

Sunday Baseball Tidbits newsletter – interesting and random stuff, fodder for bar bets.

5.7.2023

Good morning baseball fans,

While Yankees and Cardinals fans whisper to themselves “it’s a marathon, not a sprint” and the world is a little upside down with the Pirates in first and the Yankees in last, welcome to this week’s edition.

This week Happy Birthday **Willie Mays**, Tom Verducci on Velocity, Workload and Injuries; an Unbreakable Record, Mexico City, just how Bad are the A’s?, R.I.P. **Mike Shannon**.

Pour yourself a cup and enjoy.

THIS WEEK’S TRIVIA CHALLENGE

RANK THESE BROTHERS BY COMBINED CAREER HR TOTALS

Hank Aaron, Tommie Aaron

Brett Boone, Aaron Boone

Clete Boyer, Ken Boyer

Joe DiMaggio, Dom DiMaggio, Vince DiMaggio

Jason Giambi, Jeremy Giambi

BJ Upton, Justin Upton

NAME THE TWO BROTHERS I

These two pitching brothers – who combined for 529 victories, three Cy Young Awards and eight all-star selections. Consider 1970, when Brother 1 led the NL in wins, going 23-13 with a 3.20 ERA, while Brother 2 led the AL in wins, with a 24-12 record and a 3.04 ERA.

Brother 1-- elected to the Hall of Fame in 1991, finished his career at 314-265, 3.11 – with two Cy Young Awards, and five all-star selections. He was a five-time 20-game winner and topped the NL in wins three times.

Brother 2--notched a 215-174 record, a 3.45 ERA, three all-star selections and one Cy Young Award. He led the AL in victories twice.

NAME THE TWO BROTHERS II

Brother 1--17-year career at second base, he earned 12 all-star selections, led the league in runs scored once, and captured ten gold Gloves. Elected to the Hall of Fame in 2011, Roberto put up solid numbers to earn this spot: a .300 average; 2,724 hits; 210 home runs; 1,134 RBI; 1,508 runs; and 474 stolen bases.

Brother 2--enjoyed a 20-year ML career at the tough catcher position. While his numbers were not as flashy as his brother, I was a Rookie of the Year, a six-time all-star and one-time Gold Glover. Final numbers – .273 average; 1,236 hits; 112 home runs; 588 RBI; and 520 runs scored.

(answers at bottom)

MISCELLANEOUS STUFF

The last time we saw the Yankees and the Red Sox with the worst records in their division on May 1 was almost 40 years ago—1984.

As he returns to action, looking back on **Justin Verlander** last season. Verlander's season ranked as one of the best. No pitcher in his age 39 season had ever thrown more than 150 innings with a sub-2.00 ERA until Verlander tossed 175 innings with a 1.75 ERA after returning from Tommy John surgery.

The Rays have not a top 5 MVP vote getter in their 26 year franchise history. **Evan Longoria** was the most successful Ray in the MVP voting, finishing sixth twice, 10th once and in the top 20 three other times. **Brandon Lowe** was eighth in 2020 and 10th in '21, **Carlos Peña** was ninth in '07 as a Devil Ray and ninth again in '08 as a Ray.

Others who cracked the top 10 in MVP voting—Ben Zobrist 8th in 2009, Blake Snell 9th 2019.

Shohei Ohtani reached another superhuman achievement Wednesday night, striking out 13 batters to reach 500 in his career, which made him just the second player in AL/NL history to record 500 strikeouts as a pitcher and 100 homers as a hitter, joining Hall of Famer **Babe Ruth**.

Ohtani, though, has been a strikeout machine this season, as he tied a career-high with his 13 punchouts and leads the Majors with 59 strikeouts in 39 innings. He became the first pitcher in MLB to reach 13 strikeouts in a game this season.

He made history with his 13th strikeout by becoming the 10th Japanese-born pitcher to reach 500 strikeouts. And, of course, he joined Ruth in the 500 strikeout/100 homer club. Ruth hit 714 home runs and was credited with 501 strikeouts as a pitcher, per the Elias Sports Bureau. (Ruth's totals on certain stat sites show 488 career strikeouts, but that does not match up when adding up the totals from his game logs. There are a number of discrepancies in terms of record-keeping from baseball's early years, and Elias's tally is considered the official number.) Ohtani's also just the fifth player in the Modern Era (since 1900) with 500 career hits and 500 career strikeouts, joining **Smoky Joe Wood**, **Red Ruffing**, **Walter Johnson** and Ruth, per ESPN Stats.

Since 1969 only two men with 500-plus strikeouts even collected enough hits to get halfway to 500-500: **Steve Carlton** (346 hits) and **Greg Maddux** (272).

In 1883, the Philadelphia Quakers played their first game. A year later, the Brooklyn Atlantics followed suit. Chester A. Arthur and his majestic chops inhabited the White House in those days, meaning that the teams on my TV — the Philadelphia Phillies and Los Angeles Dodgers — had existed in some form through 25 U.S. presidents (one of them serving twice).

Each team has played over 20,000 games in that time. Going back as far as 1900, the Dodgers led the all-time head-to-head series, banking 1,115 wins to Philly's 877.

Bryce Harper needed 160 days from Tommy John surgery to active.

How much quicker did he go from surgery to hitting third in a big-league lineup? A review of all of the Tommy John surgeries on big-league position players in the past 10 years shows nobody else was within eight weeks of Harper.

A few examples:

Shohei Ohtani	7 months, 6 days
Didi Gregorius	7 months, 24 days
Aaron Hicks	8 months, 24 days
Pablo Sandoval	10 months, 19 days
Corey Seager	10 months, 24 days

Wednesday in Detroit, the Mets played their 26th doubleheader since the start of the 2021 season, the most in the majors during that span, according to STATS Perform.

The Guardians are next with 20 doubleheaders, followed by the Tigers at 16. The Astros are last with two, thanks in part to the retractable roof at Minute Maid Park, and the Padres, Rangers, Diamondbacks, Dodgers, A's, Giants and Rays have played five or fewer.

Doubleheaders put teams at a disadvantage, taxing bullpens in ways that can affect teams for days. They squeeze travel and except for dual admissions, hurt club revenue.

Known more for his speed than his power, **Davey Lopes** (7/6/78 vs. the Braves and 9/2/79 vs. the Cubs) is the only player with multiple walk-off grand slams in Dodgers history.

Last Sunday the White Sox scored 7 in the bottom of the 9th to beat Tampa and snap a 10 game losing streak. The day before **Lance Lynn** held the Rays hitless through 6 innings only to have the Rays put up 10 runs in the 7th enroute to a 12-3 win over Chicago. The Rays sent 14 hitters to the plate in the seventh, tallying nine hits -- five for extra bases. They scored seven runs with two outs.

Kody Clemens homered this week for the Phillies in Houston on the anniversary of his father Roger striking out 20 Mariners in 1986 for the Red Sox.

Bryce Miller, making his big-league debut for the Mariners, was perfect through 16 hitters against the A's, finishing with one run allowed, giving up just two hits. He became the first Mariners pitcher to strike out 10 in his Major League debut. Miller is only the third pitcher in AL/NL history with 10-plus strikeouts and zero walks in his debut, joining **Stephen Strasburg and Johnny Cueto**. Miller averaged a tick over 95 mph on his four-seamer and topped out at 97.3 mph, getting 11 of his 13 whiffs on his primary offering.

Oakland's **Mason Miller** had a no-hitter of his own through seven innings.

Seattle's fourth-round pick out of Texas A&M in the 2021 Draft, Bryce Miller made quick work of his time in the Minor Leagues, going from High-A Everett to Double-A Arkansas in 2022, his first full professional season. He continued to impress with an eye-opening Spring Training, and made four starts with Arkansas before getting the call.

OOPS--**Xander Bogaerts'** on-base streak is over -- and it's difficult to envision a stranger way for it to end.

Bogaerts, who had set a Padres record by reaching base in each of his first 30 games this season, appeared to have extended that streak Wednesday afternoon with a fifth-inning single in the Padres' 7-1 victory over the Reds at Petco Park.

Instead, **Juan Soto's** baserunning gaffe negated Bogaerts' single, turning it into one of the more unlikely force outs you'll ever see.

With Soto on first base, Bogaerts sent a sharp line drive to right, where Reds right fielder **Stuart Fairchild** attempted to make a diving catch. Instead, the ball short-hopped into Fairchild's glove.

Soto, who had already rounded second, turned to see Fairchild holding the baseball and assumed it had been caught on the fly. He retouched second base and headed back toward first -- much to the consternation of Bogaerts, who was standing at first base waiting for him.

Fairchild tossed the ball to second for what was ruled a 9-4 force out.

And, sure, any 9-4 force out is a strange one. But this one offered a particularly unique set of circumstances. Soto had actually touched second base. But Bogaerts would not receive credit for a hit, because Soto proceeded to give that base up.

Rule 7.08(e) reads:

If the forced runner, after touching the next base, retreats for any reason towards the base he had last occupied, the force play is reinstated, and he can again be put out if the defense tags the base to which he is forced.

Because Soto retouched second and retreated toward first, his initial touching of second base was negated. He was out at second just like any other force out -- which, by rule, does not count as a time on base for the batter.

Bogaerts had two more chances to reach base. In the sixth, he popped to shallow left, where Reds shortstop **Jose Barrero** made an excellent over-the-shoulder catch. In the eighth, he struck out.

Bogaerts finished 0-for-5. Still, he's off to a torrid start to his Padres tenure, with a slash line of .291/.378/.479.

On Monday, Bogaerts had extended his streak to 30 games, passing **Bobby Brown's** franchise-record 29-game on-base streak to begin a season, set in 1983. Bogaerts' overall streak had technically grown to 32 games, as he reached in each of his last two games with the Red Sox last season.

The Padres' all-time record on-base streak at any point in a season belongs to **Ryan Klesko**, who reached base in 56 straight games during the 2002 season.

From 1900 through 2022, there were 18 regular-season comebacks in games where one team led by 10 runs or more. Two of them happened in a span of four days between June 4 and June 8, 1989. Every single one of them was a gift.

However, there were 428,453 regular season games played during that span. That means there's a roughly one-in-23,803 chance that one of these comebacks will occur in any given game. That's a .004 percent chance, which is about the same odds of having identical triplets.

Fun read this week on great revenge seasons.

1966 Reds trade **Frank Robinson** to Orioles, claiming he was an old 30. Robinson wins triple crown and MVP leading O's to World Series. He hit .316 with 49 HRs, 122 RBIs, 122 runs scored with a .410 OBP and slugged .637 with 367 total bases.

1997 **Roger Clemens** lands in Toronto after the Red Sox give up on him. Clemens goes 21-7 with 2.05 ERA, 292 strikeouts in 264 innings pitched. Clemens won his 4th Cy Young—he would go on to win 7.

Of the Yankees' next 27 games, 5 are against the Rays and 13 more are against the Toronto Blue Jays, Baltimore Orioles, San Diego Padres and Los Angeles Dodgers. About the only things the Yankees lead the league in are cumulative injured list days and \$20.2 million spent on players while they've been on the IL. In going from 4.98 runs per game in 2022 to 3.94 this year, the Yankees are suffering through the most dramatic drop in scoring of any team in the league. They've scored fewer than five runs 22 times already, second to only the Miami Marlins.

After a great first half run in 2022 it has been a struggle. They got off to a 61-23 start but the Yankees are 55-55 in 110 games since then. And that's not even counting a playoff run in which they barely survived the Cleveland Guardians before getting unceremoniously swept by the Houston Astros in the American League Championship Series. Yankee hitters not named **Aaron Judge** batted a combined .232/.291/.360 in the second half of 2022.

It doesn't help that the AL east is stacked--the Yankees have no everyday players with a .900 O.P.S., the Rays have six. Toronto looks deeper. The Orioles are emerging as an exciting young team. Even the Red Sox just rattled off a 6 game winning streak.

The Yankees have not dipped below 90 wins in a full season since 2016. They need to get healthy and play much better to get back into contention. These next 27 games will tell a tale. Let's see where they are mid-June.

On the plus side, **Gerrit Cole** was named AL Pitcher of the Month. The Yankees' ace led the Majors with 40 2/3 innings and allowed only five runs during that span. He won five of his six starts, which included a two-hit, 10-strikeout shutout of the Twins on April 16.

Meanwhile, in Tampa... the Rays' sixth sweep of the season (with Thursday's win over Pittsburgh) and improved their record to 26-6, making them the fastest team to reach 20 games over .500 since the 1984 Tigers did so in 28 games. (The quickest team to that point since 1901 had been the 1955 Brooklyn Dodgers, who got off to a 22-2 start.) Only six other AL/NL clubs in the Modern Era have won at least 26 of their first 32 games, and Tampa Bay is the first team to do so since the '84 Tigers started 27-5.

The win Thursday featured a **Zach Eflin** gem 7 innings, 3 hits, 10 K's, 0 walks. The Rays managed only five hits against starter Vince Velasquez and four Pirates relievers, but three of

them were solo homers. It was Tampa Bay's 12th game this year with at least three homers, the highest total in the Majors and only one fewer than the team had all of last season.

The Rays had outscored opponents by 113 runs before Thursday's 3-2 win over Pittsburgh. The last team with a wider run differential through 31 games: **Honus Wagner's** Pirates in 1902, a year before the creation of the World Series.

The Rays are good at being different. The owner Stuart Sternberg, a former partner at Goldman Sachs, cultivated a Wall Street-savvy front office in the mid-2000s, and President of Baseball Ops Erik Neander worked for Sports Info Solutions, an analytics hub co-founded by John Dewan and Bill James, before joining the Rays in 2007.

And it's bad in St. Louis. The Cardinals' worst start to a season in decades. They sit in last place in the NL Central—a position they have finished in only twice in the last century.

Their 92 staff ERA+ is among the worst in the NL. Their starters have struggled to get results or go deep into games—they have a 5.00 rotation ERA with fewer quality starts than anyone in the NL except the Mets.

No team has recorded more outs on the base paths than the Cardinals. (They've made 12 in their first 31 games.) That's not a metric that includes caught stealing; it accounts for only outs made in the process of routine baserunning.

For a group with an organizational reputation of executing the little things well, St. Louis has been shockingly derelict in that department this year. They're getting caught making basic errors and being trapped in mental lapses. They rank 29th in defensive efficiency. (Only the Reds have been worse.)

No-hit bids through six innings over the last 50 seasons, counting the postseason — 1,418.

No-hit bids in that time that turned into actual no-hitters — 130

1,014 fans in attendance at a **Clyde Shoun** no-hitter in Cincinnati on May 15, 1944. That's the smallest no-hit "crowd" on record. Second is **John Montefusco** for the Giants in Atlanta, on the final weekend of the 1976 season, with a throng of ... 1,369.

Colorado swept the Brewers this week. The Rockies had gone 38 series since the last time they swept an opponent.

Last week the Twins **Jorge Lopez** saved a win for **Pablo Lopez**. The first time any López had saved a game for any other López ... the first time any active pitchers with the same last name had teamed up for a win/save ... and the first time any two pitchers with the same name had pulled this off since the Tigers' **Justin Wilson** saved one for **Alex Wilson** on May 13, 2017.

The Orioles, since their 4-5 start, are 18-6. Of the six teams they have faced in this run, only one, the Red Sox, is above .500. The combined winning percentage of the five others (the A's, White Sox, Nationals, Tigers and Royals) is .422, the equivalent of a 94-loss pace.

Teams, though, only can play the opponents in front of them. Like the Rays, the Orioles deserve credit for banking wins against clubs they should beat.

Also like the Rays, they seem to be benefiting from the new, more balanced schedule, which requires them to play each opponent in the powerful AL East only 13 times, as opposed to 19 previously.

Think the shift ban is working? Per Baseball Savant, when a lefty pulled a ball on a line or on the ground last April, he hit .308. This year, that number is .327. From Baseball Prospectus - "When at least one middle infielder played deeper than 155 feet last year, it took away 31 points of batting average on grounders and low liners. Interestingly, the .269 batting average when infielders were playing at infield depth in 2022 is almost identical to the .270 overall batting average on grounders and low liners in 2023. This suggests that the main reason why these batted balls are more successful this year is because of the infielders-off-the-lawn rule, not the rule keeping them on their own side of second base."

This week in 1979, **Bobby Bonds** became the second (after **Willie Mays**) to record 300 home runs and 300 stolen bases?

The 300-300 club is one of baseball's most exclusive, and people with the last name Bonds make up a full 25% of it. Bobby, then playing with Cleveland, joined the club with a solo homer

against the Brewers on May 2, 1979. Barry added his name to the list with a two-homer day against the Marlins on April 27, 1996.

Willie Mays, Bobby Bonds's friend and Barry's godfather, was the first in the 300-300 club. In addition to those three, three other players who played for the Giants (**Reggie Sanders, Steve Finley and Carlos Beltrán**) also reached both milestones. Finley and Barry Bonds were lined up next to each other in the Giants' outfield when Finley hit his 300th career homer June 14, 2006, to join the club. Just four days earlier, Sanders hit his 300th homer to put himself in the group.

Some interesting notes on the Pirates fast start:

Last year, the Pirates had the worst OBP in the National League, .291, and didn't reach 600 runs. This year, they have a .343 OBP, they're second in the NL in runs scored, and have a top-five offense, on pace for 871 runs.

Colin Holderman has pitched in 13 games. One inning in each game. The 8th inning in each game. The Pirates are 11-2 in games he has relieved.

The Pirates are throwing more breaking balls than any other club in baseball. An incredible 43.8% of their pitches this season have been curveballs, sliders or sweepers—not just the most in baseball right now, but also more than any team has ever recorded in a season since the implementation of Statcast. (The current league average for breaking ball use is 31.7%.).

The Pirates lead baseball with 41, compiling the most stolen bases in the first month of the season by a team in 20 years. Pittsburgh last accumulated 41 steals in a month in 1985.

The Pirates lost 100 games last year, found themselves in first place May 1 the next season. Last NL team to do that was the 1929 Boston Braves who rolled into May at 7-3 after finishing 50-103 the year before. In the AL the 2003 Royals and the 2009 Mariners did it but we are talking rare.

The last time the Pirates won 100 games was 1909, when they went 110-42-2 (.724 winning percentage).

HISTORIC TURNAROUND?

With their incredible start to the regular season, the Pirates went from a 100-loss team in 2022, to winning 17 of their first 25 games in '23. How rare is it for a 100-loss team to open the following season 17-8? Well, only three other teams in the Expansion Era (since 1961, when the schedule went from 154 to 162 games) have done it: Cleveland in 1986 and '88, and the Royals in 2003. No team has ever won 18 of its first 25 following a 100-plus-loss campaign.

How long can the Bucs continue playing like this? Will they shock the baseball world even more by making the postseason? Only time will tell, but if we go back in time, we can at least see how many other 100-plus-loss teams have had that type of success the very next year.

Note: Unless otherwise noted, only teams during the Expansion Era (1961-present) are included here for the sake of consistency with the 162-game schedule. Shortened seasons such as 1981, 1994, 1995 and 2020 are not included.

How many teams lost 100 or more games from 1961 to the present?

A total of **87 teams** lost 100 or more games in a season since MLB went from a 154- to a 162-game schedule in 1961.

What was the average win total for those teams the following season?

The average win total the year after a team lost 100 or more games was **69**.

How many teams finished the season after they lost 100 or more games with a record above .500?

Of the 87 teams with 100 or more losses dating back to 1961, **11** (12.6%) finished the next season above .500:

2021-22 Orioles (52-110 to 83-79)
2016-17 Twins (59-103 to 85-77)
2008-09 Mariners (61-101 to 85-77)
1988-89 Orioles (54-107 to 87-75)
1985-86 Giants (62-100 to 83-79)
1985-86 Cleveland (60-102 to 84-78)
1979-80 Athletics (54-108 to 83-79)
1973-74 Rangers (57-105 to 84-76-1)
1966-67 Cubs (59-103 to 87-74-1)
1962-63 Cubs (59-103 to 82-80)
1961-62 Phillies (47-107 to 81-80)

The highest win total among these teams belongs to the 1967 Cubs and 1989 Orioles, who each won **87 games** after losing 100-plus the prior season. The largest year-over-year increase in wins belongs to the 1962 Phillies, who went from 47 wins the previous season to 81 the next, representing an increase of **34 wins**.

How many teams with 100-plus losses one season reached the postseason the next?

That would be just **one**: the 2017 Twins, who went 85-77 after going 59-103 the prior season to clinch an American League Wild Card berth. Minnesota lost the AL Wild Card Game to the Yankees that October.

What was the average length of time from a 100-plus-loss season to a playoff appearance?

The average time to the next postseason berth for one of these teams during the Wild Card Era -- we're using that period for this question because since the implementation of the Wild Card in 1995, there has been more opportunity to reach the postseason -- was **6.6 years**.

As **Vlad Guerrero Jr.** looks like an MVP with the Blue Jays, Sports Illustrated took a look back at his Hall of Famer dad. In May 2000, before he was a Hall of Famer, **Vladimir Guerrero Sr.** was a hitter no one in baseball could wrap their head around—even his own manager.

"This guy went 80-something at bats without a strikeout," Expos manager **Felipe Alou** told Tom Verducci for a SI cover story that ran 23 years ago this week. "But this guy swings from his ass. He's not just trying to make contact. The guy is the strangest hitter I've ever seen."

Strange indeed. Guerrero's aggressiveness was his defining characteristic—and the numbers back up just how unusual a player he was. He loved jumping on the first pitch. He put the ball in play on the first pitch he saw in 19.6% of his career plate appearances and hit more than a quarter of his 449 career home runs on 0–0 counts. And yet, even though he was so eager to jump on the first pitch, he hardly ever struck out. His career strikeout rate is about half as high as Mike Trout's, for example.

There are only six players in MLB history who had a career strikeout rate under 12.5%, a career walk rate under 10% and hit at least 350 home runs: Guerrero, **Ernie Banks**, **Cal Ripken Jr.**, **Billy Williams**, **Yogi Berra** and **Carlos Lee**. (All of them but Lee are in the Hall of Fame.) But Guerrero also made far more contact than anybody else on that list. His career batting average (.318) is 28 points higher than any of the other five players.

At age 25, one month into his fourth season Guerrero had a "training aid" that **Joe DiMaggio** didn't: PlayStation. Guerrero playing an MLB video game for two hours in the clubhouse before a game in which he picked up three hits.

Guerrero had swung at 110 of the 174 pitches he had seen this year (not including intentional balls), and only seven times did a pitcher slip a called strike past him. Twenty-one of his 66 at bats lasted only one pitch. "What I do is see the ball, hit the ball," Guerrero says through an interpreter. He speaks almost no English. His study of pitchers doesn't venture beyond

PlayStation, which he considers a training aid. It helps him, he says, track pitches: "Sometimes all I know is a pitcher's name."

He has to be the only Hall of Famer to prep like that.

Matt Cashman, Blue Jays 3B and free agent to be, has been setting himself up for a big pay day. In April, he led the AL with a .384 batting average and .465 on-base percentage, and the majors with 68 total bases and 15 doubles—as many as he hit in 151 games in 2021. Including his excellent defense at third base, Baseball-Reference calculates that he has been worth 2.0 wins above replacement already this year.

Chapman finished seventh in AL MVP voting in 2018 and sixth in '19, but hindered by the hip injury and recovery, he began selling out for power, hitting the ball to his pull side and in the air more than ever before in his career. The result: a .221 batting average and a .746 OPS over the next three seasons. But he is healthy, he has made adjustments to be back as an offensive force, and he will score a big deal come this off season.

Surprised to read **Johnny Damon** went 6-for-6 in the Yankees' 12-11 win over the Royals on June 7, 2008, matching the franchise record for hits in a nine-inning game (June 6, 1934 - **Myril Hoag**) while becoming the only Yankee in original Yankee Stadium history to record six hits in a game of any length. Damon's final hit was a walk-off single.



This week in 1884, **Fleet Walker** became the first Black man to play in a major league baseball game, six decades before **Jackie Robinson**. He played for Toledo of the American Association.

The Boston Bruins had a record-breaking regular season in the NHL this year. Then in round 1 they were shocked by the Florida Panthers. Reminded me of the 1998 Yankees. They went 114-48 in the regular season. They swept the Rangers 3-0 in round one of the playoffs. But in the ALCS they fell behind the Indians 2 games to 1. With the pressure on, **Orlando Hernandez** took the mound in game 4 and the El Duque Show delivered as he pitched seven scoreless innings in a 4-0 win.

After defecting from Cuba Hernandez delivered 12-4 with a 3.13 earned run average in 1998 on a starting staff with **David Cone, Andy Pettitte, David Wells and Hideki Irabu**. **Mariano Rivera** chipped in 36 saves.

Frank Thomas. I continue to find tidbits that impress me. At age 32 — after a full decade in the big leagues — Frank Thomas' slash numbers were .321/.440/.579, he'd hit 361 doubles and 344 home runs, his career OPS+ was 169, and he'd won two MVP awards and finished top-3 three other times.

At that exact moment, he was making an argument as the greatest right-handed hitter in baseball history. Only 20 players up to that point* had 300 homers and 300 doubles through their age 32 season, and of the 20, only **Ted Williams, Babe Ruth and Lou Gehrig** had higher OPS+ than Thomas ... and of course all three of them were left-handed hitters.

Thomas, had he been able to maintain that pace, would have been in the same sentence as **Jimmie Foxx and Rogers Hornsby and Willie Mays and Frank Robinson and Henry Aaron**.

Injuries marred the rest of his career. He still ended up with a spectacular 156 OPS+ and a .419 career on-base percentage, and he was a deserving first-ballot Hall of Famer.

Just hours before Alabama's April 28 baseball game against LSU, Crimson Tide coach **Brad Bohannon** scratched starting pitcher **Luke Holman** due to "back tightness." The game, an innocuous 8-6 loss, got Bohannon fired yesterday.

What we know:

His termination comes after Ohio gambling regulators flagged two irregular bets on the game, both on LSU to win. One of the bets was reportedly large enough to trigger regulatory checks. ESPN reported that the person placing the bets was *in direct communication* with Bohannon when the wagers were placed. Two days later, Bohannon is out.

It's easy to blame the wave of legalized sports betting but, as regulators point out, the system worked "within minutes" here. Less than a week after the game and just three days after the bets were flagged, the situation is likely resolved. Will that dissuade impostors? Maybe. We've seen plenty of point-shaving scandals in college sports, but none sorted out this quickly.

Nonetheless, this is a stunning story. A major-conference program rattled by possible point-shaving (run-shaving?). It might not be over, though, as the NCAA is monitoring the case.

Fun Manager Facts—**Davey Johnson** was fired as manager five times in the season after he led a team to a winning record. **Billy Martin** was fired 6 times the season after posting a winning record but the whole Steinbrenner thing was involved. **Dusty Baker** has been fired three times after winning seasons. **Buck Showalter** has been fired twice after winning seasons — and both of those teams went on to win the World Series the next year.

Think Mets fans may be sweating too? The mighty Tigers swept them this week, beating **Justin Verlander and Max Scherzer**. But they are smiling in Minnesota where **Sonny Gray and Joe Ryan** are a combined 9-0 with a 1.60 ERA.

Dodger **James Outman** was NL Rookie of the Month. He had a pretty good series in Chicago. Had two 2 HR games against the Cubs. First Dodger to do that at Wrigley, ever. How many visiting players 25 or younger had ever done it in the history of Wrigley for any team? That

would be just two: the young **Wilver D. Stargell**, for the 1965 Pirates (at age 25) and **Richard Hidalgo**, for the 2000 Astros (also at 25).

In the first of those two multi-homer games, on April 21, Outman did something equally cool. He hit a go-ahead ninth-inning grand slam *and another homer* in the same game.

So how many visiting players had ever done that at Wrigley? That would also be none. And how many have ever done it, period, in any ballpark? Just eight in history, before Outman came along

Some great names in that 8 including **Sixto Lezcanno. Barry Foote, Pepper Martin and Mike Pagliarulo.**

Orioles reliever **Felix Bautista** did something you don't see every day. One inning save—0 runs, 0 hits, 3 K's, 3 BB. Only happened 5 times since 1969 when the modern save rule kicked in. For the month of April O's reliever **Yennier Cano** threw 33 innings, no hits, no walks. (That included a stretch of 21 consecutive batters retired.) Never been done before.

The Reds went a mind-blowing 354 plate appearances in a row without a home run. They ended the streak with a **Nick Senzel** walk off HR. Only three teams since 1970 have had a longer homerless streak end with a walk-off. And we should point out that none of those other three happened in walk-off hero Nick Senzel's lifetime.

July 1979 — Cubs: streak of 428 PA ends on Dave Kingman walk-off

Sept. 1973 — A's: streak of 396 PA ends on Gene Tenace walk-off slam

May 1992 — Brewers: streak of 381 PA ends on Franklin Stubbs walk-off slam

SAY HEY



Happy 92nd birthday to the oldest living Hall of Famer, **Willie Mays**. 24 All Star games. 12 Gold Gloves. 2 MVPs. Led NL 4 times in HRs, 5 times in slugging. 660 HRs, .302 average, 1903 RBI and 338 stolen bases. Mays was also at the forefront of a resurgence of speed as an offensive weapon in the 1950s, leading the league in stolen bases four times, triples three times and runs twice, with his 179 steals during the decade topping the major leagues; he was the first NL player to hit 30 home runs and steal 30 bases in the same season, and the first player in history to reach both 300 home runs and 300 stolen bases. He held the NL record for career home runs from 1966 until **Henry Aaron** passed him during the 1972 season, during which time he became the second player and the first right-handed hitter to hit 600 home runs.

A classic example of a 5-tool player, Mays finished his career with a batting average of .302. Upon his retirement, he held the NL record for career runs scored (2,062), and ranked second in

league history behind **Stan Musial** in games played (2,992), third in at bats (10,881), runs batted in (1,903), total bases (6,066), extra-base hits (1,323) and walks (1,464), fourth in hits (3,283), fifth in slugging percentage (.557), and eighth in doubles (523); his 140 triples ranked fourth among players active after 1945. He holds major league records for games as a center fielder (2,829), putouts as an outfielder (7,095) and extra-inning home runs (22), and ended his career behind only **Ty Cobb** in total games as an outfielder (2,842) and ranking seventh in assists (188) and third in double plays (59) in center field.

He is one of just 30 players all-time to hit at least 50 homers in a single season and he's one of 86 players to rack up at least 20 triples in a season. Mays, however, is the *only* player who is a member of both clubs.

Mays is one of just 18 players in Major League history to hit four home runs in a single game. On April 30, 1961, Mays went 4-for-5 with four homers and eight RBIs in a 14-4 win against the Braves at Milwaukee's County Stadium.

He won the National League Most Valuable Player Award twice during that stretch -- first in 1954 and again in '65 -- but he was a yearly contender for the honor. In fact, he received a share of MVP votes each season from 1954-66 and he finished in the top 6 in 12 of those 13 years -- and in the top 3 six times.

recording at least 70 extra-base hits in 13 straight seasons from 1954-66. No other player has 13 such seasons, consecutive or otherwise, in Major League history.

Dominance- Mays accounted for at least 7.0 bWAR in each of those 13 seasons from 1954-66, the longest such streak in big league history. **Lou Gehrig** is the only other player to post at least 7.0 WAR in even 10 straight seasons (he did it for 11 from 1927-37). Overall, Mays racked up 124.1 WAR from 1954-66 -- 27.7 more than any other player during that span. **Hank Aaron** was second with 96.4 WAR, followed by **Mickey Mantle** at 90.0.

Missed nearly two full seasons while serving his country. He played in only 34 games in 1952, then missed the entire '53 season after being drafted into the Army.

He had at least one hit in 15 All-Star Games. Stan Musial (14) is the only other player with a hit in more than 11 All-Star Games. Needless to say, Mays' 23 overall hits are the most in All-Star Game history.

The two pitchers Mays faced the most (by far) in his career were a pair of Hall of Famers: **Warren Spahn** (253 plate appearances) and **Don Drysdale** (243 PAs). Yet neither could find an answer for Mays' prowess at the plate. "The Say Hey Kid" hit better than .300 against each pitcher, combining for a .318/.371/.596 slash line and 59 extra-base hits, including 31 home runs, against the Hall of Fame duo.

Mays faced 14 Hall of Fame pitchers overall, posting a .286 batting average and an .859 OPS over 1,319 plate appearances. He hit 56 of his 660 career homers off Hall of Famers, including

18 against Spahn, 13 against Drysdale, five against **Sandy Koufax** and four apiece against **Robin Roberts** and **Fergie Jenkins**.

Mike Trout has often drawn comparisons to Mays due to the pair's consistency and dominance in center field -- and the two stand alone as the only players in Major League history with multiple seasons of at least a .320 batting average, 25 home runs and 30 stolen bases. Mays accomplished the feat in back-to-back seasons from 1957-58, posting a collective .340 average while averaging 32 homers and 34 stolen bases over those two campaigns.

Mays is one of 33 members of the 3,000-hit club, but he's the only player in MLB history with at least 3,000 hits, a .300 average, 300 home runs and 300 stolen bases.

Throughout his career, Mays claimed four home run titles, four stolen base titles and one batting title. He also led the NL five times apiece in OPS and slugging percentage; three times in triples; twice each in runs, extra-base hits and on-base percentage; and once apiece in hits and walks.

In 1955, Mays became the first player in Major League history to hit 50 home runs and steal 20 bases in the same season. It took 41 years for another player to repeat that type of production, and only three others -- **Brady Anderson (1996)**, **Ken Griffey Jr. ('98)** and **Alex Rodriguez (2007)** -- have accomplished the feat to this day.

Mays is one of just four players -- along with **Frank Schulte (1911)**, **Jimmy Rollins (2007)** and **Curtis Granderson (2007)** -- to record at least 20 doubles, triples, home runs and stolen bases in the same season. Mays accomplished the feat in 1957, when he racked up 26 doubles, 20 triples, 35 homers and 38 stolen bases.

Of the 28 players in the 500-home run club, none hit as many triples as Mays' 140. Only two other members of the club even topped 100 triples -- **Babe Ruth** had 136 and **Jimmie Foxx** had 125. Mays also ranks second within the 500-homer club in stolen bases (338), trailing only **Barry Bonds** (514).

He was the first player in MLB history with multiple 35-35 seasons, though he's since been joined by Bobby Bonds, **Barry Bonds** and **Alfonso Soriano**.

He had a .302 career average with 335 homers while playing at home, and a .301 career mark with 325 home runs on the road. As for opposing pitchers, he was a career .300 hitter with a .917 against righties, and a .305 hitter with a 1.006 OPS vs. lefties. Mays also had at least a .300 average and .925 OPS in every month except July (.280 BA, .870 OPS).

Mays often stepped up in big spots, posting a .965 career OPS in high-leverage situations. That ranks fifth all time among players with at least 2,000 high-leverage plate appearances, behind only Jimmie Foxx, Barry Bonds, Stan Musial and Henry Aaron. Mays also had 1,928 documented total bases in the seventh inning or later, second-most on record behind only Aaron (1,984).

Take a spin through Baseballreference.com to see how many top ten all time lists Mays is on to appreciate how great he was.

ONE REASON THE WHITE SOX ARE BAD

The White Sox are 29th in ERA, 28th in FIP. Sox starters have a 5.12 ERA (21st) and a 5.09 FIP (25th). The bullpen is one of three, with the Giants and A's, to have at least a 6.00 ERA. Sox relievers have a 6.47 ERA and a 5.41 FIP, both better than only the semi-pro team the A's are running out there. White Sox pitchers have walked one out of every nine men to come to the plate this year, something only a small handful of teams have done over a full season in the last 60 years. When Sox pitchers do find the plate, they're getting hammered. They've allowed the second-most barrels in baseball; only the Royals have allowed more. Close to half the batted balls they have allowed have been hard-hit.

Fielding Independent Pitching (FIP) measures what a player's ERA would look like over a given period of time if the pitcher were to have experienced league average results on balls in play and league average timing.

FIP is similar to ERA, but it focuses solely on the events a pitcher has the most control over -- strikeouts, unintentional walks, hit-by-pitches and home runs. It entirely removes results on balls hit into the field of play.

For example: If a pitcher has surrendered a high average on balls in play, his FIP will likely be lower than his ERA. Balls in play are not part of the FIP equation because a pitcher is believed to have limited control over their outcome.

The formula

Where the "FIP constant" puts FIP onto the same scale as the entire league's ERA: $((HR \times 13) + (3 \times (BB + HBP)) - (2 \times K)) / IP + \text{FIP constant}$.

EARLY DAYS

The final score when the Cincinnati Red Stockings played the first professional baseball game on May 4, 1869 was 45–9. The Red Stockings, who had formed two months earlier as the first openly professional baseball team, played two warmup games before beginning league play May 4 against another Cincinnati team called Great Western. The debut blowout was a sign of things to come.

Cincinnati's next game, against an Indiana club called Kekionga of Fort Wayne, was even more lopsided, ending with a final score of 86–8. (They didn't think of adopting a mercy rule?) The Red Stockings won their next six games by an average of 31.1 runs per game before beating Alert of Rochester by the relatively tight score of 18–9. Some other gaudy scores from that inaugural season include 80–5 (June 9 against the Mutual Club of Springfield, Mass.), 53–0 (July 1 against Baltic of Wheeling, W.Va.), 85–7 (July 30 against Cream City of Milwaukee) and 103–8 (Aug. 31 against Buckeye of Cincinnati).

The Red Stockings won all 64 of the games they played that year—all but nine of them by at least 10 runs.

EVERY PARENT'S DREAM, OR A GREAT REASON TO CALL OUT OF WORK

Angels rookie shortstop **Zach Neto** was called up this week. His parents, Joaquin and Maggie, needed to quickly book flights to Boston from Miami after he informed them of his surprising promotion to the majors late on the night of April 14.

The next day was a Saturday, but both Joaquin, a mailman, and Maggie, an AT&T employee, were scheduled to work. Maggie, who helps set up phones and internet service for federal agencies and the White House, needed to assist Vice President Kamala Harris, who was on a trip to Los Angeles.

For both Neto parents, however, Zach's major-league debut took priority.

"I already had pre-warned my boss when Zach got drafted (in 2022). I told him one day this year maybe, you're going to receive a phone call from me late at night letting you know that I'm not going to come to work for a few days because Zach got called up to the majors," Joaquin said.

Joaquin left his boss a message at about 12:30 a.m. Maggie phoned her superior at around the same time, getting him on the second try.

"Are you OK?" he asked.

"Yeah, I'm fine," Maggie replied. "I just want to let you know, I can't work the vice president's trip. I'm not going to work tomorrow, and you can do whatever you want on Monday because my son just got called up."

MORE FIRST MONTH ODDITIES

Jayson Stark, The Athletic

Last year's American League stolen base champ (**Jorge Mateo**) has as many homers (six) as last year's home run champ (that **Aaron Judge** guy).

- The pitcher who led the sport in losses last year (**Patrick Corbin**) won a game before the pitcher who led the sport in wins (**Kyle Wright**).
- And a dude who ranks 154th in baseball in average exit velocity (**Luis Arraez**) somehow has a higher slugging percentage (.543) than the guys who ranked 1-2 last year (Judge and **Yordan Alvarez**).

As recently as last season, 232 major-league games dragged on for three and a half hours or more. That's not even including the 129 extra-inning games that lasted 3:30-plus. So the 232 is just nine-inning games. It works out to more than one per day, every day, for six months.

OK, anyone want to guess how many three-and-a-half-hour games we've seen this year? (Again, just nine-inning games.) That would be exactly ... *two*.

we went four consecutive weeks without *any* three-and-a-half-hour nine-inning games. So when's the last time that happened? In 1917?

The Rockies, who play in a park where baseballs sometimes refuse to come down, haven't played *a single three-hour game all season*? True. Including extra innings.

Is this injury rate unusual? For the past several years, Baseball Prospectus' Derek Rhoads has been studying injury trends. As always, his data is eye-opening.

- The number of pitchers placed on the IL in the first 32 days of the season has climbed to 182 — the most in the first 32 days since he has been keeping track of this. That's up 14.4 percent compared to last year (which was in the wake of the lockout/abbreviated spring training) and up an astounding 62.5 percent compared to 2018.
- On the other hand, the number of hitters who headed for the IL in the first 32 days was "only" 88. That's up from last year's 78, but actually is lower than in any other season in the past five years.
- So where has the upward surge in pitcher injuries come from? There has been a significant spike in elbow and shoulder issues. Elbow placements on the IL jumped from 57 last year to 67 this year. Shoulder-related IL placements are way up, from 40 to 57. Both are the most ever in Rhoads' time tracking these trends.

We shouldn't overlook the health *benefits* of the clock. Mariners broadcaster Rick Rizz told me last week that he'd done some fascinating math on this topic. Let's say the games on average are 25 minutes shorter this season than last season. Over the course of six months, that would add up to about 67.5 fewer hours that players will have to spend just standing on the field. Which computes to 22.5 *fewer games*. Which feels, well, meaningful.

Ohtani the hitter*: .294/.355/.541, 7 HR

Hitters vs. Ohtani the pitcher: .102/.260/.185, 2 HR

What would have to happen for those hitters to hike their average this year as high as Ohtani's average? Oh, not much. Except he'd have to give up a hit *to the next 29 hitters he faces in a row*, which seems unlikely.

- What would have to happen for those hitters to get their career slugging percentage *against* Ohtani (.320) to reach Ohtani's career slugging percentage (.532)? Hey, that wouldn't be hard, either. He'd merely have to serve up a home run *to the next 85 hitters he faces*, which also seems not that likely.
- And one more thing: Ohtani the hitter has cranked 87 home runs since 2021. Ohtani the pitcher has faced 131 hitters this year — and allowed two homers. At that rate, how long would it take those hitters to hit 87 home runs *against him* if they started now? By my calculations, they would get there in July ... of 2031!

STOLEN BASES

Thanks to pitcher's limit of two disengagements (i.e. throw-overs) per batter and larger bases, entering May 1, the average stolen bases per game is 1.8, which is a jump up from last year (1.4) and 2021 (1.2) and the highest number since 2012. The stolen base success rate, 79.4 percent, is among the highest in recent baseball history.

Interestingly enough, limiting disengagements to two hasn't created the havoc you would think when a pitcher runs out of them. There have only been an average of 0.1 stolen bases per game after a pitcher has thrown over twice, and the success rate is lower than in any other scenario.

Steals per game

- 0 pitcher disengagements: 1.2 steals, 78.3 percent success rate
- 1 disengagement: 0.5 steals, 82.1 percent success rate
- 2 disengagements: 0.1 steals, 77.4 percent success rate

You could make the case that pitchers aren't often using both of their disengagements, but still more than half of the steals are taking place before even one disengagement.

Speaking of stolen bases-- Boston prospect **David Hamilton** was 70-for-78 with Double-A Portland and finished tied in the minors for the most steals in a full-season league last year. (Mets prospect **Omar De Los Santos** also stole 70 but was caught 15 times, nearly double Hamilton's total.) Hamilton, who was originally drafted by the Milwaukee Brewers before being part of the Hunter Renfroe trade, was moved up to Triple-A Worcester and added to Boston's 40-man roster this winter. Last month, he went first to third on a ground ball to shortstop. Hamilton has shown he can steal on pitchers who are 1.3 seconds to the plate and catchers with elite pop times (catch and throw). He can outrun the ball. But you can't steal first.

Royals prospect **Tyler Tolbert** at class A Quad Cities stole 53 bases on 55 attempts last season. In his career he has 105 stolen bases in 178 games—caught just 3 times.

One theory as to why we don't have a ton of base stealing burners is recovery time. **Rickey Henderson and Vince Coleman** were awesome in their hey day topping 100 attempts. But it beats up your body and you're no good to your team if you aren't on the field.

Teams with the youngest rosters (Pirates, Orioles, Guardians, D'backs and Marlins) lead baseball in stolen base attempts. Many of the young players have already played under this set of rules in the minors. Over time we will track how this impacts roster building. We mentioned last week that baseball is testing a designated runner/stealer rule. If it makes it to the majors (so we have the return of **Herb Washington**—if you're too young to remember him, look him up) it will be interesting to see if teams will recruit super-fast runners who can read pitchers and crank up stolen base totals.

Of course there are always outliers. More than half of MLB is on pace to steal 100 bases this season, a year after just eight teams reached that mark. The Twins and Rockies are on pace to steal 62 bags this year ... combined. They were bottom-two last year in swipes, too, but combined for 83 stolen bases. So they're stealing even less this year, when the rules of the game literally changed to encourage more thefts. It turns out it isn't a strategic plan—both teams are just slow. The Twins fastest player, Byron Buxton, is an injury risk, and the rest of the roster isn't filled with speedsters.

Meanwhile, the Rockies' fastest player this year, according to Baseball Savant, is 36-year-old Charlie Blackmon, who ranks 89th in MLB's 90-foot running splits this year. Not exactly a steals-conducive environment.

R.I.P MIKE SHANNON



Former Cardinals third baseman, outfielder, and broadcaster **Mike Shannon** died this week at 83. Shannon played for the Cardinals for nine seasons, from 1962 until 1970, when his playing career ended after he contracted nephritis. He won the World Series twice with the club, in both 1964 and 1967. In 1967, Shannon finished 7th in NL MVP voting, joining **Lou Brock**, **Curt Flood**, and winner **Bob Gibson** among Cardinals who finished in the top 10 that season.

Shannon, who moved from right field to third base midcareer when the franchise acquired slugger **Roger Maris**. During his career, Shannon hit both the final home run in the original Busch Stadium (Sportsman Park) and the first home run by the Cardinals in the second Busch Stadium. His game-tying two-run blast off Yankees Hall of Fame pitcher **Whitey Ford** in Game 1 of the 1964 World Series -- which the Cardinals won in seven games -- proved to be the most significant of his career.

Overall, Shannon slashed .255/.311/.387 for his career, good for a roughly league average 97 wRC+. The career .255 hitter had 68 home runs.

Shortly after his retirement, Shannon joined the club's broadcast booth in 1972. He would go on to spend 50 years as the voice of the Cardinals on the radio until his retirement following the

2021 season. Shannon was inducted into the Missouri Sports Hall of Fame in 1999 and the Cardinals Hall of Fame in 2014. Shannon was one of only 14 announcers in baseball history known to have spent as much as 50 years in a broadcast booth, and one of just six to call all those games for only one team. Only three other broadcasters active at the time -- Jaime Jarrín with the Dodgers, Denny Matthews with the Royals and **Bob Uecker** with the Brewers -- called games for their respective teams longer than Shannon. He worked alongside broadcasting legends such as Jack Buck, Dick Enberg and **Joe Garagiola**.

Shannon was at the microphone for Cardinals World Series victories in 1982, 2006 and '11. He was also on the radio call in St. Louis when slugger **Mark McGwire** smashed his 62nd home run of the 1998 season to pass Maris, breaking the single-season record of 61 set in 1961. His home run call "Get up, baby!" became a St. Louis treasure.

SOUTH OF THE BORDER

Mexico City is the highest elevation city in North America at 7,349 feet above sea level. Altitude and light air in Mexico City for Padres-Giants. Highest over/under in MLB history at 20 runs. The two teams combined for 27 runs in Padres 16-11 win. With 11 HR there were more hitters with at bats that had home runs (10) than those that didn't (9) – **Manny Machado** had two HR. The teams came back to earth Sunday with San Diego winning 6-4.

For two days at Estadio Alfredo Harp Helú, the M.L.B. games were a celebration of Mexico and its love of baseball. The league had previously played regular-season games in Monterrey in 1996, 1999, 2018 and 2019. Exhibition contests were played in Mexico City in the past but playing games that mattered in the country's capital was different.

M.L.B. wanted to do so in Mexico City sooner, but the \$166 million stadium, which holds 20,000 fans, wasn't completed until 2019. The facility is home to the Mexican League's Diablos Rojos, a team owned by the Mexican billionaire Alfredo Harp Helú, also a part owner of the Padres.

Mexico City is one of the largest cities in the world, a metropolis more populous (22 million) than New York City (20 million) and 2,000 feet higher in altitude than Denver, which is home to M.L.B.'s Colorado Rockies and is famously a mile above sea level. It is also the largest city in North America without a franchise in the region's four major men's professional sports leagues (N.B.A., N.F.L., N.H.L. and M.L.B.).

Baseball has a strong foothold, particularly in certain regions of this country of 127 million people. Given how the Toronto Blue Jays are the M.L.B. team for all of Canada, baseball officials and fans have dreamed about the potential of an expansion franchise in Mexico City.

Regular-season games, at the very least, are expected to return to Mexico City. As part of its overseas push in recent years, M.L.B. played games in London for the first time in 2019, expanding a world tour that already included Japan, Puerto Rico and Australia. In the latest labor agreement, M.L.B. and the players' union agreed to more regular-season games in London, some in Paris in 2025 and yearly trips to Mexico City from 2023 to 2026.

The first Major League player to homer in a regular-season game in Mexico--**Steve Finley**, SD (8/16/1996 vs. Mets)

Winning pitcher in the first MLB regular-season game played in Mexico--**Fernando Valenzuela**, SD (8/16/1996 vs. Mets)

Tom Verducci in Sports Illustrated considered how many home runs **Aaron Judge** would hit if he played all his games in Mexico City. Start with the average fly ball at Yankee Stadium last season and compare it to the average fly ball last weekend in Mexico City:

Yankee Stadium averages

Exit velocity 92.8 mph

Distance 313 feet

% of fly balls that result in HR 18.2%

Mexico City

97.0 mph

Distance 439 feet

% of fly balls that result in HR 48.3%

Nearly every other fly ball in Mexico City was a home run. The stadium is more than a mile and a half above sea level, some 7,349 feet. It makes Coors Field look like a pitchers' park.

Comparing similar exit velocity and launch angle, a fly ball hit at Yankee Stadium travels 39 feet farther when struck the same way in Mexico City. That's 10.9% farther!

Now we have a pretty good handle on how much farther a ball travels a mile and a half above sea level. Our next step is to imagine Judge playing 81 games at Estadio Alfredo Harp Helú instead of Yankee Stadium and how that influences his ball flight.

Let's look at every fly ball Judge hit at Yankee Stadium last season that traveled at least 310 feet and was not a home run:

Give those fly balls the Mexico City boost: add 11% to each fly ball distance. The outfield dimensions at Estadio Alfredo Harp Helú are not that different from Yankee Stadium: 332 down the lines and 410 to center, distances only 4% and 6% farther down the lines and less than 1%

to center. With the 11% boost, a warning-track fly ball at Yankee Stadium is a home run in Mexico City.

The verdict? Conservatively, Judge gets at least 14 more home runs if he plays a season with Estadio Alfredo Harp Helú as his home ballpark. On the low end of the estimate, that would make Judge the MLB single-season home-run champion with 76 home runs.

JAYSON STARK AND MORE WEIRDNESS IN MEXICO

Looking back on the Padres-Giants Mexico City series. We've never had a big-league game featuring a mile's worth of home runs. But this game gave it a shot!

4,858 feet worth of homers, according to Statcast, last Saturday in Mexico. So they only missed the miracle mile by 422 feet. Just two games in the Statcast era (since 2015) have ever come closer to the home-run mile mark than that:

- 4,969 feet in a totally wacked out, 13-homer Diamondbacks-Phillies game in Philadelphia on June 10, 2019. But that was with two extra homers.

And 4,861 feet, in yet another Diamondbacks 2019 launchfest, this time in Arizona on Aug. 16. There were a dozen homers that day — three of them popped by a man who somehow went hitless in this game, the Giants' **Mike Yastrzemski**.

Besides the 11 home runs that were hit Saturday, **Brandon Crawford** hit another one that was initially called fair, reviewed and then changed to a foul ball. I'd lobby to count it, except then he whopped a 482-foot fair-ball home run in the same at-bat. So never mind!

Back-back-back-back-back. Whoever said home runs come in bunches should have seen *this* game. The Padres hit back-to-back homers twice. The Giants also hit back-to-back homers twice. And no game north of the border had ever featured two of those by each team.

If you're thinking you've never seen that, either, maybe that's because it was just the third game of all time with back-to-back homers in three consecutive innings. Here are the other two, according to STATS Perform:

- July 3, 1962 — A's-Yankees at old Yankee Stadium: **Jerry Lumpe/Gino Cimoli** (A's) in the sixth ... **Bobby Richardson/Roger Maris** (Yankees) in the seventh ... Maris/**Mickey Mantle** (Yankees, duh) in the eighth.
- May 2, 2015 — Mariners-Astros at Minute Maid Park: **Logan Morrison/Mike Zunino** (Mariners) in the second ... **Evan Gattis/Colby Rasmus** (Astros) in the third ... **Jose Altuve/Luis Valbuena** (Astros) in the fourth.

Ten different players hit a homer! If I have my math right, that means more guys who started this game *did* hit a homer (10) than *didn't* (eight). And that's a thing that has happened in only two games ever played. The other two were in Philadelphia: That 13-homer game in 2019, plus Mets–Phillies on Aug. 24, 2015 (both with 10).

- There was nothing more shocking than an inning *without* a homer! From the third to the seventh inning of this game, these teams played 10 half-innings. They hit at least one home run *in seven of them*. All they missed was the top of the fifth and both halves of the sixth. In another stretch, between the third and fifth innings, there were 15 runs *and only 16 outs*.

Seven homers flew for 440 feet or longer. And not only is that the most in any game in the Statcast era, but also the previous record was just over half of that. That record was four, set in two games at Coors Field (“only” 5,200 feet above sea level), a place we used to think of as altitudinous before Mexico City (altitude: 7,349 feet!) came along.

The Giants hit five home runs in this game — *and got outhomered*. They were only the 10th team in history that could say that about any game.

Counting the next day, in the same stadium, the Giants wound up smoking eight home runs in two games ... *and lost them both*. It was the first time in the history of their franchise they'd hit eight (or more) in two games and won neither. It was also the first time the Padres had ever allowed eight (or more) in two games and lost neither.

Then there was **Nelson Cruz**. He's 42 years old ... *and went 5 for 6, with a homer and a stolen base*. How many other 42-year-olds (or older) in the modern era have had a game like that? None, of course. How many games did he have like that in his 20s? Yep, none.

- Cruz finished a triple short of the cycle. Guess what he did in his first at-bat the next day. What else? He tripled! He's hit one triple at sea level *in the last five seasons combined*.

And finally, how about the winning pitcher in this game, Padres lefty **Tom Cosgrove**. It was the first big-league game of his career. He faced one hitter, threw four pitches and got a ground-ball out to the second baseman. ... *And he came out of that with a win* — in a game in which 27 runs, 30 hits, 72 total bases and 95 other plate appearances erupted around him.

I don't know why, but I spent way too much time determining that only one pitcher in the live-ball era faced one batter and got a win in a game with more runs scored than that. And that was the immortal **Belve Bean**, for Cleveland, in a 15-14 game with the Yankees, on July 18, 1934.

KEEPING PITCHERS HEALTHY

When **Jacob deGrom** went on the IL last weekend he had 45 strikeouts and just four walks in 30 1/3 innings. If he could just stay healthy...as Joe Posnanski wrote—

deGrom is back on the injured list, this time with forearm tightness, and he's trying to sound positive ("There's a little inflammation in there, so the goal is to get that knocked out here in the next few days") but yeah, in a year when he's had to deal with left-side tightness, wrist soreness and, now something with his forearm (it has been officially called "right-elbow inflammation" which sounds worse), it's hard to be super positive.

In 2012, the New York Mets had an old pitching staff, anchored by 37-year-old knuckleballer **R.A. Dickey**, who won the Cy Young Award, and backed up by perhaps the best pitcher of his generation, 33-year-old **Johan Santana**, and 33-year-old **Chris Young**, who is now GM of the Rangers.

That same year, they called up a breathtaking young talent, a 6-foot-4 fireballer named **Matt Harvey**, who would soon be called the Dark Knight.

Two years later, they called up a less-hyped 6-foot-4 fireballer named Jacob deGrom, who would be called deGrominator.

And one year after that, they called up the most hyped prospect of the three, a 6-foot-5 fireballer named **Noah Syndergaard**, who would soon be called Thor.

I use "fireballer" in all three of their descriptions for a reason: Each of the three seemed to throw the baseball absolutely as hard as they could on every pitch.

Maybe it's just true of all young pitchers — we call it "max effort" pitching — but it seemed particularly true of those three. Syndergaard would show up at spring training and throw 101-mph fastballs on the first day; he battled with bone spurs and arm fatigue and less-threatening words until he tore a muscle in his arm, rushed back, kept trying to throw baseballs through walls until the inevitable blown-out elbow and Tommy John surgery.

Harvey blew out his elbow at 24, tried to rush back, probably pitched way too many innings in his first season back, lost his velocity, had surgery for thoracic outlet syndrome, and it all went downhill from there.

deGrom had his first Tommy John surgery in the minor leagues, then his arm held up quite well as he threw harder and harder and dominated more and more, winning back-to-back Cy Young Awards in 2018 and 2019. In 2021, he had 50 strikeouts through four starts and there was talk of him having the greatest season for any pitcher in baseball history. His had an 0.51 WHIP through 12 starts. Then came the inevitable forearm tightness, and elbow pain and season shutdown, and you know the song.

I bring this up because in 1966-67, the New York Mets called up three fireballing young pitchers. The first was **Nolan Ryan**. The second was **Tom Seaver**. The third was **Jerry Koosman**.

Ryan won 324 games and pitched 5,386 innings.

Seaver won 311 games and pitched 4,783 innings.

Koosman won 222 games and pitched 3,839 innings.

And while it's not an apples-to-apples comparison, I do wonder: Did teams know something in the 1960s that they don't know now? Did pitchers know something? Or was the game simply more forgiving for pitchers? Harvey, Syndergaard and deGrom have thrown a **combined** 3,206 innings.



May 2, 1939: Lou Gehrig's streak of 2,130 consecutive games played ended when he did not play in the Yankees' 22-2 win vs. the Detroit Tigers at Briggs Stadium. **Babe Dahlgren** played first base instead, contributing a double and a home run.

BAD BASEBALL

To lose 100 games in season, you have to play .382 baseball or worse.

As of Monday, there are seven teams in baseball playing .382-or-worse baseball. The entire American League Central, when added up, is playing .387 baseball. There are three American League teams — Oakland, Chicago and Kansas City — that are playing sub .280 baseball, making them early-season candidates for historically terrible seasons.

Theo and the Commissioner better think about the haves and have nots. With expanded playoffs if all the haves make it and the have nots are done just fodder May 1 the regular season is devalued and networks and advertisers and fans aren't stupid.

While we are looking at bad records, I was surprised that the 1962 Mets 40-120 .250 winning pct. is just the 8th worst season of all time. The Cleveland Spiders of 1899 went 20-134 .130 winning pct. For the worst winning pct. Ever. The A's and Royals and White Sox are on pace to be three of the 11 worst winning pct. Ever. Looking at it another way, there is always hope. One of these bad teams could rally to make the expanded playoffs. Then that team might win the World Series. That's not conjecture. It happened in 2019, when the Nationals started the season 19-31 and still won it all.

The 2023 A's versus 1962 Mets daily update?

We ask because, well ...

'62 Mets after 30 games: 11-19, minus-47 run differential

2023 A's after 30 games: 6-24, minus-118 run differential

How is that possible? Well, since you asked ...

- They came out of April with a 7.72 team ERA — the worst by any team in March/April since **Stubby Overmire's** 1951 St. Louis Browns.
- Their starting rotation was 0-15, with an 8.51 ERA, through April. Yes, those are real numbers. If you're wondering how many other teams have ever gone this deep into any season without *any* starting pitcher winning a game, that answer is zero, because of course it is.
- And in other amazing rotation tricks, A's starters have essentially turned every hitter in baseball *into* 1963 **Henry Aaron** (.317/.396/.562 versus Oakland through April, .319/.391/.586 by Aaron). And I am not making that up, either.
- Meanwhile, their bullpen has basically transformed the entire league into 2008 **Albert Pujols** (.354/.464/.569 against the A's *just in save situations*, .357/.462/.653 by Albert).
- In other news, the A's have led three games this season after seven innings — *and lost all three*.
- And they've already allowed 10 runs or more 12 times. (*It's May 3!*) The other four teams in their division have done that seven times *combined*.
- Finally, just to cap this off, they've all but run their franchise out of town — literally. *Hello, Vegas!*

MEANWHILE, BETTER BASEBALL

The entire AL East, where every team is .500 or better entering Tuesday, each with a positive run differential.

This division has the potential to be historic. Let's dig in.

The schedule

First, the context and its implications. This is the first year of the new, balanced schedule. The last time the schedule was balanced, interleague play didn't exist. Now, every team plays *every other* team.

That means fewer games against divisional opponents, which can go multiple ways. If there's a less successful team in a division, its peers in the division have fewer chances to theoretically pad their records against that team. But it also means that if every team in a division is good, those teams will have fewer chances to cut into each other's records, and more turns to add on elsewhere.

Could it be the winningest division ever?

The AL East has a combined .623 winning percentage. Divisions began in 1969, and in that span, the best combined winning percentage for a season was .566 by the 2002 AL West.

But wait, the current AL East has the potential to be even more impressive, as five teams have compiled that .623, instead of the four in that '02 AL West. Next on the list is the '01 AL West (.565) and that same division in '12 (.542).

The fourth division on the list is the leader among those with five teams, and it should be familiar. It's last year's edition of the AL East, at .541. This combined strength has been building to this point.

Currently, the Rays are at .793, Orioles .679, Blue Jays .621, Red Sox .533 and the Yankees are at .500. If all teams are above .500 again at some point, this may be of interest: the latest into a season that an entire division has been above .500 was the NL East in 2005, according to the Elias Sports Bureau. All five teams were over .500 through October 1, the second-to-last day of the season. The Nationals then lost their finale to finish 81-81.

By definition, a division will go .500 against its own division. As noted above, each division now plays more games outside of it. The AL East has built this record with prowess against non-divisional opponents.

The AL East currently has a .670 winning percentage outside the division. The best for a season, excluding 2020 (when outside the division consisted of only the same division in the other league), was .603 by the aforementioned '02 AL West, followed by .601 by the '01 AL West.

The highest for a five-team division was the next on the list, the 2022 AL East (.577).

The AL East has played 106 non-divisional games, third most behind the AL Central (117) and AL West (111). The NL Central is next with 105, followed by the NL East (99) and West (90).

The AL East's .623 winning percentage in April was the third highest by a division in a calendar month, minimum 70 games, behind only the 2001 AL West's July (.648) and the 2002 AL West's August (.625). But of course, as we've established, those were four-team divisions, meaning that the 2023 AL East's April was the highest for a five-team division in a month.

The prior record for a five-team division in a month? That would be the '22 AL East again, at .619 last June.

It's only early May. There are plenty of games left, both inside and outside divisions. But this year's AL East could be historic.

AN UNBREAKABLE RECORD YOU PROBABLY DIDN'T CONSIDER

One of the most durable and enjoyable baseball debates involves unbreakable records. Which is the most unbreakable?

Some prefer **Cy Young's** 511 wins, a pretty solid bet, considering no one who has pitched in the last 50 years has come within even 140 of him. The way that baseball -- and, really, all sports -- are played in an era of load management, it's tough to imagine surpassing Cal Ripken's streak of 2,632 consecutive games played. Even with the bigger bases, can you fathom anyone approaching **Rickey Henderson's** 1,406 stolen bases?

But I have a sleeper candidate that we are not considering, one that, because of the increasing use of instant replay, will only become more sturdy as the years go along. That record? **Bobby Cox's** 162 all-time ejections.

One-hundred sixty-two ejections! That is literally getting thrown out of every single game for a full season. Cox managed 29 seasons in the Majors. Though when you account for all the ejections, I suppose he only actually managed 28.

Most frequently ejected

1. Bobby Cox, 162
2. John McGraw, 121

3. **Leo Durocher**, 100
4. **Earl Weaver**, 96
5. **Tony La Russa**, 93

Second place on the list is John McGraw, who managed four more seasons but had 41 fewer ejections. The only living manager (other than Cox) in the top five is Tony La Russa, who retired after last season but, for as hot as his temper might have run from time to time, was still 69 ejections behind Cox. The active leader is **Bruce Bochy**, who has 78 ejections, less than half of Cox's total. Cox, even for his era, was a truly elite ejectee.

But that's the key, though: *For his era*. Because every aspect of baseball culture right now -- from the job of manager to the technology ruling the era to what we actually expect from our umpires -- is turning away from ejections. And it may well be about to change even further.

There *are* fewer ejections than there used to be. That started around 2000. In the 1950s, there was an ejection roughly every nine games played, and in the '90s, it was about one every 10 games. (I wonder how much Cox is personally responsible for the number being that high.) At the turn of the century, it continued to fall to one every 13 games in 2021, and not just because Cox retired after the 2010 season.

Why has there been a huge drop? The answer (unless it's just Cox) can be found in the reasons for the ejections. The most common reason for ejections, throughout baseball history, is for arguing balls and strikes. This is especially true because MLB has a rule saying that arguing balls and strikes is grounds for immediate ejection. Second place throughout history is arguing calls on bases, followed by "bench jockeying," fighting and "intentionally throwing at batter."

But remember: It's not just arguing balls and strikes that will lead to an immediate ejection. It's also arguing a replay decision that will do so. And that leads to the second-most dramatic change in ejections: The complete collapse of ejections for calls on bases in the age of replay.

In 2019 there were 150 ejections for arguing balls and strikes and ... exactly one (1) for arguing calls on the bases. One! This makes sense, of course: At a certain level, it is impossible, or at least pointless, to argue with a replay decision. The umpire, the guy you're yelling at, isn't even the guy who made the call! (Someday I'd love to see a manager just yell at the sky and hope the person in the replay room in New York hears him.) Introducing replay to calls on the bases essentially eliminated the utility, the need, even the *desire*, to argue a call out there.

This has led to an uptick in ejections because of balls and strikes arguments, as you might expect. But the uptick has been more as a percentage of total ejections than total ejections entirely. This year, there have been exactly 13 managerial ejections, which, with 342 total games played, comes out to a total of one ejection every 26 games -- historically very, very low. You might have your own theory about why this is: Mine is that everyone's still getting used to the pitch timer, and also that games are flying by too fast to even have time to get ejected.

But of those ejections, almost all of them have been related to strike calls. Now, like all ejections, they don't come out of nowhere; often the strike call is what breaks the proverbial camel's back. But the real reason the ejections are coming from the strike calls is that, in an age of replay -- and especially in an age where we've all gotten used to replay and how the process all works -- there really isn't anything else to argue about. It's sort of inefficient to argue with umpires much anymore. And if we know anything about how teams operate, they won't do much that isn't inefficient.

It is also worth noting that of those 13 managerial ejections, no manager has more than one. (That 13 number also means half the managers haven't gotten ejected at all yet.) That is no way to catch up with Bobby Cox!

And if you think ejections are collapsing now, well ... we are all aware that the Minor Leagues have experimented with automatic balls and strike calls, the so-called "robot umps." If ever implemented at the Major League level, this will lead to a situation where managers have one *less* thing to yell at a human about.

If ejections collapse with automated strike zones the way they did with calls on the bases, it would not just keep Cox's record safe forever: It could theoretically make the whole notion of arguing with the umpire beside the point. For good.

There is a sadness to this: Grand umpire-manager fights are part of baseball lore, from old *Saturday Evening Post* paintings to Earl Weaver yelling at **Ron Luciano**. But then again, I remember a great quote from the late Luciano: "If they create a robot umpire that calls every strike exactly right," Luciano said, "hitters will never let it survive. Whenever it makes a call against them, they will beat it to death with a bat." Sometimes, we just need someone, or something, to be mad at. Just ask Bobby Cox about that.

There's a Science Behind More High-Velocity Pitches, But There's Also a Cost

With athletes becoming stronger and better trained, the rise in pitching velocity began as a gradual evolution. But there has been a stunning leap forward in the past four years. Here's why.

Tom Verducci, Sports Illustrated

When **Aroldis Chapman** began warming up in the bullpen for his first major league appearance in 2010, fans in the outfield seats at Great American Ball Park stormed the area around the Reds' bullpen just to get a glimpse of what a 100-mph fastball looked like.

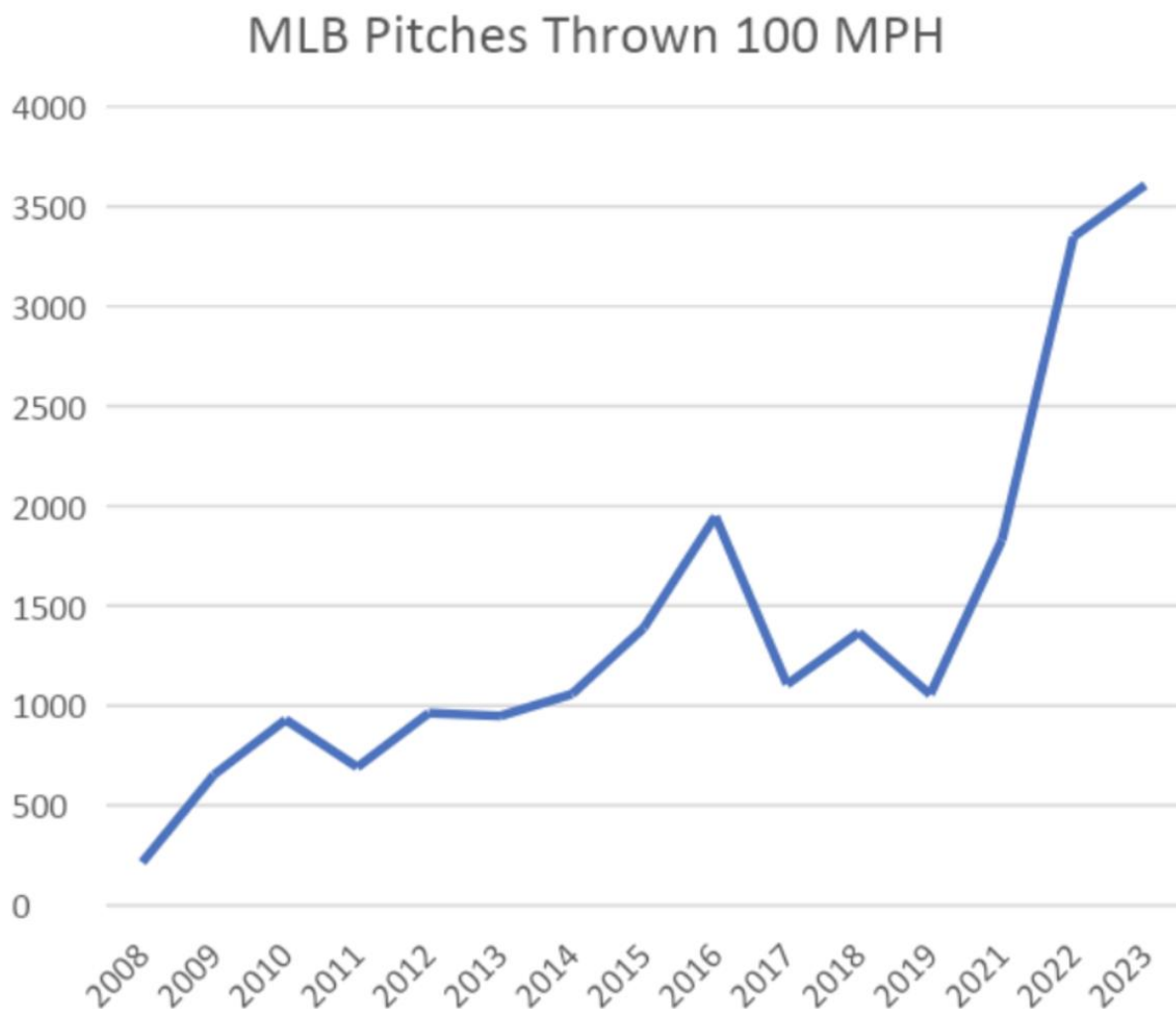
The novelty of triple digits is long gone.

It is an everyday occurrence. Not a day has gone by this season without someone throwing 100 mph.

One-hundred-mph fastballs are more common than stolen bases and double plays. Twenty-seven pitchers hit 100 mph in April, as many as pitchers did over the entire *season* 10 years ago.

The rise in velocity began as a gradual evolution. Athletes have grown bigger and stronger, and are better trained. But there has been a stunning leap forward in the past four years. It happened as the science of throwing became big business, fueled by biomechanics, technology and investments by private companies and major league teams.

The number of major league pitches clocked at 100 mph and faster more than *tripled* over three years, from 1,056 in 2019 to 3,348 last year. The rate continues to go up this season, as shown by this recent spike that includes the prorated total for '23:



Not coincidentally, as velocity goes up, so do injuries. Teams paid \$486 million last year to 427 pitchers on the injured list, a rate of \$2.67 million each day. Pitchers too hurt to pitch spent 30,728 days on the IL while collecting 9% of all money paid to players. Despite better training and lighter workloads, pitchers have about the same chance of staying off the IL as a flip of a coin. Only 51% of pitchers who appeared in a game last season stayed off the IL.

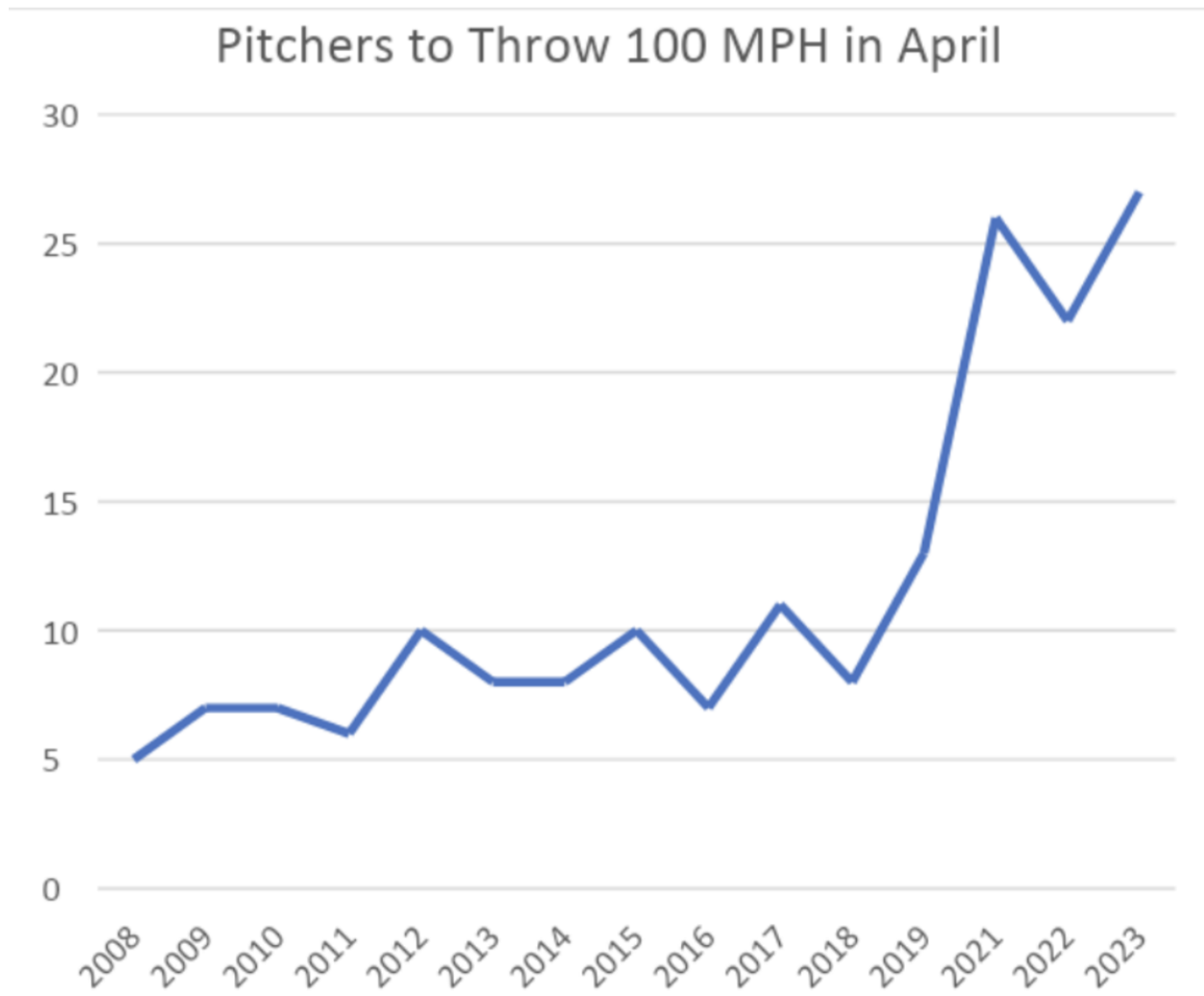
This season, 173 pitchers ended April on the IL, having collected \$100 million while unable to pitch, or \$3.1 million per day. Five of the seven most expensive pitchers, as ranked by average annual value, began May unable to pitch: **Max Scherzer**, who was serving a 10-game suspension for violating the rule against sticky substances; **Justin Verlander**; **Jacob deGrom**; **Stephen Strasburg**; and **Carlos Rodón**, all of whom were hurt. (The highest-paid pitchers still taking their starts were **Shohei Ohtani** and **Gerrit Cole**.)

“We really improved the mechanics or biomechanics of many pitchers from major leagues down to little leagues,” says Glenn Fleisig, the research director at the American Sports Medicine Institute in Birmingham who is also an adviser to MLB and an established leader in pitching biomechanics.

Fleisig was a guest on my podcast with World Series–winning manager **Joe Maddon**, *The Book of Joe*. “Improving the mechanics means getting more velocity and maximizing your force of using your whole body, but that has come with a price,” Fleisig says. “It’s been a price that pitchers could pitch faster than ever before, but they’re putting more force on their elbow and shoulder than before.

“So, through optimizing mechanics and conditioning and nutrition, baseball pitchers are pushing their body to the maximum performance now and kind of redlining it and getting that maximum performance—but always teetering on the edge of overuse injury.”

When it comes to velocity, both supply and demand have increased. Teams survive the injury rate of pitchers because someone else is coming out of a pitching lab right behind them throwing 100 mph, often somewhat anonymously, rather than with the pedigree of Chapman. As this chart shows, pitchers who can throw 100 have doubled since 2019 and tripled since '18.



On April 22, Gregory Santos threw the fastest and second-fastest pitches recorded by a White Sox pitcher, 102.3 mph and 103.1 mph—five months after he was designated for assignment. Who is **Gregory Santos**? In 2015, the Red Sox signed him as a 16-year-old out of the Dominican Republic with a \$275,000 bonus. He was throwing 93 mph two years later, when they traded him to the Giants. In 2021, his fastball averaged 97.7. He was suspended that year for testing positive for a steroid. In '22, he averaged 98.8. The Giants designated him for assignment in December before trading him to the White Sox.

“Maximizing velocity, it is not the pitcher who wins,” Fleisig says. “It is the team who wins. It is not the pitcher. We’ve done biomechanical studies looking at the relationship between velocity and the torque on your elbow. We found that the torque on the elbow varied a lot from pitcher to pitcher, but within any pitcher, the more velocity they throw with, the more torque on the elbow.

“Our studies have shown that to succeed, particularly as a starting pitcher, you should vary your velocities. You shouldn’t max-effort every pitch. You should mess around with the batters at

various speeds of your pitches, your locations, et cetera, to succeed as a pitcher, not as a thrower. To be healthy and successful, the pitcher should vary the velocity.”

Teams always have coveted velocity. What has quickly changed the market is the ability to add or find velocity at an extreme level. Clubs consider velocity a skill that can be improved, and more and more pitchers are testing the limit of what their shoulders can withstand. The rotation of the shoulder when throwing a baseball is the fastest human motion ever measured biomechanically. The shoulder fires 7,000 degrees per second. It’s the equivalent of having your arm complete 20 circles in one second.

“It’s unbelievable,” Fleisig says.

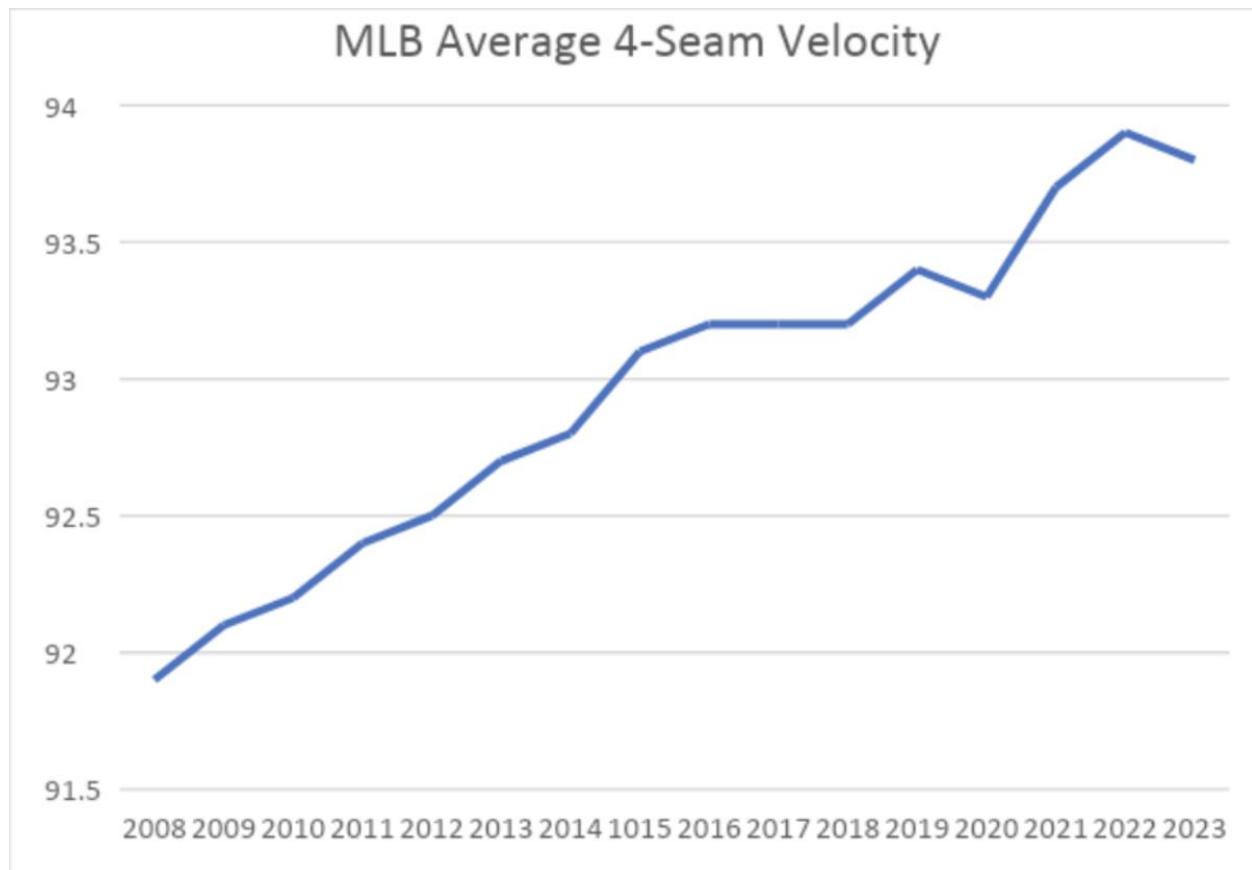
Researchers at ASMI wondered how much more speed the human shoulder could withstand. They did research on cadavers. They found the forces the cadavers could withstand before the joint broke apart were *less* than the forces they measured when pitchers threw in their lab.

“So, our science says that an arm should break every single pitch, but obviously it doesn’t,” he says. “But what happens is the cadavers aren’t ... um, not to be too gross, but they weren’t young healthy men. They were older people. So the point is the elbow and shoulder are pushed to their biomechanical limit pretty much every pitch.

“But the problem is, as pitchers get faster and faster, they are getting stronger and stronger with their muscles and their mechanics are getting more finely tuned. The weak links are the ligaments and tendons. They have ligaments and tendons holding their joints together, like the Tommy John ligament in the elbow and their rotator cuff tendons in the shoulder.

“And when people work out, get stronger, essentially their muscles get stronger, but it’s really hard to strengthen your ligaments and tendons. So, what we’ve got is a situation now where, through good mechanics and good strength conditioning, the muscles and the mechanics are overpowering the ligaments and tendons.”

Here’s another chart that shows how the slow growth of velocity has suddenly spiked since 2020:



What I find fascinating are the mechanical changes pitchers are making to help push that average higher. Since 2015, the average four-seamer is being thrown with a slightly lower release point (5.86 to 5.83 feet; it was even higher in 2008) and more extension (from 6.2 to 6.5 feet). Translation: Pitchers are using their lower half more and “getting down the mound” more, rather than the old-school way of “tall and fall” and “getting your arm up.”

Fifteen to 20 years ago, teams would send pitching prospects to the ASMI lab to undergo a biomechanical evaluation. Teams weren’t sure what to do with it. Now they can get the data and crunch it themselves, even through markerless motion capture during games.

“What’s happened over the last 10 years is there’s been a revolution,” Fleisig says. “Teams are trying for a competitive advantage and are using biomechanics. I was once the only show in town, but now teams are hiring biomechanists. More than two-thirds of teams employ biomechanists, and teams have biomechanics equipment.”

How high can the maximum velocity go?

“If you asked me 10 years ago,” Fleisig says, “when Chapman or whoever was the fastest pitcher, I said in several interviews that I don’t think the maximum velocity is really going to go far up, but I think it’s going to be a glass ceiling that’s going to get more crowded near the top.

“And over the past 10 years that’s happened. The max-velocity guy might be one mile per hour faster than it was 10 years ago. But it’s really crowded. Every team has 95-plus. Pitchers now, everyone is pushing their body to the limit, but I don’t think the limit could go up, because I don’t think the ligaments and tendons can go farther.”

It may seem counterintuitive, but as pitchers throw faster, they throw *fewer* fastballs. The use of fastballs (not including cutters) was as high as 58.4% in 2009. Last season, it fell below 50% for the first time, to 48.5%. This year, it is down further, to 46.9%. At this rate, hitters will see 80,886 fewer fastballs than they did 14 years ago, even though the average velocity of those fastballs has gone up 1.9 mph.

But what biomechanics have done for velocity, technology has done even more for spin. Breaking pitches have become so nasty that, this year, a run-of-the-mill slider is tougher to hit (.218) than a fastball at 99 mph and above (.232). For example, St. Louis righthander Jordan Hicks has thrown the most 100-mph pitches this year (110). Hicks hit 100 mph more times in April than the entire league did in April just five years ago (92 in 2018). And yet, batters hit .333 against his triple-digit fastballs.

In this super-velocity era, pitchers also are throwing fewer pitches and with more days of rest. Ten years ago, pitchers made 51% of starts on four days of rest. By last season it had dropped to 39%. This year it is 24%. Having a rotation work every fifth day is a dead concept.

“We’re not going back to that because of the things we talked about earlier,” Fleisig says. “It’s the type of pitchers ... the maximum velocity by optimizing mechanics, getting the maximum force on the arm. So we’re going to have to deal with the fact that this is where we’re at, but there’s a balance for how hard you could push.

“There’s workload, which is the accumulation of how much force or how many pitches you throw, but there’s also a new thing. Scientists call it the acute-to-chronic workload ratio, which means not just how much have you done, but how much has it varied over the course of the days, the weeks, most of the year. And what we found in science, baseball, soccer and all sorts of sports is that athletes get hurt when they have too much workload, but also when they’re acute-chronic workload ratio is too high, meaning they’re varying up and down.”

Developments over the past four years have created an industry standard of pitching: max out on velocity while curbing workload. The days when I tracked teams that packed huge year-to-year innings jumps on young pitchers is over. No pitcher has thrown 120 pitches since June 28, 2022, a streak of more than 3,400 consecutive starts. Over the past three seasons, a pitcher thrown 120 pitches only eight times—as many times as **Kerry Woods** did in a 21-start stretch as a 21-year-old rookie in 1998. Now we have real-time biomechanical measurements and acute-to-chronic workload ratios, which is why the Yankees generally pitch Cole every sixth day and have kept his pitch count within the narrow range of 92 and 109.

For years, we've known the biggest risk factors for injury have been poor mechanics and fatigue.

"I've done a lot of science over the past 35 years," Fleisig says, "and some studies have shown [fatigue] has a 50% effect or a 100% percent effect. We did one study where it was a 36 times effect, and it was the strongest study we've ever done.

"We looked at a group of high-school-aged baseball pitchers who had never had an arm problem versus high school-aged pitchers who came in for surgery. We asked them many questions like, 'How old were you when you started throwing a curveball?' But the one question that was basically the telltale about who ended up having surgery at the high school level was, 'Did you routinely keep pitching after you were fatigued?'

"Essentially, if you asked someone if you keep pitching up to fatigue and they said yes, I would've bet you \$36 to one that that guy was the one who ended up with surgery versus the guy who said no. It's huge. So unfortunately for me, fatigue is not something that can be measured very well with computers or anything like that.

"Fatigue is a self-feeling, essentially at all levels. Pitchers should keep pitching when they're feeling good, but when they're fatigued, it's time to call it a day. At the amateur level, it's, 'Hey, he's my best pitcher. I'm going to keep riding this guy.' At the pro level, it's the other way around. They're very cautious because they have a lot invested in these guys. At the pro level, you should certainly call it a day when it's fatigue. Part of the problem is that, on the pro level, they're shutting it down too soon. For some guys, they're being overly cautious."

Now we understand there is another risk factor to add to poor mechanics and fatigue: chasing maximum velocity. It is a known risk pitchers gladly accept, especially in deep bullpens where the work tends to be short and intense. When it comes to the "wow" factor, 102 is the new 100. Pitchers touched 102 mph more times in April (83) than over the entire 2021 season (43).

Pitching has changed significantly and quickly. It is as obvious as the LED readouts on radar guns on a nightly basis. Weighted ball training, strength training and pitching labs stocked with biomechanists are sending forth more and more pitchers who are bumping up against the limit of what is humanly possible

THIS WEEK'S TRIVIA CHALLENGE ANSWERS

RANK THESE BROTHERS BY COMBINED CAREER HR TOTALS

768 **Hank Aaron** (755), **Tommie Aaron** (13)

573 **Joe DiMaggio** (361), **Dom DiMaggio** (87), **Vince DiMaggio** (125)

492 **Jason Giambi** (440), **Jeremy Giambi** (52)

- 489 **BJ Upton** (164), **Justin Upton** (325)
- 444 **Clete Boyer** (162), **Ken Boyer** (282)
- 378 **Brett Boone** (252), **Aaron Boone** (126)

NAME THE TWO BROTHERS I

These two pitching brothers – who combined for 529 victories, three Cy Young Awards and eight all-star selections. Consider 1970, when Brother 1 led the NL in wins, going 23-13 with a 3.20 ERA, while Brother 2 led the AL in wins, with a 24-12 record and a 3.04 ERA.

Brother 1-- elected to the Hall of Fame in 1991, finished his career at 314-265, 3.11 – with two Cy Young Awards, and five all-star selections. He was a five-time 20-game winner and topped the NL in wins three times. **GAYLORD PERRY**

Brother 2--notched a 215-174 record, a 3.45 ERA, three all-star selections and one Cy Young Award. He led the AL in victories twice. **JIM PERRY**

NAME THE TWO BROTHERS II

Brother 1--17-year career at second base, he earned 12 all-star selections, led the league in runs scored once, and captured ten gold Gloves. Elected to the Hall of Fame in 2011, Roberto put up solid numbers to earn this spot: a .300 average; 2,724 hits; 210 home runs; 1,134 RBI; 1,508 runs; and 474 stolen bases. **ROBERTO ALOMAR**

Brother 2--enjoyed a 20-year ML career at the tough catcher position. While his numbers were not as flashy as his brother, I was a Rookie of the Year, a six-time all-star and one-time Gold Glover. Final numbers – .273 average; 1,236 hits; 112 home runs; 588 RBI; and 520 runs scored. **SANDY ALOMAR**

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