



MATHEDA Engineering Data Analysis

Descriptive Statistics

Statistical Comparison of the Top 10 Ranked MLB Pitchers of all Time as indicated by Pitcher List

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Chapter 1; Introduction

Throughout baseball history, dominant pitchers have defined eras, shattered records, and left lasting legacies on the game. From overpowering fastballs to devastating breaking balls, the best hurlers have combined skill, strategy, and endurance to carve their names into baseball lore. The PITCHERLIST, a website that specializes in MLB pitchers and their analysis of their pitching stats, states the top 10 in their eyes and this report is here to visualize the legacies left by these baseball legends.

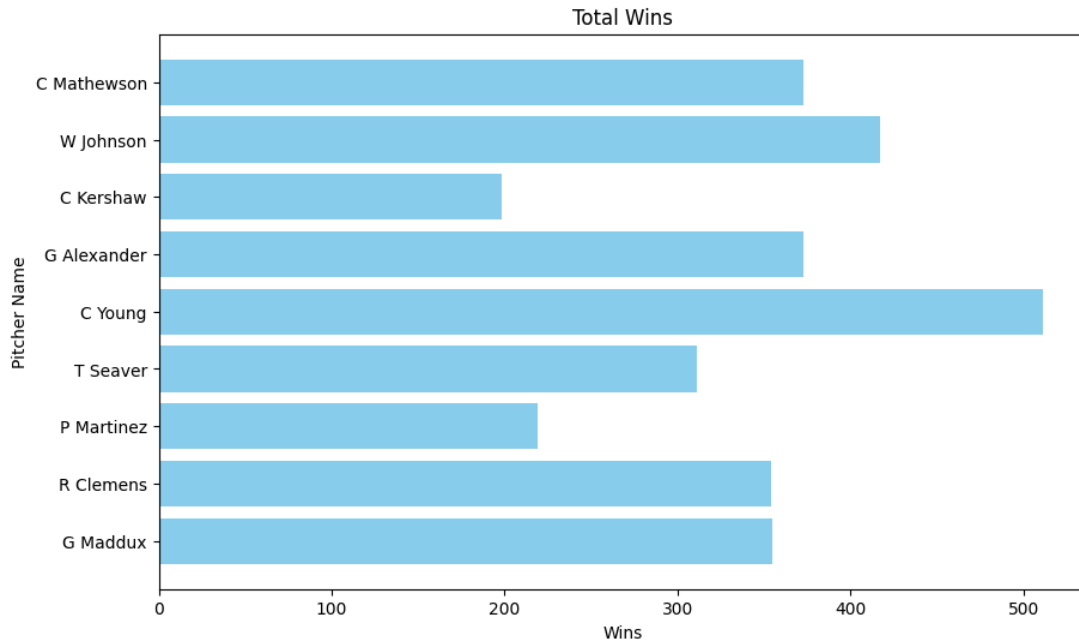
According to the article "The Top Ten Pitchers of All-Time" from Pitcher List, the top ten pitchers are:

1. **Walter Johnson (1907–1927)**
2. **Christy Mathewson (1900–1916)**
3. **Cy Young (1890–1911)**
4. **Pete "Grover Cleveland" Alexander (1911–1930)**
5. **Roger Clemens (1984–2007)**
6. **Tom Seaver (1967–1986)**
7. **Greg Maddux (1986–2008)**
8. **Pedro Martinez (1992–2009)**
9. **Randy Johnson (1988–2009)**
10. **Clayton Kershaw (2008–present)**

These rankings are based on a combination of career longevity, dominance, and statistical achievements, considering both traditional metrics and advanced analytics.

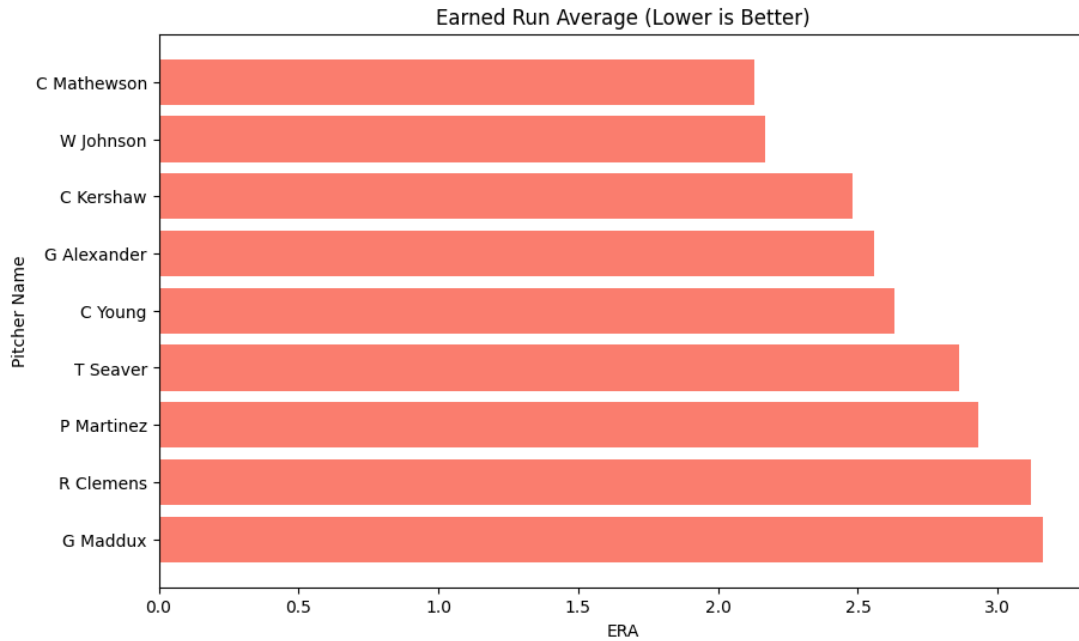
Chapter 2: Data Visualization

Chapter 2.1: Total Wins



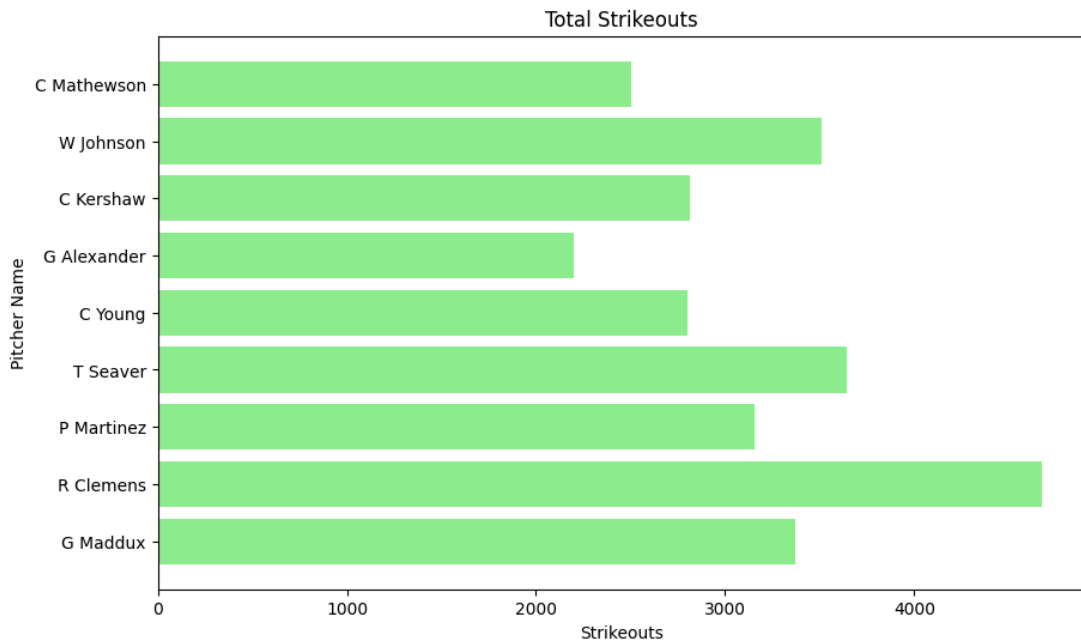
The number of games a pitcher is credited with winning. A pitcher earns a win if they were the last pitcher for their team before they took the lead and held it for the remainder of the game. The statistics indicate that Cy Young holds the highest number of wins, exceeding 500, a record that remains unparalleled. Walter Johnson followed with a total surpassing 400 wins. Other notable pitchers, including Christy Mathewson, Grover Alexander, Roger Clemens, and Greg Maddux, each recorded over 300 career wins. Tom Seaver and Pedro Martinez, while still among the all-time greats, achieved slightly lower totals, with Martinez having one of the lowest win counts among the pitchers listed. Clayton Kershaw, the only active player in this selection, has accumulated significantly fewer wins, which may be attributed to both modern pitching strategies and the fact that his career is ongoing. Overall, the statistics presented in the chart underscores the longevity and dominance of these pitchers in terms of total career victories.

Chapter 2.2: ERA



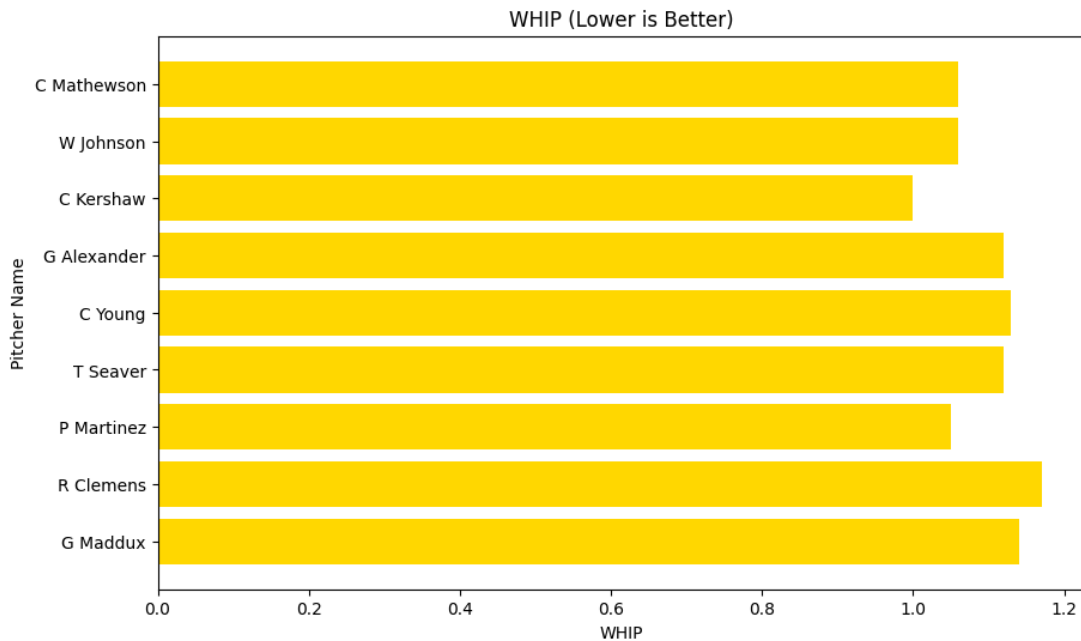
A statistic that measures the average number of earned runs (points allowed) a pitcher allows per nine innings. A lower ERA indicates better pitching performance. Christy Mathewson records the lowest ERA among the group, followed closely by Walter Johnson. Other historically dominant pitchers, such as Grover Alexander, Clayton Kershaw, and Cy Young, also maintain low ERA values, demonstrating their effectiveness in preventing earned runs. Tom Seaver, Pedro Martinez, Roger Clemens, and Greg Maddux have slightly higher ERA values, though they remain among the most efficient pitchers in baseball history. The statistics highlight the exceptional consistency and skill of these pitchers in limiting opponent scoring throughout their careers.

Chapter 2.3: Total Strikeouts



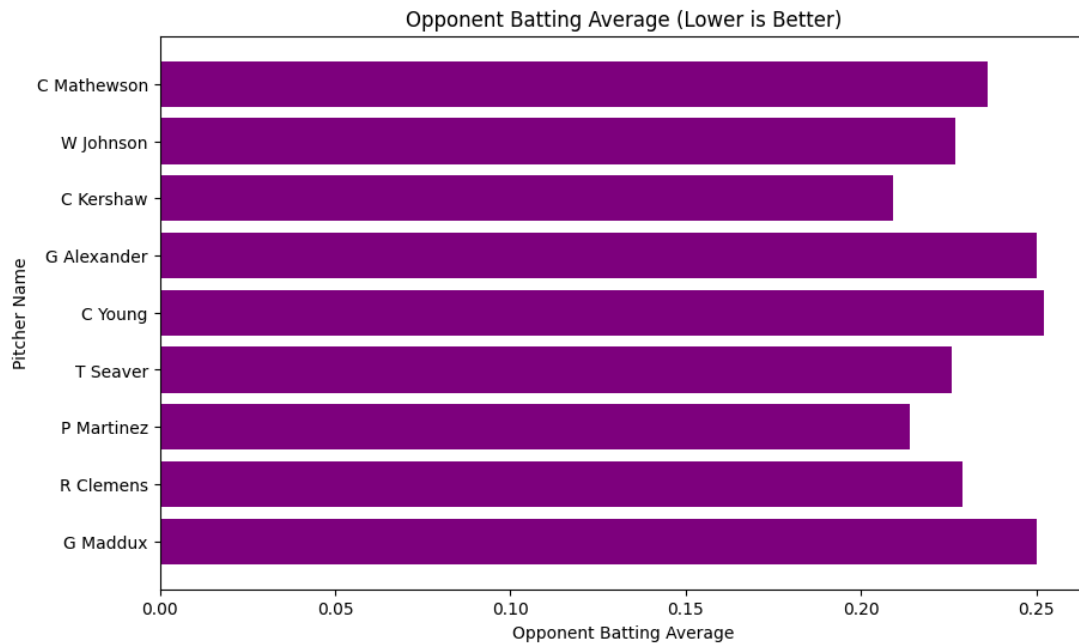
The total number of times a pitcher records a strikeout by getting a batter to miss three strikes. A high strikeout total usually indicates a dominant pitcher. Roger Clemens leads the group with the highest number of strikeouts, demonstrating his ability to overpower hitters consistently. Walter Johnson, Tom Seaver, and Pedro Martinez also recorded high strikeout totals, highlighting their effectiveness in generating swings and misses. Greg Maddux and Clayton Kershaw, while still highly successful, have slightly lower strikeout totals, reflecting differences in pitching style and approach. Christy Mathewson and Grover Alexander recorded the fewest strikeouts among the selected pitchers, likely due to the different era in which they played. Overall, the statistics showcase the exceptional ability of these pitchers to retire batters via strikeouts throughout their careers.

Chapter 2.4: WHIP (Walks plus Hits per Innings Pitched)



A metric that measures how many base runners a pitcher allows per inning. A lower WHIP means fewer baserunners, indicating better control and effectiveness. Christy Mathewson and Walter Johnson recorded some of the lowest WHIP values, showcasing their ability to control the game and minimize opposing offensive threats. Clayton Kershaw, Grover Alexander, and Cy Young also posted low WHIP values, further emphasizing their dominance on the mound. Pedro Martinez and Tom Seaver maintained slightly higher WHIP values but remained among the most effective pitchers in limiting walks and hits. Roger Clemens and Greg Maddux recorded the highest WHIP values in this dataset, though they still rank among the greatest pitchers in baseball history. Overall, the statistics highlight the remarkable control and efficiency demonstrated by these legendary pitchers throughout their careers.

Chapter 2.5: AVG or BAA (Batting Average Against)



The percentage of at-bats where a batter gets a hit. It is typically represented as a three-decimal number (e.g., .300 means the batter gets a hit 30% of the time). Clayton Kershaw recorded one of the lowest opponent batting averages in this dataset, demonstrating his ability to suppress hitters with exceptional pitching control and command. Pedro Martinez and Tom Seaver also exhibited strong performances, maintaining low opponent batting averages that contributed to their dominance on the mound. Walter Johnson, Christy Mathewson, and Roger Clemens followed closely, reinforcing their reputations as some of the most challenging pitchers to face. Meanwhile, Greg Maddux, Cy Young, and Grover Alexander had slightly higher opponent batting averages, yet they still rank among the greatest pitchers in baseball history. Overall, this data highlights the elite level of performance these pitchers maintained in preventing opposing hitters from making consistent contact.

Chapter 3: Conclusion

The statistical analysis of the top pitchers in baseball history, based on Wins, ERA, Strikeouts, WHIP, and Opponent Batting Average, provides a comprehensive view of their dominance on the mound. Cy Young leads in total wins, solidifying his reputation as one of the greatest pitchers of all time, while Roger Clemens and Walter Johnson also rank among the highest in this category. When analyzing ERA, Christy Mathewson and Walter Johnson stand out with the lowest values, indicating their efficiency in preventing runs.

Strikeout data reveals Roger Clemens as the leader, demonstrating his ability to overpower batters, followed by Walter Johnson and Tom Seaver. In terms of WHIP, which measures a pitcher's ability to limit baserunners, Clayton Kershaw and Christy Mathewson emerge as the most effective, with Pedro Martinez also performing exceptionally well. Similarly, opponent batting average statistics further highlight the dominance of Kershaw, Martinez, and Seaver, as they consistently limited hitters to some of the lowest averages.

Overall, while each pitcher excelled in different aspects of the game, a common factor among them is their ability to consistently perform at an elite level. Whether through sheer dominance in strikeouts, pinpoint control in WHIP, or longevity reflected in total wins, these pitchers have solidified their legacies as some of the greatest to ever play the game. However, all these pitchers were great during their respective eras, making it impossible to determine a definitive winner.

Sidenote: Since Clayton Kershaw is still playing, the dataset didn't include his still ongoing tenure with the LA Dodgers. The Dataset also doesn't include stats like WAR (Wins above Replacement) which indicates how important they are to win a game.

Chapter 4: References Used

References

1. **Pitcher List.** (n.d.). *The Top Ten Pitchers of All Time*. Retrieved from <https://pitcherlist.com/the-top-ten-pitchers-of-all-time/>
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