

Runs, Runs, and More Runs Pre-Professional Baseball, By the Numbers

By Bruce Allardice

Baseball's post-Civil War period (1866-70) is vitally important to understanding the sport as we know it today. This era saw significant changes in baseball's rules and equipment. It saw baseball spread across the continental United States and into Alaska and Hawaii. It saw the formation of the first openly professional club, the Cincinnati Reds, soon followed by other professional clubs. It saw baseball's progression from a gentlemanly amateur sport to a sport increasingly dominated, in the newspapers as well as on the field, by paid, professional players and teams.

Organized leagues of professional baseball began in 1871, with the National Association (NA). But the National Association didn't burst forth from a baseball vacuum, but rather evolved from the many amateur, semi-professional, and professional clubs in existence prior to 1871. One key to understanding the 9-club NA is to better understand the 8,000 clubs that came before it. And this especially applies to the subject near and dear to most SABR members—baseball statistics. No previous study has analyzed via statistics how baseball was played in the five years prior to professional baseball leagues. This article hopes to fill that gap, answering such questions as: How many runs were scored in an average game? How many innings were played? How long did the games last? When and where were the games played? How did rule and equipment changes impact the game?

In this article I'll set forth the results of a first-ever statistical analysis of the baseball of this period. This research project analyzed all the games played under NABBP¹ rules for 1866-70 reported by the major baseball-covering newspaper of the time, the New York City-based *New York Clipper*. It also compares those numbers to games played prior to 1866.² In 1871, the first professional baseball league, the National Association, was formed, and statistics regarding the pro game are well known. Hence the 1870 cutoff.

The 1866-70 data covers reports of 4,984 games,³ with dates the game was played, scores, where the games were played, game times, and innings played. Not all game reports list all these items. A few lack detailed scores, some don't mention the innings played or date of the game, and many don't mention the time of the game. However, even with these gaps, the data is robust enough for valid analysis. The number of games per year averages almost 1,000, a number far greater than the games played per year in Major League Baseball during the 19th Century. Almost all these games were played by amateur clubs, a handful considered "first-class" (the country's top clubs, according to the sporting press) or semi-professional, but most truly amateur. 1869 saw the first openly professional club, the Cincinnati Red Stockings. 1870

featured a number of professional clubs, vying for an unofficial championship. Data for “first class” amateur clubs, and professional clubs, are analyzed separately.

So what does the data tell us about amateur/semi-professional baseball in this era?

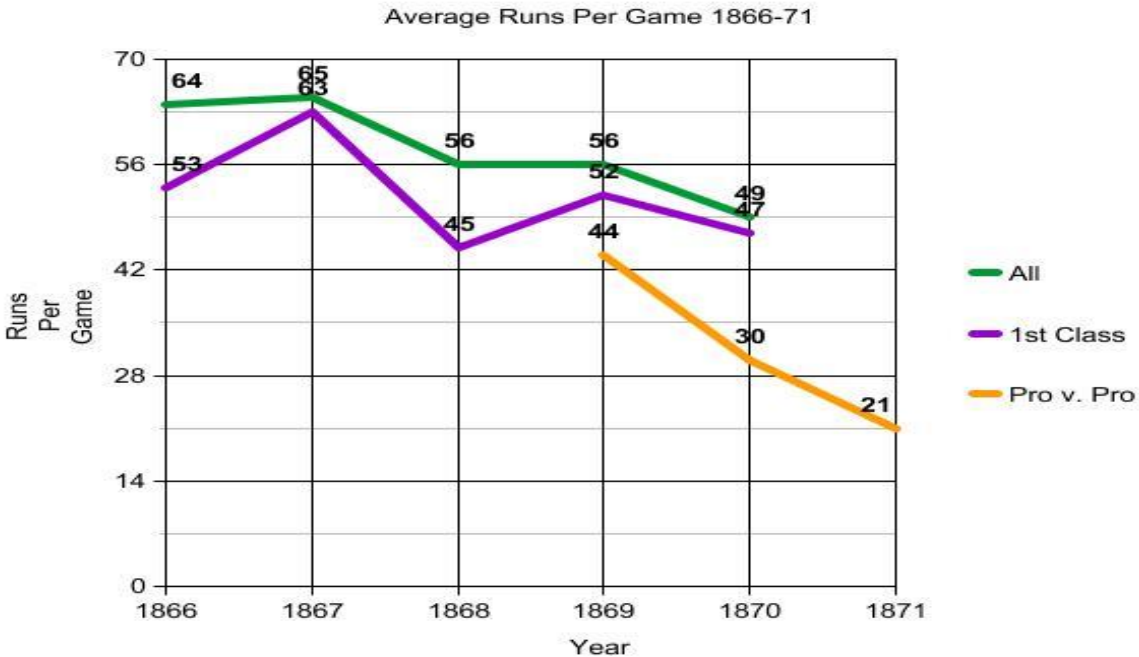
Runs Per Game (Rpg), 1866-1870, by Year

Year	Games	Avg. Rpg	Median ⁴ Rpg	1 st Class Club Rpg ⁶	Pro ⁵ Club Rpg	Pro v. Pro Rpg
1866	574	63.80	59.5	53.13	---	---
1867	562	65.01	60	62.84	---	---
1868	1054	55.86	50	45.25	---	---
1869	1271	56.01	50	51.63	48.9	43.6
1870	1523	48.97	44	47.23	36.8	30.4
1871						20.94 ⁷
Avg.		55.7	50.4			

The general downward trend in scoring is obvious, and perhaps explained by factors mentioned below. There is an anomalous 1868-69 uptick in scoring, perhaps due to top clubs doing tours and playing mismatches against local clubs.

Openly professional baseball began in 1869 with the Cincinnati Red Stockings, In the years 1869-70 professional teams often played, and roundly defeated, amateur teams. These mismatches reduced the disparity between overall runs per game and first-class club’s runs per game. The 1870 professional v. professional scoring declined dramatically from 1869. Per below, this may be due to an equipment change (adoption of a “dead” baseball) and improvement in team defenses (discussed below).

Overall, runs per game in first-class games were less than in the average amateur contest, professional vs. amateur games less than that, and professional v. professional lesser still. Professionalizing clubs clearly led to reduced game scores (and game times).

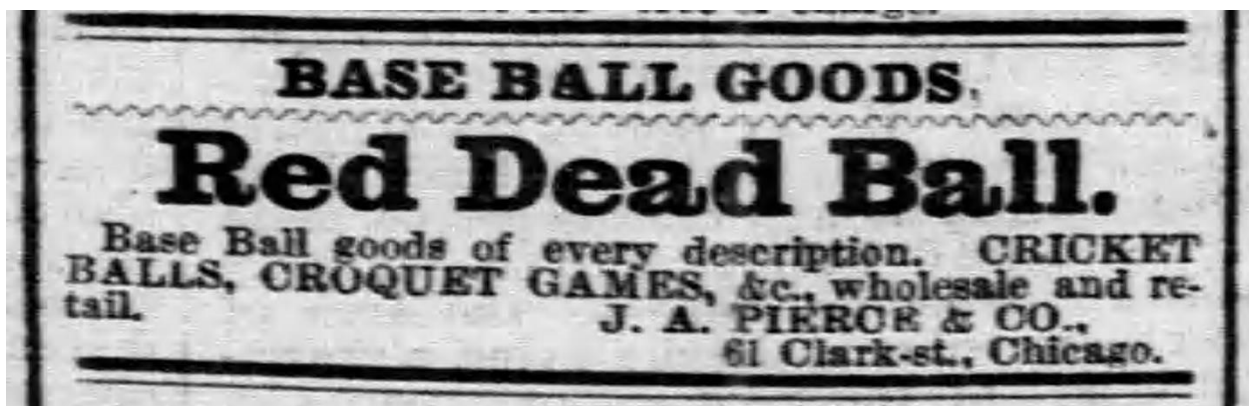


Baseball’s rules have always been changing and evolving, and the 1860s saw a number of major rules changes. Some of these impacted scoring. The 1858 rules, now regarded as the starting point of baseball as we know it, were modified in 1863 and 1864 to restrict pitching and to ban the “first bounce out” rule. Umpires were allowed to call “strikes”—but rarely did so prior to 1866.⁸ These changes all took a while to become standard practice. The changes resulted in a scoring binge for 1864 and 1865 (see below). However, as the game spread and the skills (particularly fielding skills) became more uniform, scores slowly declined. The rules changes made in the late 1860s were relatively minor and did not markedly affect the game statistics.⁹

Equipment in the 1860s was also ever-changing. The dramatic surge in MLB home runs 2016-2020 has led to a welcome focus on the baseballs used in games. Studies have shown that recent balls have slightly different seams from past balls, leading (in one estimate) to fly balls traveling four feet further—increasing the number of home runs. Debate over baseballs in the 1860s was just as spirited, albeit less scientific. For 1868, the weight and circumference of balls was reduced and made uniform, but the elasticity of the balls—their interior composition—was not regulated.¹⁰ Teams could, and did, choose the style of ball they desired for games. And until 1869, most baseballs contained over two ounces of rubber, making for a so-called “lively” or “elastic” ball. Newspapers printed numerous lively discussions about the difference between the “lively” balls, the “dead” balls, and the impact these balls had on scoring. In 1870 the *New York Clipper* linked the elastic ball both to increased scoring and to increased player injuries.¹¹ Many newspapers made the link explicit: Dead Balls = Fewer Runs.¹² Part of the reason why scoring was less in “first class” and professional games, compared to the general amateur game, was that the “first class” clubs increasingly adopted the dead ball—against the wishes of

the fans who, then as well as now, preferred the “home run” to the single.¹³ Baseball pioneer Henry Chadwick repeatedly urged the adoption of the “dead” ball in his *Clipper* columns. The “dead” was formally adopted at the November 1870 baseball convention.¹⁴ Scoring (at least among professional teams) declined accordingly in 1871.

The scoring decrease due to the “dead” ball could be dramatic. For example, the 1870 Chicago White Stockings switched from the live ball to the dead ball in mid-season. The club’s games averaged 35 runs per game the first half of the season, declining to 23 runs (a 1/3rd drop) in the second half. Their lowest scoring game of the year, a 9-0 shutout, was played with a “dead” ball. Looking at the team’s head-to-head matchups that year with other professional teams (perhaps the best method for comparison), in 8 of the 9 instances where the White Stockings played a team more than once, the rpg in the last game played was less than the first. The only exception was the games against Cincinnati, which already used the dead ball. In these nine head-to-heads, the teams averaged 35 rpg for first game, 23 rpg the last. A similar, if smaller, decline can be seen for the New York Mutuals, who went to the dead ball starting July 6th. The Cincinnati club, which always chose the dead ball, showed no such decline in its head-to-head matches.¹⁵



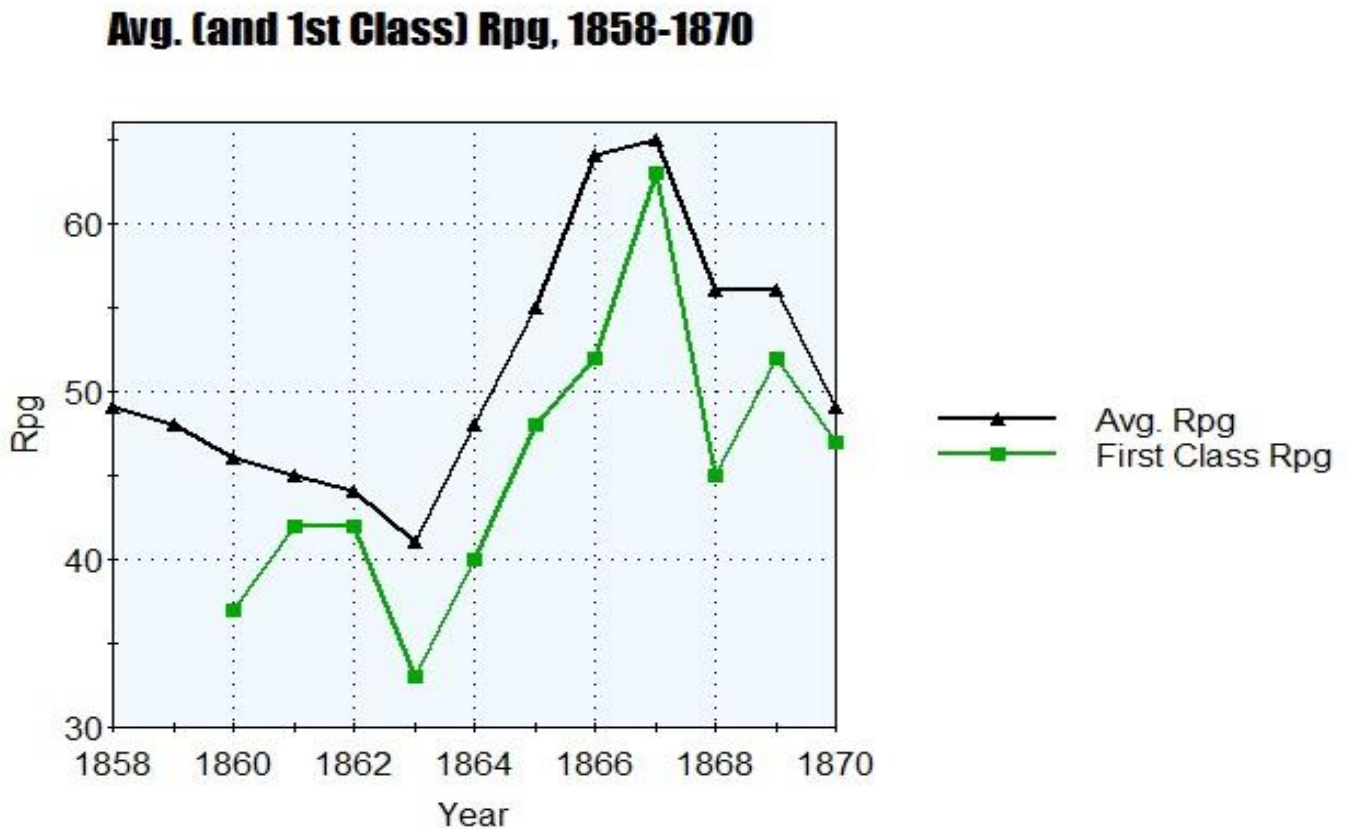
Ad for “dead” baseballs in the *Chicago Tribune*, Aug. 17, 1870

Baseball in the 1860s featured a batter vs. fielder contest, much more than the batter vs. pitcher contest we see today. Improvements in team defense in the late 1860s played a large part in the reduced scoring. While a few players started to wear gloves (more for protection than as an aid to fielding), what some historians have dubbed the “fielding revolution” relied more on fielders working together rather than as individuals. Baseball pioneer Harry Wright popularized, if he did not initiate, the fielding revolution during the 1869 tour of the Cincinnati Red Stockings. The thoughtful Wright had his players shift position, depending on the batter and the situation. He also trained his defenders to work together, to back up one another, to play defense as a team rather than as nine individuals. The astounding success of the Red

Stockings soon led other teams to copy Wright's stratagems. This appears to have been an additional factor in the reduced scoring for 1869 and 1870.¹⁶

Comparison to Rpg, 1858-1870¹⁷

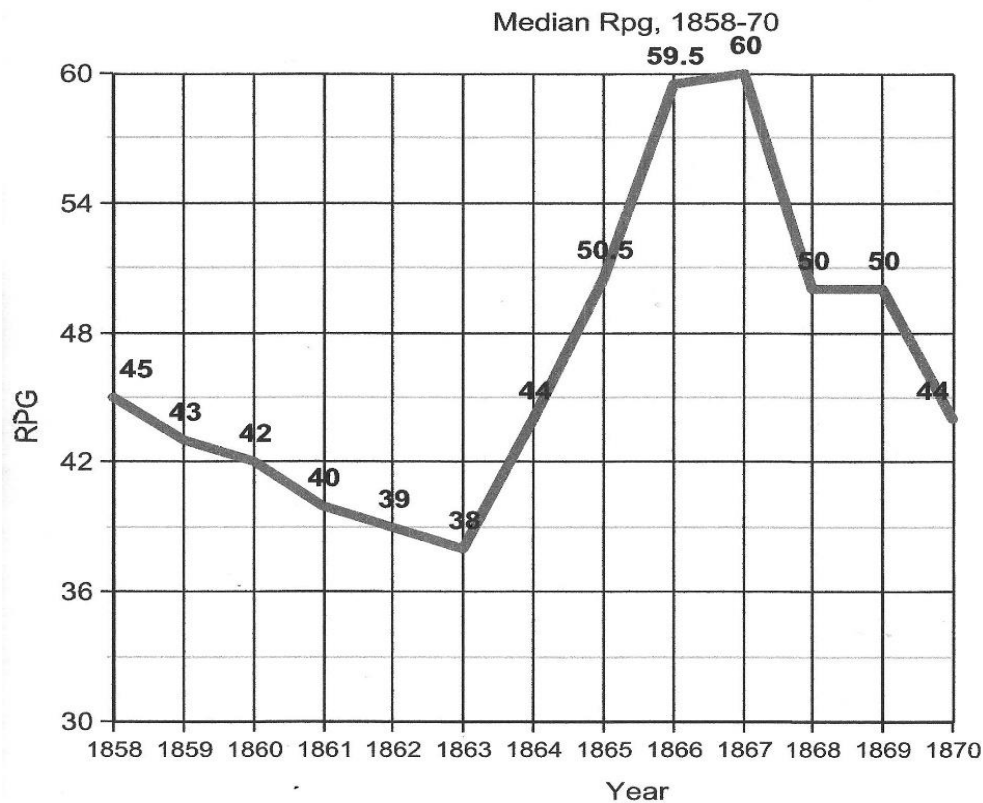
Average Rpg, All and First Class Games, 1858-1870



In the average game, one can see a huge disparity in rpg, from a yearly low of 42 rpg in 1863 to a high of 64 (1866). Scoring trends show three distinct movements: a steady decline from 1858-63, followed by a dramatic upsurge 1864-67, followed by another decline 1868-70. As with 1866-70, scoring in "first class" club games ran constantly lower than in games overall.

Since a statistical 'average' score includes games with extreme highs and lows in scoring, perhaps a better measure of rpg is the median score per game, shown in the chart below:

Median Rpg, All Games, 1858-1870



The media rpg consistently tracks about 4-5 rpg less than the average rpg.

1847-1857 Rpg

For the curious, I studied all the game scores 1847-57 listed on the protoball database of early games. Games prior to 1858 were played under early, pre-9-inning rules, and thus are not directly comparable to games 1858 and after. The data nonetheless shows a broad similarity to 1858-65 scoring, with 1847-57 averaging 49 runs per game. The average score was 30-19, with an 11 run average margin of victory.¹⁸

High and Low Scores, 1866-1870

Year	High Score one team	High Total both teams	Low Score one team	Low Total both teams
1866	135	156	1 (twice)	19
1867	124	165	1 (twice)	17
1868	116	164	1 (4 times)	16
1869	209	219	0 (8 times)	6
1870	157	167	0 (15 times)	4

With lower scores came closer games and more shutouts. The biggest blowout occurred in a June 8, 1869 game the *New York Clipper* headlined as “The Largest Score on Record,” with the Niagara Club of Buffalo, NY defeated the Columbia of Buffalo 209-10. Evidently determined to humiliate their crosstown rivals, the Niagara scored 58 runs in the eighth inning alone. Despite the monster scoring, the game only took three hours.¹⁹ In 1870, in a professional v. amateur romp, the Chicago White Stockings (pros) beat a hapless Memphis amateur team (which nonetheless claimed to be the champion amateur club of Tennessee) 157-1. Showing no mercy, the pros, already up 134-1, piled up 23 runs in the last inning, with their manager ordering, in the words of one newspaper, “the boys to go on with their rat killing.”²⁰



Chicago Tribune, May 14, 1870

Time of Games

Year	Avg. Time ²¹	Median Time	% < 9 inn ²²	% > 9 inn	% < 9 as % of all games	Ties
1866	2.77 hrs.	2.75	41.0%	1.6%	13.5%	2
1867	2.63	2.5	26.6	0.9	11.2	5
1868	2.62	2.6	26.1	1.9	16.8	4
1869	2.65	2.6	34.5	2.0	17.8	6
1870	2.28	2.25	33.4	3.6	8.8	6

The shortest time for a 9-inning game—denoted by the *New York Clipper* as “the shortest regular game on record”—was an October 18, 1870 game between the Brooklyn Athletics and Brooklyn Stars, which took only 1 hour, 5 minutes. The longest game time was 5 hours, 20 minutes—a May 1, 1866 game in Boston in which 144 runs were scored.

The reduced times in the later years were largely because of reduced scoring. There is no evidence that the players played “faster,” though the umpires becoming more active in calling balls/strikes helped move the game along.

Game times, 1860-65²³

For comparison, here are the average game times for nine-inning games 1860-65:

1860	2.75 hrs
1861	2.99
1862	3.04
1863	3.22
1864	2.63
1865	2.73

As can be seen, game times (along with scoring) increase once the 1864 rule changes go into effect.

To provide a modern-day comparison, MLB game times in 2019 averaged 3.16 hours (3 hours, 10 minutes). For all the complaints about the length of today's games, game times in 1863 were longer than in 2019 ... albeit in the 1863 context of much greater scoring.

Number of Innings Per Game

Innings Per Game, for Games Where the Innings are Reported

Year	Avg. Innings Per Game	% < 9 innings	% > 9 innings	% of Games Where Innings are Reported
1866	7.96	41.0%	1.6%	42.7%
1867	8.31	26.6	0.9	42.7
1868	8.43	26.1	1.9	64.4
1869	8.27	34.5	2.0	51.4
1870	8.76	33.4	3.6	48.7

Innings per Game, Assuming Games Where Innings Not Reported were Nine Inning Games

Year	Avg. Innings Per Game	%<9 as % of all games	%>9 as % of all games	Ties
1866	8.56	13.5%	0.6%	2
1867	8.70	11.2	0.8	5
1868	8.63	16.8	1.2	4
1869	8.63	17.8	1.0	6
1870	8.88	8.8	1.0	6

Nine inning games become the in-practice standard by the late 1860s. However, as can be seen in the above chart, a significant number of games didn't go the full nine. The rules since 1858 had mandated nine innings, but prior to 1866 clubs often ignored this standard. By 1870 the

less-than-nine-inning games played became very rare, and were usually due to natural causes-- weather, darkness, or one club having to leave town by a certain time.

The *Clipper* game reports often did not specify the number of innings played. For example, for 1866, less than half the game reports include the number of innings. The *Clipper* tended to report the number of innings if the game was less than, or greater than, 9 innings. The variant reporting makes the calculation of average innings difficult, thus, I've calculated the average two ways.

Compared to today, there were very few extra inning games. Scoring was so high that games rarely ended 9 innings in a tie, though it can be seen that as scoring lessened somewhat in 1869-70, the percentage of extra-inning games increases. The longest reported game was only 12 innings, a 14-13 game on August 29, 1870. Games ending in a tie almost disappear post-1865.

Using the average innings for all games has an impact on the runs per inning, 1866-70:

Runs Per Inning (RPI), 1866-1870, by Year

Year	Games	Avg. Rpg	Avg. Innings	Avg. RPI	Normalizing RPI to 9 innings
1866	574	63.80	8.56	7.45	67.05 Rpg
1867	562	65.01	8.70	7.47	67.23
1868	1054	55.86	8.63	6.47	58.23
1869	1271	56.01	8.63	6.49	58.41
1870	1523	48.97	8.88	5.51	49.59
Avg.		55.7	8.70		

When adjustments are made for the innings played, the Rpg shows the same trends as without the adjustments, though the increase from 1866 to 1867 is a bit less, and the 1870 dip in Rpg is a bit greater.

Location of Games, by State²⁴

Overall, 59.4% of the reported-on games were played in the Northeast region of the United States. New York state alone accounted for 28.3% of all games.

Using New York-New Jersey games as a proxy for Greater New York City (GNYC), 56% of games were played outside GNYC in 1866, and 67% in 1870. Many southern and western games involve tours of eastern clubs, playing and (usually) defeating the locals. Reporting of games in

the south and the west increases after 1868, due largely to reporting of winter baseball games. Of the non-Northeast states, Ohio's totals are the only ones to compare to the northeastern states.

Sixty-two games in Canada were reported—more than in Michigan, more than in most U.S. states. Early baseball reporting had a surprisingly international, or at least North American, flavor.

Number of Games, By Month²⁵

	1866	1867	1868	1869	1870	Total	% of Total
Jan.	2	2	1	2	11	18	0.5%
Feb.	3	2	1	7	22	35	1
Mar.	1	4	2	9	20	36	1
Apr.	13	10	30	36	76	165	3
May	51	59	92	140	178	520	10
June	71	61	120	155	179	586	12
July	112	155	186	276	238	967	20
Aug.	121	124	265	232	289	1031	21
Sept.	81	81	213	192	294	861	17
Oct.	67	41	109	152	134	503	10
Nov.	45	20	32	51	61	209	4
Dec.	2	0	0	11	10	23	0.5

As can be seen, there are a lot more November games, and fewer April games, than today's Major League Baseball. July, August and September were the core months, with over half (58%) of the games being played in these three core months. Much more than today, baseball in the 1860s was not the "Game of Summer" but rather the "Game of Fall."

Conclusion

With this data historians will be able to confirm, with hard numbers, previous assumptions about pre-pro baseball (most notably, that scoring was higher in the pre-pro era than in the professional era). The data also highlights noticeable changes from one year to the next in scoring and game times, as well as the spread of baseball from east to west. The analysis suggests that the pre-pro game of baseball never was static, but rather, ever-changing and ever-evolving, greatly impacted by rule and equipment changes—in many ways, more impacted by those changes than by the recent changes that impact today's game.

¹ National Association of Base Ball Players, the governing body for amateur clubs.

² The years 1858-65 are already covered in my article, "Baseball 1858-1865: By the Numbers," *Baseball Research Journal* (Summer, 2020) 85-90.

³ 4,984 total entries, including a handful of games cut short because of rain.

⁴ The “median” of a set of numbers is that number where half the numbers are lower and half the numbers are higher.

⁵ “Professional” clubs as listed in the *Beadle Baseball Guide* “club averages” for 1870 and 1871, with professional games for the 1870 Chicago White Stockings, Rockford Forest City, and Maryland of Baltimore added. Includes the games the professionals played against amateur teams.

At this time clubs jumped from “amateur” to “semiprofessional” to “professional,” often in the same year. Authorities did not always agree on whether a club was “professional” or not. The 1870 Philadelphia Keystones, for example, are listed as professional in some contemporary sources, amateur in others.

⁶ “1st class” (top amateur) clubs as defined in the *Beadle Baseball Guides*. The 1869 *Beadle Guide* (covering 1868) listed only individual, not club, scoring statistics, so the postseason *New York Clipper* compilations are used as an analog.

The numbers of “first class” games for each year are 1861:64, 1864:179, 1865: 258, 1866: 485, 1868:216, 1869:1138, 1870:570. 1867 numbers were calculated using *New York Clipper* end of year reports. Much “double counting” of games is included here.

⁷ By comparison, Major League Baseball games for 2019 averaged 9.66 rpg. On a side note, as pointed out in the 2018 *SABR Journal*, if you only count “earned” runs, 1871 rpg roughly equal modern rpg.

⁸ Richard Hershberger, “Called Strikes,” online article at www.protoball.org.

⁹ Among the changes at this time were new rules on when an umpire should call a ball or strike, a rule confining the batter to a “box,” and rules confining pitchers to a box when delivering a pitch. In 1870 the practice of allowing batters to call for a “high” or “low” strike was abandoned. See Richard Hershberger, *Strike Four: The Evolution of Baseball* (New York, Rowman & Littlefield, 2019), and Peter Morris, *Game of Inches: The Stories Behind the Innovations That Shaped Baseball* (Chicago, Ivan R. Dee, 2006) 1:105, 107, for more.

¹⁰ Hershberger, *Strike Four*, 122-123; Morris, *Game of Inches* 1:54; *Knoxville Press and Messenger*, May 7, 1868.

¹¹ *New York Clipper*, April 16, 1870; July 9, 1870; October 29, 1870. See also Jack Bales, *Before They Were the Cubs* (Jefferson, NC, McFarland & Co., 2019) 50; Morris, *Game of Inches*, 1:53; *Brooklyn Union*, Dec. 6, 1869, Aug. 2, 1869.

The core of the “dead” ball was restricted to one ounce in weight. Some “lively” balls reportedly had a 3-ounce rubber core—almost half their weight! Hershberger, *Strike Four*, 124.

¹² Cf. *The Lewisburg Chronicle*, Oct. 7, 1870.

¹³ *New York Tribune*, July 28, 1870.

¹⁴ Morris, *Game of Inches*, 1:54.

¹⁵ Only games against other professional teams considered. Data from Marshall D. Wright, *The National Association of Base Ball Players, 1857-1870* (Jefferson, NC, McFarland & Co., 2000) 292-293. See *New York Herald*, July 27, 1870; *New York Clipper*, July 30, 1870. See also *New York Clipper*, Sept. 24, 1870, for an amateur club’s scoring with the live vs. dead ball.

¹⁶ See Hershberger, *Strike Four*, 116-118. While data on the quality of ballfields is lacking, it is safe to assume that better maintained ballfields also helped improve fielding and thus reduced run scoring.

¹⁷ For 1858-65 data, see Bruce Allardice, “Baseball 1858-1865: By the Numbers,” *Baseball Research Journal* (Summer, 2020) 85-90. For the definition of “first class” teams 1866-70, see footnote 6. 1860, 1862 and 1863 “first class” figures derived from Wright, *The National Association*. The numbers of games for those years are 1860: 174, 1862: 88 and 1863: 128.

¹⁸ See Protoball website. Reported scores 1847-57 exist for 527 games, almost all in the Greater New York City area, and mostly in games by the New York Knickerbockers, considered baseball’s founding club.

¹⁹ *New York Clipper*, June 19, 1869; *Buffalo Commercial*, June 9, 1869.

²⁰ *Chicago Tribune*, May 14, 1870.

²¹ Of games that have times indicated.

²² Of games that have innings indicated.

²³ See Bob Tholkes, *Length of Game, 1860-65*, online at https://protoball.org/Length_of_Games_1860-1865_1.0. The games sample here is small, and includes only 9 inning games.

²⁴ Unknown state in a handful of games. The state-by-state breakdown can be found at www.protoball.org.

²⁵ Of games that have months indicated.