

# Descriptive statistics assignment



One of the most beloved sports in America is Major League Baseball. This professional sport spends billions of dollars each year enhancing the chances to reach the ultimate goal in winning the World Series. Major League Baseball is one of the few remaining sports that have an uneven balance in the franchise wage capacity to acquire top talented players. The areas of concentration in this research paper will be player salaries, winning percentage, player performance, and salary caps.

The disparity in payroll numbers among the lowest and highest-market capitalizations brings about the question; Can a small-market team be viable and compete against the marquee players? The data examined here may or may not illustrate a relationship between payroll dollars and wins. The question arises if Major League Baseball (MLB) owners can guarantee wins by spending more money. A lack of a clear relationship between wins and salary indicates that wins are simply the result of having exceptional athletic performance by a given player in a particular year.

There have been several research studies over the question if baseball salaries and wins are connected in some way. The Honest hypocrite for example, stated a€? A players pay is by no means an indicator of his performance. a€? There have been teams that have ranked fairly high in the standings but are consistently one of the lower spending teams. Teams that focus on ways to save money use young inexpensive players to keep the franchise expenses down. The objective is to use these players with little experience at a fairly low market rate.

Salaries will never be an exchange for wins. According to the article, baseball can't buy me wins by Mark Hyman several successful teams have been some of the most lavish spenders but have never qualified for post season playoffs. MLB players have proven that some of the most successful teams on the baseball field are not the richest payers. Money doesn't always make the difference; franchises depend on management to find talent and even luck. The following table shows the ranking of some of the highest paid teams and their rankings.

According to the October 5th 2005 news analysis, the rankings and the salaries of national league players can be surprising. Salary Standings NL EAST SALARY STANDING\* (Millions of Dollars) FINAL STANDING IN DIVISION New York Mets \$101 4th Philadelphia Phillies \$96 2nd Atlanta Braves \$86 1st-playoff bound Florida Marlin \$60 3rd Washington \$46 5th and last When calculating the measures of central tendency and dispersion out of the five team salary data, the median salary is \$86K and the mean is \$78K. The standard deviation ranges from \$46K to \$101K.

Taking into consideration that the highest salary standing team was the New York Mets who finished in 4th place that year and the lowest salary was the Washington Nationals who finished 5th which was last place in the MLB Division Standings. The disparity in payroll numbers among the lowest and highest-market capitalizations brings about the question; Can a small-market team be viable and compete against the marquee players? In calculating the salary of all 30 MLB teams analysis indicated the mean and median were very close.

The average mean is \$83K and the median is \$85. The findings would place the average Major League Baseball salary at \$84.5K and the winning team would be anyone's guess. An example of a high priced season came from the Giants whose payroll consisted over \$90 million dollars (the seventh highest paying team). \$22 Million went to a player who was out half the season with a bad knee. Researchers have used several graphs and figures to create the research of how salaries do not always guarantee wins. Do salaries have a direct impact on the number of wins in a season?

When looking at the statistics for the 2005 baseball season, the number one team in salaries wages was the New York Yankees yet they had 94 wins that year. Boston was the number two team in salaries and had 96 wins that year. Comparing them to the Cleveland Indians who were ranked number 23 out of 30 top salaries in the league, they also had 96 wins that year.

(CBSSports, 2007) Salaries have no direct impact on the number of wins in a season based on the payroll budget per team. Major League Baseball does not have a salary cap, but they have installed a luxury tax.

The New York Yankees have had to pay this luxury tax, yet for 7 straight seasons they have not won a World Series. The Angels who are number 4 in the payroll standings missed the playoffs altogether in 2006. (CBSSports, 2007) The New York Yankees and the Cleveland Indians both won 94 games during the baseball season; however, the New York Yankees spent \$129 million dollars more than the Cleveland Indians. (Silver, 2007) The opportunity to gain more elite players in a particular franchise is imminent when the payroll budget is excessive, but it does not necessarily determine the number of wins.

Even the highest paid players may have off-seasons when they may not play at their fullest potential. Two of the highest paid players are on the New York Yankees, yet their number of wins is the same as the Cleveland Indians.

CBSSports shows that not one of the Cleveland Indian players has made the top 50 salaries in Major League Baseball (CBSSports, 2007). The subsequent research papers will focus on investigating and examining all pertinent data that will accurately represent the correlation between the salary base and the win percentage.

The 2005 Major League Baseball season will be dissected and analyzed at different intervals to establish the relationship between salary and wins. This research paper will take an in-depth look at the salary of a player and the capability and talent of the players both offensively and defensively to produce wins. The variables that will be taken into account and analyzed are: franchise wages, win percentage, offensive stamina and endurance, and the defensive fortitude and strength.

Other variables that might be considered in the research papers are the influence of ticket prices, attendance, location, new stadiums, and salary caps which may or may not have had a bearing on the winning percentage or salaries. The research conducted by the team will be extensively investigated and will focus on the impact of all the variables and determine the association between salaries and winning. Scatterplots and linear regression will be implemented in order to observe the correlation between the salaries from the highest paid franchises to the lowest paid franchises and their winning percentage.

The top 25 pitchers and the top 25 hitters will be analyzed according to salary and performance. The interval measurement scale will be put into operation at various segments within the 162 regular Major League Baseball season to establish if a correlation between winning and the salary base of the organization. The intent of the analysis is to determine whether franchises with high salary payrolls or franchises with low salary payrolls are getting the maximum return on the franchises investment. The research conducted by the team will provide evidence in the correlation between salaries and wins in a major league baseball season.

The necessity of salary caps to balance out the playing field of economics throughout the organization will also be included in the subsequent research papers. Investigating the individual player's abilities and their wages will have a significant impact on the ensuing analysis. Research among the team revealed a diverse perspective in the correlation between salaries and wins. Information indicated the teams with higher salaries had more diversity in the team's line-up than teams with lower salaries.

This was not inclusive to an overall winning season, but did indicate the capacity for the individual talent to influence wins. In 2005, the highest Major League Baseball payroll went to the New York Yankees. The team had several members that contributed to the .586 overall winning percentages in the season. Alex Rodriguez, Jason Giambi, Derek Jeter, Jorge Posada, and Hideki Matsui appeared in several categories in the top 25 offensive statistics. (Baseball Almanac, 2005) The Tampa Bay Devil Rays had the lowest payroll in Major League Baseball in 2005.

The individual team members rarely appeared on both offensive and defensive leaderboards. The lack of individual and team cohesiveness may have contributed to the .414 overall winning percentages in the season.

(Baseball Almanac, 2005) “Perhaps it is the quality of players that determines how many baseball games you will win.” (Koehler, 2007)

There seems to some validity to this statement while salaries may not be a true indication in how many wins a team may get in a season. The quality of the players contributing to the team has a significant impact on the number of wins in a season.

The question becomes if the quality of players has any correlation with the salaries being paid. The sample poll used in this research was taken from a class of non-traditional college students. The number of individuals in the class comes from a very diverse background. Each individual is unique in perspective and personal interest, however, the common academic interest is shared by all the students. Establishing the data set the students surveyed are established in their careers and have a mature sense of responsibility while pursuing further professional advancement.

In other words, all the participants in the poll are likely to have an upwardly mobile career track. Despite the homogeneity of the sampling group, it can be said that the group has diversity of opinion, particularly because the polling topic, professional baseball, is a leisure pursuit that has a sundry interest base. Some survey participants were enthusiastic MLB supporters, while others had little interest. Measuring salaries versus wins when 30 baseball teams are spread all over the United States is difficult in such a

small sample. The proper sampling pool for such a survey should be larger than a handful of students.

One area where the sampling group and size failed is that the participants are non-traditional students with a common interest. This common interest inherently could result in the skewing of the data, but further examination would be required. For example, it would be helpful to investigate if career professionals have a tendency to patronize professional sporting events more than the general population. A sample size large enough to include a greater diversity of people with unique special interests would be helpful in analyzing the data sets.

To avoid biasing errors in the data, it would be useful to have included 1) individuals not pursuing career advancement, 2) individuals beyond retirement age, 3) teenagers still fluid in personal views on sporting events and steroid use. To reduce the bias of special interests, a much larger sampling size with true diversity of age, education, gender, income, and sports knowledge would be ideal components in a sampling pool. There have been many different views on if the salaries have any influence on the ranking of baseball players. The subsequent list is an example of the disparity between baseball franchises.

The New York Yankees are at the top of the list with a salary of \$189, 639, 045. The Tampa Bay Devils are listed at the bottom of the list with a salary of \$24, 123, 500. New York Yankees \$189, 639, 045 Boston Red Sox \$143, 026, 214 New York Mets \$115, 231, 663 Los Angeles Angels \$109, 251, 333 Chicago White Sox \$108, 671, 833 Los Angeles Dodgers \$108, 454, 524



Seattle Mariners \$106, 460, 833 Chicago Cubs \$99, 670, 332 Detroit Tigers \$95, 180, 369 Baltimore Orioles \$93, 554, 808 St. Louis Cardinals \$90, 286, 823 San Francisco Giants \$90, 219, 056 Philadelphia Phillies \$89, 428, 213 Houston Astros \$87, 759, 000 Atlanta Braves \$87, 290, 833

Toronto Blue Jays \$81, 942, 800 Oakland Athletics \$79, 366, 940 Minnesota Twins \$71, 439, 500 Milwaukee Brewers \$70, 986, 500 Cincinnati Reds \$68, 904, 980 Texas Rangers \$68, 318, 675 Kansas City Royals \$67, 116, 500 Cleveland Indians \$61, 673, 267 San Diego Padres \$58, 110, 567 Colorado Rockies \$54, 424, 000 Arizona Diamondbacks \$52, 067, 546 Pittsburgh Pirates \$38, 537, 833 Washington Nationals \$37, 347, 500 Florida Marlins \$30, 507, 000 Tampa Bay Devil Rays \$24, 123, 500 The variability of the data, where no salary data value occurs twice, no mode exists. The median salary of all 30 teams is \$66. 19 million, not a large variance from the mean.

The mean salary of all MLB teams is \$73. 06 million, but this is a deceptive value, because the range between the highest and lowest payroll numbers is extreme. The salary range is \$178. 6 million, the dramatic difference between the Yankees payroll of \$208. 3 and Tampa Bay's \$29. 7 million salary. The mean value is positively skewed because the New York Yankees payroll is nearly double the next-highest MLB team, the Boston Red Sox. However, the skew value is \$2. 17 million, a number that does not seem to skew the data much. However, omitting only the highest salaried team from the statistics changes the skew to \$0. 1 million. Consider also that the standard deviation of all MLB teams is \$34. 23 million, whereas omitting only the New York Yankees reduces the standard deviation to \$23. 19 million, a significant difference when only one team is ignored. The median salary for

all MLB baseball teams is \$66. 19 million, which, by convention, is the average of the two central values in the table of all MLB team salaries. By contrast, the median salary of the five highest MLB payrolls is \$125. 26 million. Interestingly, the average wins by any team in 2005 is 81 games won. The average wins among the five highest-salaried teams is 91. wins, and the five most successful teams averaged 96. 8 wins, regardless of the salary level of each team. The statistical data indicates no correlation between payroll and wins. A good example of this is the Chicago White Sox, whose payroll ranked 13th highest, and yet the team ranked second in total wins.

2005 Major League Baseball Salary in Millions

Statistic	Value
Mean	73. 06356327
Standard Error	6. 250239255
Median	66. 1914165
Mode	#N/A
Standard Deviation	34. 2339703
Sample Variance	1171. 964722
Kurtosis	7. 571096331
Skewness	2. 174257307
Range	178. 62775
Minimum	29. 679067
Maximum	208. 306817

Sum 2191. 906898 Count 30 2005 Major League Baseball Wins

Statistic	Value
Mean	81
Standard Error	1. 978040363
Median	81
Mode	95
Standard Deviation	10. 83417327
Sample Variance	117. 3793103
Kurtosis	-0. 438682506
Skewness	-0. 120101482
Range	44
Minimum	56
Maximum	100
Sum	2430
Count	30

Salary Bin Salary Frequency

Bin	Salary	Frequency
1	29. 679067	1
2	65. 404617	14
3	101. 130167	12
4	136. 855717	2
5	172. 581267	0
6	More 1	1

Win Bin Win Frequency

Bin	Win	Frequency
1	56	1
2	64. 8	0
3	73. 6	7
4	82. 4	9
5	91. 2	7
6	More 6	6

The descriptive statistics analysis indicates that the standard deviation in salary was 34. 23 million while the standard deviation for wins was 10. 83.

The skewness in salary was a positive skew while the wins indicated a negative skew. In analyzing all the pertinent data, no significant information

substantiated a correlation between salaries and wins. The following chart is a reflection of results based on questions asked on salary concerns in major league baseball. Although this data is based on a small sample size of respondents, the results were respondents considered professional baseball players are being paid as much as in other professional sports. Many of the respondents believed professional baseball players are paid too much for this type of professional sport.

The result in the graph shows that respondents think that salaries produce more wins in baseball. Results for the above graph were obtained through a class survey given earlier this week. The following is the tabular format of the survey results.

Yes	No	Uncertain	Paid as much as other sports?	A	A
3	4	1	A	A	
A	Paid too much	5	3	0	A A A
	Salaries produce more wins?	4	3	1	

The following chart is a reflection of results based on questions asked on salary concerns in major league baseball. Although this data is based on a small sample size of 19 respondents, the findings indicated that the individuals surveyed responded as follows to questions concerning the pay as it related to Major League Baseball. The bandwidth for this distribution is wide but the research team has not omitted any information collected from the survey pertaining to the data collected for MLB salaries. Other ways to collect data other than the questionnaire survey that was used for this assignment are interviewing, observations, case studies, critical incidents, and reviewing portfolios. The most popular method of collection data is the questionnaire. This type of data collection can take some time to prepare in order to design a survey that reveals the information needed.

Advantages to using such a method are: 1) reaching the masses at one time by mail, fax, e-mail, 2) minimal cost involved, 3) no bias from surveyor. The survey method has very little impact on ethical issues. When surveyors collect data careful consideration has to be taken so that the respondents are not offended. Ethically surveyors should remember the diversity of all respondents and individuality of those individuals to make their own choices without influence. The survey questions were constructed in such a way as to establish the comprehension and expertise of the participants' knowledge of Major League Baseball.

Familiarity with the game and the awareness in the process involved provided the team with a basis of interpreting and analyzing the data. Investigating the general comprehension and mind-set of the individual taking the questionnaire was the foundation in which the survey was structured. The decision to establish a simple format in which the participant was allowed to answer as simple or as in depth was intentional. Determining the extent in which the individual considered the question is sometimes difficult to ascertain when the individual is only given clear-cut choices and not the freedom to elaborate on specific questions.

The survey along with other pertinent data has been used to validate if a direct correlation between salaries and wins exist. The opportunity to gain a better understanding in the correlation between salaries and wins while making the process enjoyable for everyone involved in the progression has been a priority amongst the team from the onset of the research analysis. All relevant data pertaining to the 2005 Major League Baseball season have indicated no direct correlation in salaries vs. wins. During the research

process the team discovered a direct impact on the quality of players and the number of wins observed during a given season.

Further study would need to be performed from the research team in analyzing how many quality players are on a given team and their combined earnings. Team C Questionnaire Major League Baseball Do youA watch Major League Baseball games on television? Have you ever been to a Major League Baseball game? If so, what teams did you watch? Do you think that people attend more home games when their team has a winning record? What do you like most about Major League Baseball games? Do you know who won the World Series last year? Have reports of steroid use affected how likely you are to attend a MLB game or watch a game on TV?

A Would you be more likely to attend a MLB game in an open-air or an enclosed stadium? Which is the more realistic cause-and-effect relationship in MLB, that wins drive salaries, or that salaries drive wins? Are Major League Baseball players paid as much as other professional sports? Does a Major League Baseball team with the best players always rank at the top? Do television stations spend too much air time showing Major League Baseball games? Are professional baseball players paid too much? What type of salary would you think is fair for a major league player?

Are you interested in watching a Major League Games if the team is not having a winning season? Do you think Major League Baseball players with higher salaries produce more wins? What do you like most about Major League Baseball games? What do you like least about Major League Baseball games? Do you feel that Major League Baseball seasons are too long? Do

you think that there should be a salary cap on Major League Baseball? What do you think about the designated hitter rule? References Baseball Almanac (2005) Baseball Almanac a€” Year in Review: Year-by-Year Baseball History Retrieved December 22, 2007 from HYPERLINK “ [http://www. aseball-almanac. com/yearmenu..shtml](http://www.baseball-almanac.com/yearmenu.shtml)” [http://www. baseball-almanac. com/yearmenu..shtml](http://www.baseball-almanac.com/yearmenu.shtml) Bloom, Barry (2002) The Official Site of the Major League Baseball: News: Major League Baseball News: Players stand firm on CBA issues. Retrieved December 21, 2007 from HYPERLINK “ [http://www. mlb. com/news/article. jsp? ymd= 20020530&content\\_id= 37354&vkey= news\\_mlb&fext=. jsp&c\\_id= null](http://www.mlb.com/news/article.jsp?ymd=20020530&content_id=37354&vkey=news_mlb&fext=.jsp&c_id=null)” [http://www. mlb. com/news/article. jsp? ymd= 20020530&content\\_id= 37354&vkey= n ews\\_mlb&fext=. jsp&c\\_id= null](http://www.mlb.com/news/article.jsp?ymd=20020530&content_id=37354&vkey=news_mlb&fext=.jsp&c_id=null) CBSSports (2007, December 20). CBSSports MLB: MLB Salaries. Team Payrolls Retrieved December 21, 2007, from HYPERLINK “ [http://www. sportsline. om/mlb/salaries](http://www.sportsline.com/mlb/salaries)” [http://www. sportsline. com/mlb/salaries](http://www.sportsline.com/mlb/salaries) deMause, Neil (2006) Does Baseball need a salary cap? ESPN Page 2 Retrieved December 21, 2007 from HYPERLINK “ [http://sports. espn. go. com/espn/page2/story? page= betweenthenumbers/salar ycap/060405](http://sports.espn.go.com/espn/page2/story?page=betweenthenumbers/salarycap/060405)” [http://sports. espn. go. com/espn/page2/story? page= betweenthenumbers/salary cap/060405](http://sports.espn.go.com/espn/page2/story?page=betweenthenumbers/salarycap/060405) Fry, Ben (2005) Salary vs. Performance for American baseball teams over the season, retrieved December 22, 2007 from HYPERLINK “ [http://benfry. com/salaryper/index. html](http://benfry.com/salaryper/index.html)” [http://benfry. com/salaryper/index. html](http://benfry.com/salaryper/index.html) Kennedy, K, Bechtel, M. , & Cannella, S. (2007, July) SI players poll.

Sports Illustrated, 107(3). Retrieved December 22, 2007, from EbscoHost Academic Search Premier Database. Nightinale, B. (2007, December).

Baseball have-nots make use of payroll flexibility. USA Today, Page 01c.

Retrieved December 21, 2007 from EbscoHost Academic Search Premier

Database Powers, S. (2006, October). Sacks of cash. Business 2. 0, (7)9.

Retrieved December 22, 2007, from EbscoHost MasterFILE Premier

Database. Sherson, Brian (2005) WebQuery: Baseball Salaries and Winning

retrieved December 22, 2007 from HYPERLINK “ [http://www. cwu.](http://www.cwu.edu/~shersonb/webqueries/mlbsalaries/)

[edu/~shersonb/webqueries/mlbsalaries/](http://www.cwu.edu/~shersonb/webqueries/mlbsalaries/)” [http://www. cwu.](http://www.cwu.edu/~shersonb/webqueries/mlbsalaries/)

[edu/~shersonb/webqueries/mlbsalaries/](http://www.cwu.edu/~shersonb/webqueries/mlbsalaries/)

Silver, Nate (2007, October 31). The wins budget, the dodgers, and A-Rod.

Retrieved December 21, 2007, from Baseball Prospectus Web site:

HYPERLINK “ [http://www. baseballprospectus. com/unfiltered/index. php? s=](http://www.baseballprospectus.com/unfiltered/index.php?s=payroll+budget&submit=Search+Unfiltered)

[payroll+budget &mit= Search+Unfiltered](http://www.baseballprospectus.com/unfiltered/index.php?s=payroll+budget&submit=Search+Unfiltered)” [http://www. baseballprospectus.](http://www.baseballprospectus.com/unfiltered/index.php?s=payroll+budget&submit=Search+Unfiltered)

[com/unfiltered/index. php? s= payroll+budget& submit= Search+Unfiltered .](http://www.baseballprospectus.com/unfiltered/index.php?s=payroll+budget&submit=Search+Unfiltered)

Smith Jr. , Paul (2007) Gazizza: Baseball Payrolls and Wins retrieved

December 22, 2007 from HYPERLINK “ [http://www. gazizza.](http://www.gazizza.net/2007/05/baseball_payrolls_and_wins.htm)

[net/2007/05/baseball\\_payrolls\\_and\\_wins. htm](http://www.gazizza.net/2007/05/baseball_payrolls_and_wins.htm)” [http://www. gazizza.](http://www.gazizza.net/2007/05/baseball_payrolls_and_wins.htm)

[net/2007/05/baseball\\_payrolls\\_and\\_wins. htm](http://www.gazizza.net/2007/05/baseball_payrolls_and_wins.htm) PAGE PAGE 3 Descriptive

Statistics