Major League Baseball, 2019 and 2021, by Team

Team	2019 Average length (minutes)	2021 Average length (minutes)	<i>p</i> -value on difference*
Arizona Diamondbacks	186.52	191.26	.0779
Atlanta Braves	189.56	187.98	.6700
Baltimore Orioles	183.01	187.24	.1116
Boston Red Sox	201.52	196.68	.8906
Chicago Cubs	188.78	197.13	.0144
Chicago White Sox	186.43	190.84	.1156
Cincinnati Reds	180.68	192.16	.0006
Cleveland Indians	182.42	182.20	.5260
Colorado Rockies	194.53	190.45	.8578
Detroit Tigers	180.61	185.39	.1012
Houston Astros	179.44	196.07	<.0001
Kansas City Royals	181.88	190.59	.0046
Los Angeles Angels	192.65	192.14	.5608
Los Angeles Dodgers	184.65	189.38	.0777
Miami Marlins	182.72	191.15	.0132
Milwaukee Brewers	192.55	196.10	.1817
Minnesota Twins	188.51	186.81	.6737
New York Mets	184.14	192.47	.0282
New York Yankees	183.22	194.62	.0012
Oakland Athletics	179.25	183.23	.1123
Philadelphia Phillies	189.53	197.51	.0243
Pittsburgh Pirates	184.88	193.95	.0063
San Diego Padres	182.38	196.73	<.0001
San Francisco Giants	178.08	184.77	.0223
Seattle Mariners	183.28	188.05	.1087
St. Louis Cardinals	183.80	185.66	.2953
Tampa Bay Rays	179.93	180.80	.3924
Texas Rangers	191.59	182.03	.9958
Toronto Blue Jays	181.40	184.81	.1737
Washington Nationals	188.32	193.62	.0956

*All *p*-values are for a one-tailed alternative that the average length of a ballgame in 2019 was *shorter* than the corresponding average in 2021.

References

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3. Z. Kram. October 20, 2021. “Baseball Games Are Still Too Long – And Getting Longer” *The Ringer* at <https://www.theringer.com/2021/10/20/22735982/mlb-playoff-games-are-too-long-pitch-clock-needed> .
4. <https://www.baseball-reference.com/teams/baseball-reference.com/teams/> All thirty teams in 2019 and 2021. For the 2019 Arizona Diamondbacks, for example, click on <https://www.baseball-reference.com/teams/ARI/2019-schedule-scores.shtml> . Proceed to “Team Game-by-Game Schedule”. Click “Share & Export” and then “Modify, Export & Share Table”.
5. Sports Media Watch. 2021. “Major pro sports teams ranked by market size” at <https://www.sportsmediawatch.com/nba-market-size-nfl-mlb-nhl-nielsen-ratings/>