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Characteristics and Success of Long-Term Contracts in Major League Baseball

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CHARACTERISTICS AND SUCCESS OF LONG-TERM CONTRACTS IN MAJOR LEAGUE BASEBALL

by

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ABSTRACT

The current labor market in MLB is extremely lucrative for both players and owners; however, the system is not without its problems. Over the past two decades, owners have become increasingly aggressive when signing elite players. Owners must offer long-term contracts in excess of $100 million to outbid other teams and secure an elite player to be the face of their franchise. Because MLB contracts are guaranteed, owners take a tremendous risk when signing players to a long-term deal. The purpose of the study was to apply a framework for what a “successful” MLB contract is and then measure all long-term (5+ years) contracts in MLB from 2001 to 2010, in order to provide objective data on the success rate of those long-term contracts. For this study, dollar per Wins Above Replacement ($/WAR) was the objective measurement used to framework success. Additionally, this study sought to reveal characteristics that could assist MLB team executives with deciding which players to give long-term contracts to. The results showed that only 29.7% of long-term contracts were successful. Player’s age,

MLB experience, fielding position, and signing with his current team all had statistically significant relationships with contract success. The study implied that teams should give long-term contracts to players between the ages of 21 and 24, have between one and three years of MLB experience, and that teams should sign players already on their team.

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CHAPTER ONE

INTRODUCTION

Major League Baseball (MLB) has made great strides economically over its 150 plus year existence. Professional baseball can be traced back to 1842, when the New York Knickerbocker Baseball Club began playing (Baseball-Reference, 2014a). The Knickerbocker players paid dues so that the team could rent fields to play its games on, although a few of the best players were secretly paid (Haupert, 2007). In 1858, the National Association of Baseball Players was formed (Mondout, 2015). The association formalized rules and created an administrative structure. That same year, the association charged fans an admission fee to watch the All-Star game (Ryczek, 2014). The association had rules that prohibited direct compensation for players but it was common practice for players to be paid under the table (Mondout, 2015). This practice led to players frequently changing teams to obtain more money.

In the 1860s, newspapers began covering baseball games on a regular basis and the sport gained popularity (Haupert, 2007). In 1869, the Cincinnati Redstockings became the first team to openly pay their players (Baseball-Reference, 2015a). The Redstockings professional baseball team spent a year barnstorming across America and defeated every challenger. This barnstorming tour created a demand for the sport and helped baseball gain popularity because fans wanted to come out and watch their local team take on the professional Redstockings (Haupert, 2007). That demand led to the development of the first all professional baseball league in 1871, the National Association of Professional Base Ball Players (Baseball-Reference, 2015d).

The league separated itself from amateur leagues and caused the amateur leagues to disband within a few years (Haupert, 2007). The National Association of Professional Base Ball Players was renamed the National League in 1876, and is still recognized under that same name today (Bendix, 2008). The formation of the National League was a major step in making professional baseball a viable business in the United States. However, baseball still had many problems to address during this time. The best players were paid well, earning as much as $4,500 per season. This was significant considering the average laborer only earned $10 per week and worked 60 hours (Outrun Change, 2012). However, teams competed to sign the best players and this system became impractical because owners would offer star players more money to leave their current team; players would even switch teams during the season to obtain a pay increase (Haupert, 2007). To strengthen the integrity of baseball, owners met after the 1878 season and secretly agreed not to steal players from other owners (Haupert, 2007). This secret agreement was the beginning of baseball's reserve clause. The agreement was formally included as a contract clause in 1887 and agreed to by the players (Baseball-Reference, 2012a). The reserve clause meant that players could only negotiate their salary with their current team. This eliminated any bidding for services and kept salaries low. It was nearly a century before the players were able to abolish the reserve clause via free agency (Barra, 2011).

In response to owners implementing the reserve clause, the players created the National Brotherhood of Professional Base Ball Players in 1885 (Lewis, 2001). This was the players' first attempt at organizing to achieve better salaries. However, the attempt was not successful and the organization only lasted two years (Haupert, 2007). The Players Protective Association was formed in 1900, but it too folded after only a few

years (Baseball-Reference, 2010b). Occasionally, outside forces created competition for players and caused players' salaries to rise, but baseball was always able to eliminate the competition and therefore control the players' salaries. In 1901, the Western League declared itself a professional baseball league and renamed itself the American League (Bendix, 2008). However, it merged with the National League in 1903 and eliminated any bidding for players between the two leagues (Bendix, 2008). This organizational structure still exists today as baseball has successfully protected itself from outside competition for over 100 years.

As baseball became a more established game and a more popular form of entertainment, the owners began to expand their revenue sources. In 1897, baseball sold broadcast rights for the first time. As part of the contract, each team was given $300 worth of telegrams for allowing their games to be broadcast play-by-play over telegraph (Ham, 2011b). Over the next two decades, MLB maintained a baseball monopoly in America and continued to expand and increase its revenue; however, players' salaries only increased slightly except for those of elite players (Haupert, 2011).

In 1922, MLB's monopoly was finally challenged in court. *Federal Baseball Club of Baltimore, Inc. v. National League of Professional Baseball Clubs et al.* made it all the way to the United States Supreme Court (Abrams, 1999). The court ruled in favor of MLB by stating baseball was not interstate commerce, and therefore, exempt from antitrust laws (Haupert, 2007).

MLB also expanded into radio in 1922 by nationally broadcasting The World Series, further increasing its revenue which it shared equally with all teams (Ham, 2011a). Baseball quickly discovered that radio was not only a great source of revenue,

but also helped attract more fans and served as free advertising (Haupert, 2007). In the 1920s and 1930s, teams made enough revenue to pay massive salaries, such as Babe Ruth's $80,000 salary in both 1930 and 1931 (Haupert, 2012). However, the average player's salary was still modest compared to today's salaries and it took another two decades before a player surpassed Ruth's salary (Haupert, 2012).

In 1939, MLB again expanded its revenue sources into television (Schwartz, n.d.). The first local television contract was sold by the New York Yankees within a decade and The World Series was a top-rated television event by 1951 ("New York Yankees," 2015). MLB and its owners were thriving, but after enduring half a century with no negotiating power, the players began to push harder than ever for better conditions. In 1946, the players formed the American Baseball Guild (Weintraub, 2012). This was not a union but a committee of player representatives that was tasked with negotiating directly with the owners. Previously, contract terms had been dictated solely by owners; owners could waive a player with little notice or even unilaterally decrease a player's salary by any amount (Dorhauer, 2015). While players were not able to negotiate any major changes, they were able to change the standard MLB player contract. The players were able to obtain a minimum player salary, 25% maximum pay cut, a pension plan, and paid living expenses during spring training (Haupert, 2007). The players' increase in negotiating power was not the last challenge MLB would face.

MLB had eight antitrust lawsuits filed against it in the 1950s, the largest one being *Toolson v. New York Yankees, Inc.*, which was heard in the Supreme Court (Grow, 2010). Again, the Supreme Court ruled in favor of MLB; however, the two dissenting judges noted that baseball featured 39 interstate leagues and had gross receipts of $52

million in 1950 (Fein, 2005). The Major League Baseball Players Association was organized in 1954 and remains today (MLB Players, 2016).

MLB revenue continued to climb in the 1950s and 1960s, but not equally, which caused problems between teams. Teams negotiated local media contracts and those teams in the largest markets were able to get more money (Haupert, 2007). This inequality in revenue caused a competitive gap in the league. MLB addressed this problem in 1966 when it sold its first national television contract; the deal provided $300,000 to each team (Castle, 2016, p. 16).

The players’ union began to make small gains in the 1960s when it hired Marvin Miller as their negotiator. Miller was able to increase the minimum salary and decrease the amount owners were allowed to reduce salaries (Wertheim, 2012). By 1970, the business of baseball had been around for over 100 years. Over that duration, owners had held almost all the bargaining power and kept players’ salaries low while their own revenues increased exponentially (Dorhauer, 2015). However, the power balance between players and owners in MLB was about to change drastically.

In 1970, Curt Flood of the St. Louis Cardinals was traded to the Philadelphia Phillies (Grow, 2010). Flood did not want to leave St. Louis and refused to switch teams. Baseball Commissioner, Bowie Kuhn informed Flood that he could play for Philadelphia, or not all at. Flood chose the latter and filed an antitrust lawsuit against MLB (Dorhauer, 2015). In 1972, *Flood v. Kuhn* made it all the way to the Supreme Court, and again, the court ruled in favor of MLB (Dorhauer, 2015). Nevertheless, the court acknowledged that the original 1922 antitrust exemption should be overturned and stated that Congress should be the entity to right the wrong (Grow, 2010). Rather than wait for Congress to

act, the players, with Miller as their negotiator, decided to take action at the bargaining table. At first, the owners refused to bargain on certain issues like salary and pensions (Haupert, 2007). Consequently, the players responded by going on the first league-wide strike in U.S. professional sports history (Ghosh, 2013). The owners conceded to the players' demands only a few weeks into the regular season and the players had won their first major victory at the bargaining table in nearly a century (Haupert, 2007).

In 1974, Catfish Hunter became the first free agent in MLB due to an oversight by the Oakland Athletics owner (Kelly, n.d.). Hunter's contract called for payment on a specific date; when the owner missed the deadline, Hunter and Miller filed an objection to void the contract (Rogers, 2014). An arbitrator agreed and voided the contract; a bidding war for Hunter ensued. Hunter eventually signed a record contract in terms of both length (five-years guaranteed) and annual salary ($750,000) (Berkow, 1999). Prior to this, it was rare for a player to get a contract longer than one year, and it was unprecedented for a contract to be guaranteed. On the heels of Hunter's success, Miller advised two other players to play the 1975 season without signing their contracts. Andy Messersmith and Dave McNally played the entire season without signing a contract; because the players refused to sign, their teams renewed their previous year's contracts (Abrams, 2009). After the season, the players argued that since they signed no contract, there is no reserve clause, and therefore, they should be able to negotiate with any team. The issue went before an arbitrator and on December 23, 1975, the arbitrator did what the Supreme Court had failed to accomplish by striking down the reserve clause (Abrams, 2009). This ruling drastically shifted the bargaining power of players in MLB. The strike became the favorite tool of the players and was used again in 1981, 1985, and 1994,

which caused the cancellation of the World Series for the first time since 1904 (Nightengale, 2014). The owners tried to fight back by locking out the players in 1976 and 1989, but with no success; they even tried colluding against the players in 1986 (Brown, 2008). Each time a work stoppage has occurred in baseball, whether through a strike or lockout, the players' have had their demands met by the owners (Haupert, 2007).

The players had now gained the ability to become free agents and negotiate with any team, and salaries skyrocketed. In 1975, the average MLB salary was $45,000; the average salary rose to $289,000 in 1983, and $2.4 million in 2002 (Haupert, 2007). The average MLB salary is over $4 million today (Badenhausen, 2015). Over that same period, the minimum salary increased from $6,000 to $507,500, and the highest annual salary increased from $240,000 to over $30 million (Gaines, 2015). Curt Flood may have lost his lawsuit, but the players ultimately prevailed in abolishing the reserve clause. Since 1975, the players have won the right to increased pensions, arbitration for salary disputes, the right to a hearing for disciplinary actions, the right to hire agents, increased travel money, better working conditions, and, of course, free agency (Haupert, 2007).

While players' salaries have increased dramatically since the introduction of free agency, there are other factors that have contributed to the rise in salaries. MLB may have lost some control over players in 1975, but they still hold a monopoly on baseball in the United States. The owners still control every other aspect of MLB, specifically television and other media contracts. Television revenues, along with other media sources have increased exponentially since the 1970s. National television contracts paid each team $3 million in 1975, $24 million by 2002, and $51 million today (Yoder, 2013). Tickets prices have increased from $3.30 in 1975 to $28.94 today (Linshi, 2015), while

attendance has more than doubled (Haupert, 2007). Finally, the number of MLB teams has increased from 24 in 1975 to 30 today (Dodd, 2011). Currently, the bargaining power between owners and players is fairly equal. The reserve clause still exists, giving owners control over a player for the first six years of his career (Thornley, n.d.). However, players can file for salary arbitration after two or three years, depending on games played, so the owner cannot unilaterally decide the player's salary (Gorman, 2012). After the first six years, players are able to become free agents and can negotiate with any team for the rest of their careers (Gorman, 2012).

The current labor market in MLB is more lucrative than ever for players. Although the owners have to split more of their profits with players, they are splitting a much larger profit overall; MLB revenues exceeded $9 Billion in 2014 (Brown, 2014). However, this system is not without its problems. Over the past two decades, owners have become more aggressive when signing elite players. Owners must offer long-term contracts in excess of $100 million to outbid other teams and secure an elite player to be the face of their franchise (Schlegel, 2011). Because MLB contracts are guaranteed, owners take a tremendous risk when signing players to a long-term deal. Frequently, an owner will sign a player to a long-term deal, only to watch that player get injured or have his performance decrease drastically (Meltzer, 2005). Sometimes events unfold that make the relationship between player and team hostile. Normally, the team would simply cut or trade the player; but multi-million dollar long-term contracts make that difficult. If the team cuts the player, they still have to pay the rest of his contract, and trading is nearly impossible because other teams are not willing to take on the large contract. In other words, the team is stuck with the player and his contract.

In January 2014, a MLB arbitrator suspended Alex Rodriguez for the entire baseball season (162 games), plus any playoff games (Matthews, 2014). In the weeks following the arbitrator's decision, Rodriguez filed lawsuits which severely strained his relationship with MLB, the MLB Players' Union, and the New York Yankees. This lawsuit seemed to be the final straw for the Yankees, who were already unhappy with Rodriguez's declining performance despite being the highest paid player in MLB (Megdal, 2013). However, the Yankees were trapped; after serving his yearlong suspension, Rodriguez was still under contract until 2017 and owed $61 million in base salary (Hagen, 2014). No other MLB team would dare trade for a declining 39-year old with a price tag of over $20 million a year (Heyman, 2012). The Yankees could release Rodriguez but would still have to pay him the $61 million remaining on his 10-year, $275 million contract. The only reasonable option for the Yankees was to continue to pay Rodriguez his salary for the remainder of his contract and hope he was able to help the team.

Politi (2013) believed Rodriguez's contract with the Yankees "will go down in the record books as the worst contract in American professional sports history" (p. 1). While Rodriguez's situation was the most notable, his was far from the only contract to be labeled a failure. Kevin Brown signed the first $100 million contract in baseball in 1998. The Dodgers gave him a seven-year, $105 million deal at the age of 33 (Roos, n.d.). This deal was a disaster as Brown never performed up to expectations, despite his then record salary. Reuter (2013) believed many MLB contracts are bad deals for teams and specifically referred to Ken Griffey Jr's 9-year, $116 million deal with the Reds, Mike Hampton's eight-year, $121 million contract with the Rockies, Johan Santana's six-

year, $137.5 million deal with the Mets, and Barry Zito's seven-year, $126 million deal with the Giants.

These contract failures are widely known. The consensus among fans, sports media, and even MLB team executives, seems to be that long-term contracts are not worth it for the teams (Kahn, 2015). One former team executive even stated publicly that "the players' performance is not the same following the signing of a new multi-year contract" (Stankiewicz, 2009a, p. 1). So why do MLB teams continue to take million dollar risks on players? Before the 2015 season, the Miami Marlins signed Giancarlo Stanton to a 13-year, $325 million contract, the largest in North American sports history (Normandin, 2014). Stanton's contract is back-loaded so he will receive most of the $325 million near the end of his contract, and he can opt out of the contract after seven years. However, if Stanton chooses not to opt out, the Marlins may be paying $30 million a year for Giancarlo, whether he is contributing to the team or not.

It is surprising that any team is willing to give a five-plus year contract to players considering that the average playing career in MLB is only 5.6 years (Roberts, 2007). Furthermore, team payrolls usually account for over one-third of franchises' total costs since the start of the free agent era (Hadley & Gustafson, 1991). Even today, this remains the norm. MLB achieved record revenues of $9 billion in 2014 and player salaries accounted for about $3.4 billion in expenses (Brown, 2014). Therefore, a team's profitability is sensitive to players' salaries. Although these $100+ million contracts are constantly in the news and come with "boom or bust" potential for the franchises, they are extremely rare. Contracts of five years or longer make up only about five-percent of contracts in MLB (Krautmann & Solow, 2009).

In addition, MLB has seen a substantial increase in revenues over the past two decades. Since 1995, baseball has increased its revenue by 257 percent, mainly due to television contracts (Turvey, 2013). Players' salaries increased substantially over that time as well, but not equally. In 1987, the highest paid player in MLB made 40 times the league minimum ($4 million compared to about $100,000), by 2006, the highest paid player made 70 times the league minimum ($22 million compared to about $300,000) (Krautmann & Ciecka, 2009).

One MLB general manager believed "a very small percentage of the players in the big leagues actually are much better than everyone else, and deserve to be paid the millions" (Meltzer, 2005, p. 8). Some baseball experts think that a superstar player's ability to help his team get into the playoffs is enough of a reason to pay a higher salary than would otherwise be expected (Krautmann & Ciecka, 2009). A team with home-field advantage throughout the playoffs could conceivably play 11 home playoff games if they made it all the way to the World Series. These games are likely to increase the team's revenues by $33 million, and owners keep 100% of all revenues beyond the fourth game in each round compared to 40% in the first three games (Krautmann & Ciecka, 2009). Going deep into the playoffs could earn an owner tens of millions of dollars more in profit, so it is understandable that many owners are willing to pay an elite player $10 million more a year if that player could potentially get the team there.

It seems that everybody (sports media, team executives, fans, etc.) has an opinion on whether or not long-term contracts are successful (Kahn, 2015). However, these are just subjective opinions with no empirical research or data to back up their claims. No one has defined what a successful contract is and attempted to measure the success of

long-term contracts using objective measurements. Some researchers have even omitted long-term contracts for fear of skewing their data because five plus year contracts are so rare (Meltzer, 2005). Conversely, some long-term contracts today are for such large dollar amounts that that a single player could account for a quarter of the team's payroll for the year. Therefore, this type of contract could make or break a team's on-the-field success for half a decade or more. Therefore, long-term contracts in MLB are worth studying.

Purpose of the Study

The purpose of the study was to apply a framework for what a "successful" MLB contract is, then measure all long-term contracts in MLB from 2001 to 2010, in order to provide objective data on the success rate of those long-term contracts. There is no standard definition of a successful MLB contract. However, some researchers have implied what a good starting point might be. Baumer, Jensen, & Matthews (2013) stated that "a natural choice of baseline is the league average player" and "league average players themselves are quite valuable" (p. 2). As a result, this study viewed a successful long-term contract as one in which a player performs above the MLB average for the majority of his contract. For this study, dollar per Wins Above Replacement ($/WAR) was the objective measurement used to framework success. Although $/WAR was a relatively new measure of performance, it had been used in both academic studies (Turvey, 2013) and within the sabermetric community (Cameron, 2014; Pollis, 2013). $/WAR was calculated by taking the player's salary for the year and dividing it by the player's end of year WAR. For example, if the player made $10 million in 2001 and had a WAR of 5.0, his $/WAR for 2001 would be $2 million. If the player's $/WAR for the

year was below the MLB average $/WAR, then that year was considered “successful” (the MLB average $/WAR in 2001 was $1,949,726.73 so the year would not have been successful in the hypothetical example). Each year of a player’s long-term contract was measured in this manner to determine if the total contract was successful or not. A contract was deemed as “successful” if the majority (over 50%) of the years were successful in terms of $/WAR. For example, if a player had four successful years out of a seven-year contract, then the player’s total contract was successful. In the event of a tie (i.e., the player had four successful years out of an eight-year contract), the player’s average $/WAR over the entire contract was compared to the average MLB $/WAR for the same period.

Additionally, this study sought to reveal characteristics that could assist MLB team executives with deciding which players to give long-term contracts to. After assessing which contracts were successful and which ones were not, the study then determined whether specific player characteristics were more common in the successful long-term contracts (a high percentage of the successful contracts were from left-handed batters, outfielders, former MVP’s, American League players, etc.). Lastly, the study showed the demographic characteristics of the players receiving long-term contracts (age, position, salary, contract length, team, league, etc.). This study looked at age to see if older players had a lower success rate in terms of long-term contracts, and the researcher looked at whether or not player performance declined significantly after signing a long-term contract (i.e., was the player’s long-term contract WAR below that of their pre long-term contract WAR).

Significance of the Study

This study added to the current body of knowledge in several ways. First, no previous study has attempted to framework success or failure of long-term contracts using $/WAR calculations. Turvey (2013) used $/WAR to assess long-term contracts. However, his study used projections rather than actual performance data and he used ambiguous terms (Big Bargain, Definite Bargain, Underpaid, Hugely Overpaid, and Definitely Overpaid) rather than state a contract was successful or unsuccessful. Other studies have only used statistics such as runs, total bases, OPS, or other narrow hitting statistics to measure success. WAR is a comprehensive statistic that accounts for fielding, base running, pitching, and all hitting statistics. Therefore, WAR describes a player's total contributions to his team, not just how he contributed with hitting statistics. Using $/WAR takes this a step further by measuring the player's performance in terms of how much the team is paying for the player's services. This allowed the study to look at whether or not teams were overpaying for that performance. For example, a player's performance might have looked impressive considering he had a WAR of 6.0, but it was put into perspective when you consider 10 other players had the same WAR and were all paid $10 million less that year. This type of data is critical because baseball is a business and economic efficiency is important, especially to small market teams that can't afford a $200 million payroll like the Yankees and Dodgers.

Second, baseball researchers have yet to identify characteristics that are significant predictors of long-term success in MLB. This study attempted to identify what characteristics to look for, and which to avoid. Then MLB team executives could use the information to become much more efficient and competitive. Perhaps this study revealed

that no player over 30 years of age had a successful long-term contract or that no contract over nine years was successful; teams could then use this data and avoid offering long-term contracts to players in their 30s and to avoid offering contracts over eight-years in length. Ultimately, teams could use the data to make better front office decisions and be able to put the highest performing team out on the field for the least amount of money.

Finally, previous shirking studies (studies that look for deliberate decreases in a player's performance) used only batting statistics (such as OPS) to measure performance rather than Wins Above Replacement (WAR), which measures a player's total contribution to his team. Krautmann and Donley (2009) stated that tests for shirking can be dependent on the approach utilized. Shirking studies using OPS and other hitting statistics have provided mixed results. Using a comprehensive statistic like WAR may provide more uniform results over time.

Assumptions & Limitations

Within this study, there were various assumptions, limitations, and key terms that the investigator needed to take into account in order to successfully conduct the research task at hand.

Assumptions

- Contract success can be measured by using Dollar per Wins Above Replacement ($/WAR).
- A successful contract was one in which the player performed above the MLB average (in terms of $/WAR) for more than 50% of the contract.
- Shirking can be measured using Wins Above Replacement (WAR).
- rWAR from Baseball Reference is just as good as other versions of WAR.

Limitations

This study was not without its limitations. First, only 91 contracts were examined (see Table A1 in Appendix). Although this represented all but two long-term contracts over the period from 2001 to 2010 (see Table A2 in Appendix), it was not a large enough sample to make any definitive conclusions. However, one could argue that the results of this study are sufficient enough to formulate more narrow hypotheses for future testing. Second, the study only looked at regular season performance to framework success. Some baseball enthusiasts would disagree with this approach and argue that success in baseball should be based on the amount of postseason (especially World Series) wins a player has. Third, the study was based on the assumption that a successful contract is one in which the player performed above the MLB average (in terms of $/WAR) for more than 50% of the contract. An argument could be made that a successful contract should have a much higher standard (i.e., the player should perform higher than the MLB average 75% or 100% of the years in his contract). Fourth, WAR has no standard formula. There are many different formulas used to calculate WAR and every formula uses a different baseline to define what a replacement level player is. This study used the rWAR formula from Baseball Reference for its convenience. However, there was no evidence to suggest that this formula was any better or worse than other versions of WAR. Fifth, the study used age 27 as the age of peak performance. While this age was the most common finding in the literature, other studies found different ages of peak performance when accounting for ability level, experience, and position (Hakes & Turner, 2009). Finally, the study did not account for the player's place in the batting order. Hitting in front of or behind an elite hitter could significantly impact the player's

performance (WAR) enough to change him from a successful contract to a non-successful contract, or vice versa.

Research Questions

For the purposes of this study, five exploratory research questions were utilized in order to learn more about long-term contracts in MLB.

RQ1: What are the characteristics of MLB players who sign 5+ year contracts?

RQ2: What percentage of 5+ year MLB contracts are successful in terms of $/WAR?

RQ3: At what age does the success rate of 5+ year MLB contracts drop to 50%, 25%, 10%, and 0%?

RQ4: What characteristics significantly impact the success of 5+ year contracts?

RQ5: In what percentage of 5+ year MLB contracts does shirking occur when measured using WAR?

Definitions of Key Terms

Conceptual Definitions of Key Terms

- Apprentice – a term used to describe those players with less than three full years in MLB. Apprentices are bound to their team and have little bargaining power in terms of salary. These players are not eligible for arbitration or free agency, so they must accept whatever offer the team makes. (Krautmann, Gustafson, & Hadley, 2000)
- At-Bat (AB) – the total of hits, outs (except sac hits and flies) and times reached by error. An at bat differs from a plate appearance, which counts every time a batter comes to bat in a game situation, as the number of at bats excludes certain results such as walks, hit by pitch, sacrifice hits, and sacrifice flies. At bats are used to calculate batting average and slugging percentage, while plate appearances are used to calculate on-base percentage. (Baseball-Reference, 2010a)
- Ballpark Effects/Park Factors – in baseball, none of the playing fields are the same. In the NHL, NBA, and NFL there are certain things that might make certain

stadiums feel different than one another, but the measurements of each are the same. In baseball, the bases are all 90 feet apart and the mound is at regulation length, but the fences vary by distance and height. You can travel to all 30 parks and never see the same dimensions twice, but that also poses a problem when trying to evaluate the game because there's an additional variable influencing the outcome of every plate appearance. If we want to properly evaluate players and teams we need to have some way of adjusting for the fact that every park is different. It's not just the dimensions. The dimensions matter, obviously, but deep fences don't automatically make a pitcher's park and short porches don't always favor hitters. In addition to the dimensions, the weather matters, the air density/quality matters, and topology of the surrounding area matters. The ball tends to travel better in warm air and thin air, and the surrounding buildings and ballpark structures can influence how well the ball carries. The goal of ballpark effects is to know how every single plate appearance would play out in all 30 MLB parks. A ball hit at 15 degrees directly over the shortstop while traveling at 93 miles per hour will travel how far and land where? That's basically what we want to know for every possible angle and velocity, but we just don't have the data and we don't have it for every type of weather in every park. Instead, we have to settle for approximations. A league average park factor is set to 100 and a 105 park factor means that park produces run scoring that is 10% higher than average (halved so 110 becomes 105 in 81 games). (Weinberg, 2015)

- <u>Bargaining Power/Negotiating Power</u> – the ability of a person, group, or organization to exert influence over another party in a negotiation in order to achieve a deal which is favorable to their interests. (Collins Dictionary, 2016)

- <u>Cost Per Win</u> – a number that compares each MLB teams' payroll to that of their win total to determine the effective amount of money the team spends for each win. It's calculated by taking a team's payroll and dividing by the number of wins. (Sporting Charts, 2015a)

- <u>Designated Hitter (DH)</u> – a player in the batting order to hit only but not play defense. He usually hits in place of the pitcher. If the DH is replaced by a player who then takes a position, the pitcher must bat in the designated hitter's place. The Designated Hitter is often considered the most significant rule change to occur in baseball's modern era. (Baseball-Reference, 2016)

- <u>Earned Run Average (ERA)</u> – the primary measure of a pitcher's success. It is expressed as an average number of opponents' earned runs scored per nine inning game: ERA = Earned Runs Allowed * 9 / Innings Pitched. (Baseball-Reference, 2011)

- <u>Fielding Percentage</u> – a common, though limited, measure of fielding effectiveness. Fielding percentage is calculated as chances accepted divided by total chances, and thus measures how effective a fielder is in avoiding errors. For much of baseball history, fielding percentage was used as the primary measure of a fielder's ability. Despite its popularity, fielding percentage has long been criticized for counting only one class of fielding failure while ignoring

others; it penalizes fielders for mishandling balls that they get to, but does not penalize them for failing to get to balls in the first place. It thus rates slow but sure handed fielders ahead of far ranging but less sure handed ones. (Baseball-Reference, 2006a)

- Final-Offer Arbitration – when an arbitrator decides a player's salary. Both the player and his respective team submit their final salary offers. Before the hearings, players and owners are encouraged to continue negotiations. If the player and owner cannot reach an agreement, a third party arbitrator will be selected to the hearing. At this hearing, the players and owner are given one hour to present evidence and one-half hour to rebut the other side's case. Following the hearing, the arbitrator has 24 hours to choose one offer, which will become the player's salary for the following season. (Tarman, 2005, pp. 2-3) A major point to remember is that the arbitration decision is not 100% binding. If a team is unhappy with the decision, the owner can always trade or release the player. (Hadley & Gustafson, 1991)

- Free Agent – players that have six or more years' experience in MLB. This group of players has the most bargaining power and free agents are free to market their services to any team they choose. (Krautmann et al., 2000)

- Home-Field Advantage – a term which describes the benefit that the home team is said to gain over the visiting team as a result of playing in familiar facilities and in front of supportive fans. In baseball, in particular, the difference may also be the result of the home team having been assembled to take advantage of the idiosyncrasies of the home ballpark, such as the distances to the outfield walls; most other sports are played in standardized venues. (Posnanski, n.d.)

- Journeymen – players with three to six years' of MLB experience. Players in this category are still bound to their team by the reserve clause, but they are allowed to settle salary disagreements with Final-Offer Arbitration (FOA). (Krautmann et al., 2000)

- Major League Baseball Players Association (MLBPA) – the union representing players in Major League Baseball for the purposes of negotiation the Collective Bargaining Agreement. (Baseball-Reference, 2013b)

- Marginal Payroll/Marginal Wins (MP/MW) – a system that evaluates the efficiency of a club's front office by comparing its payroll and record to the performance it could expect to attain by fielding a roster of replacement-level players, all of whom are paid the major league minimum salary. The formula is: (club payroll - (28 x major league minimum) / ((winning percentage - .300) x 162). The numerator of the formula assumes a 25-man active roster and three-man disabled list. It uses Opening Day payroll numbers. The formula multiplies the major league minimum by 28, then subtracts this number from the club's actual payroll to yield its marginal payroll. The denominator of this formula assumes that a replacement-level club would play .300 ball. That translates to 48.6 wins in a 162-game season. After subtracting the replacement-level .300 winning percentage from the club's actual winning percentage, the resulting number is

multiplied by 162 to calculate the number of marginal wins over a full 162-game season. This adjusts the formula for strike-shortened seasons and clubs which fail to make up a postponed game or two. Finally, the MP/MW formula divides a club's marginal payroll by its marginal wins. The resulting figure reflects how much money a club has spent, per win above the theoretical minimum. The lower the number, the more efficiently the club spent its cash. Comparing this number to the club's actual winning percentage provides another way to evaluate teams. (Pappas, 2004)

- <u>Minimum Salary</u> – the lowest amount which a club can pay a player for a full season in the major leagues. Its amount is set in the Collective Bargaining Agreement. In 2015, the minimum MLB salary was $507,500. A minority of players is paid the minimum salary at any time, but most players will be paid at that level at some point in their careers. Almost all players are paid the minimum salary as rookies - the exceptions are the few very high draft choices or international free agents who are in a position to negotiate a higher initial rate of pay. (Baseball-Reference, 2015b)

- <u>Minor League Baseball (MiLB)</u> – a hierarchy of professional baseball leagues in the Americas that compete at levels below Major League Baseball (MLB) and provide opportunities for player development and a way to prepare for the major leagues. All of the minor leagues are operated as independent businesses. Most are members of the umbrella organization known as Minor League Baseball (MiLB), which operates under the Commissioner of Baseball within the scope of organized baseball. (SponsorPitch, 2016)

- <u>Most Valuable Player Award (MVP)</u> – an award given to a player in each league who has contributed the most to the success of the player's team. It is awarded by the Baseball Writers Association of America. (Baseball-Reference, 2015c)

- <u>On-Base Plus Slugging (OPS)</u> – a common statistic used by sabermetricians to judge a player's overall offensive performance. OPS is the sum of on-base percentage and slugging percentage. The formula for OPS+ is OPS+ = 100*((OBP/lgOBP)+(SLG/lgSLG) -1), with lgOBP and lgSLG representing the league average for that statistic in that year. (Baseball-Reference, 2013c)

- <u>Pythagorean Winning Percentage</u> – a formula created by Bill James which relates the number of runs a team has scored and surrendered to its actual winning percentage, based on the idea that runs scored compared to runs allowed is a better indicator of a team’s future performance than a team’s actual winning percentage. (Baseball-Reference, 2015f)

- <u>Relief Pitcher (aka reliever, collectively the bullpen)</u> – a pitcher who specializes is coming into a game started by another pitcher. The difference in usage patterns goes beyond when the pitchers are brought into the game. Unlike starters, who are given several days off after each appearance, relievers are expected to be able to pitch in several consecutive games. (Baseball-Reference, 2015g)

- Replacement Level Players – players that are easy to obtain when a MLB starter needs to be replaced due to injury or performance. When teams need to replace a starter, they most likely have to look to the most talented minor league players. A replacement level player is not a real player, but the conceptualization of a player with a talent level between the best minor league player and the worst MLB player. There is some dispute over where to place the replacement level, but most sabermetricians agree that comparing players to a general replacement level is the best approach to valuing players. (Baseball-Reference, n.d.)

- Reserve Clause – a clause in player contracts that bound a player to a single team for a long period, even if the individual contracts he signed nominally covered only one season. For most of baseball history, the term of reserve was held to be essentially perpetual, so that a player had no freedom to change teams unless he was given his unconditional release. The clause was widely believed to have been overturned in the 1970s, but in practice young players today are still bound for up to 12 years (6 in the minors and 6 in the majors) before they have free agent rights. (Baseball-Reference, 2012a)

- Runs Batted In (RBI) – a run batted in is credited to the batter for the number of runners who score due to any hit, out, walk or HBP by the batter. Runs that score as the result of double plays or errors do not result in credit being given for an RBI. A batter can bat himself in on a home run. (Baseball-Reference, 2009b)

- Runs Created – a statistic created by Bill James in the 1970s to determine offensive performance. The basic formula is base hits plus walks, multiplied by total bases; that result is then divided by at bats plus walks. (Baseball-Reference, 2014b)

- Sabermetrician – a person who follows the teachings of sabermetrics (Baseball-Reference, 2006b)

- Sabermetrics (SABR) – the application of statistical analysis to baseball records, especially in order to evaluate and compare the performance of individual players. (Lewis, 2003)

- Shirk – to avoid doing something you are supposed to do (Merriam-Wester, n.d.)

- Slugging Percentage – also called Slugging Average, is the number of total bases divided by the number of at bats. Its formula is ([Singles] + [Doubles x 2] + [Triples x 3] + [Home Runs x 4])/[At Bats]. At bats are different than plate appearances. (Baseball-Reference, 2013d)

- Stochastic – random, involving a random variable, involving chance or probability. (Merriam-Webster Dictionary, n.d.b)

- Strike – a work stoppage caused by the players refusing to play. When the owners refuse to hold games, the work stoppage is called a lockout. (Baseball-Reference, 2012b)

- Total Bases – the number of bases a batter accumulates counting a single as 1 base, a double as 2, a triple as 3 and a home run as 4. Total Bases = [Singles] + [Doubles x 2] + [Triples x 3] + [Home Runs x 4] = [Hits] + [Doubles] + [Triples x 2] + [Home Runs x 3]. (Baseball-Reference, 2006c)

- Trade – when two teams exchange players, future considerations or a player to be named later, money, draft picks or some combination thereof. (Baseball-Reference, 2010c)

- Unconditional Release – when a team no longer has use for a player and wants to terminate all of its contractual obligations towards that player. If the player is a major league veteran, he is first placed on irrevocable waivers for a number of days, allowing any team to claim him and assume the remainder of his contract. If he is not a veteran, he becomes a free agent immediately, with the releasing team paying him a portion of the year's contract, depending on the date of release. (Baseball-Reference, 2008)

- Walk (BB) – also called a base on balls, occurs when a player gets on base by drawing four balls from the pitcher. A walk may be intentional. For batters, it counts as a plate appearance, but not as an at-bat; a high number of walks drawn is a sign of a good batting eye, or of a very dangerous hitter that pitchers are trying to pitch around. A walk is also a statistic for pitchers, where a high number of walks allowed indicates a lack of control. (Baseball-Reference, 2012c)

- Win Shares – statistic developed by Bill James which is meant to assess a player's value in terms of his ability to help his team win games. It is derived from Marginal Runs Scored and Marginal Runs Saved. (Baseball-Reference, 2007)

Operational Definitions of Key Terms

- Age (AGE) – a player's age during the first year of his long-term contract, on opening day. Example: If a player was 25 years and 364 days old when he played his first game of the long-term contract, his AGE would be 25. This is an independent variable in the study.

- Age of Entry (DEB) – the player's age the day he made his debut in MLB. Example: If a player was 22 years and 221 days old when he played in his first MLB game, his Age of Entry would equal 22.221. This is an independent variable in the study.

- All-Star (AS) – a player selected to play in the All-Star Game. The starting position players for each team are voted in by the fans and the rest of the team is selected by the manager for that league's team. In this study, All-Star (AS) refers

to the number of times the player was selected to the All-Star team before the first year of his long-term contract (Baseball-Reference, 2009a). This is an independent variable in the study.

- Average Yearly Salary (AVG) – the average salary a player collects each year of the long-term contract; this number is obtained by dividing the total salary by the contract length. Example: If a player signs a six-year contract worth a total of $87 million, his average yearly salary would be $14.5 million per year. This is an independent variable in the study.

- Bats (BAT) – refers to whether the player was a right, left, or switch-hitter. This is an independent variable in the study.

- Career Wins Above Replacement (CWAR) – the player's average career WAR before beginning the first year of his long-term contract. This number is calculated by adding together the player's WAR from each full season in MLB before starting his long-term contract, and then dividing that number by the number of full seasons the player has played in before starting his long-term contract. Example: Player A began playing in MLB in 2003, that year he had a WAR of 1.3; in 2004 and 2005, his WAR was 4.2 and 4.6 respectively. In 2006, Player A began the first year of his long-term contract. Add player A's WAR for his first three seasons (1.3 + 4.2 + 4.6 = 10.1) and then divide that number by three (10.1 / 3 = 3.3666). This is an independent variable in the study.

- Contract Length (LNG) – the number of years in the long-term contract. This is an independent variable in the study.

- Current Team (CRT) – refers to whether or not the player signed the long-term contract with the same team he played for the year before his contract, as opposed to changing teams. This is an independent variable in the study.

- Dollars Per Wins Above Replacement ($/WAR) – a measure of a player's performance that accounts for the player's salary. A player's performance could be considered successful if their WAR for the season was 4.0, but it may be considered unsuccessful by the team paying their salary when it considers that the player's salary that year was $30 million and other players in MLB had the exact same WAR with a much lower salary. A low $/WAR would be successful from the teams perspective because they would be getting the most performance for the least money spent. Dollars per Wins Above Replacement ($/WAR) is calculated by taking the player's salary and dividing it by the player's WAR (Cameron, 2014; Pollis, 2013; Turvey, 2013). Example: In 2013, Player A had a WAR of 6.3 and a salary of $16 million. Divide Player A's salary by his WAR (16,000,000 / 6.3 = $2,539,682.54) to get his $/WAR for 2013. This is a dependent variable in the study.

- Finishes Contract (FIN) – refers to whether or not the player finished his long-term contract, as opposed to being released, retiring, or any other occurrence that

stopped the player from completing the contract. This is an independent variable in the study.

- Finishes with Same Team (SAM) – refers to whether or not the player finished the long-term contract with the same team he signed it with. This is an independent variable in the study.

- Height (HT) – the player's height in inches. This is an independent variable in the study.

- League (LG) – the league within MLB (National or American) that a player competes in during the first year of his long-term contract. This is an independent variable in the study.

- Long-Term Contract – any MLB contract that is five years or more in length (Krautmann, 1990; Krautmann & Solow, 2009) .

- Metro Population (POP) – the population of the metropolitan area in which a player's team competes for its home games. This number will be obtained by using 2010 census data. This is an independent variable in the study.

- Most Valuable Player (MVP) – the number of times the player was selected as the Most Valuable Player or Cy Young winner, before signing his long-term contract. This is an independent variable in the study.

- Position (POS) – there are nine standard positions in baseball; they are governed more by experience and traditional practice than by the rules. They are: pitcher, catcher, first baseman, second baseman, third baseman, shortstop, left fielder, center fielder and right fielder. Other positions include the designated hitter, and specialized roles such as pinch hitter and pinch runner. Despite the lack of rules on positioning, the positions have become so standardized that anything more than a minor change in players' positions is viewed as noteworthy. In this study, Position (POS) refers to the fielding position that the player competed at most often during his long-term contract. Designated hitter is not included as an option for this variable, all three outfielder positions are grouped under a single outfield category, and all pitchers are grouped under a single pitcher category (Baseball-Reference, 2015e). This is an independent variable in the study.

- Round Drafted (RD) – the round the player was selected in the MLB draft. This is an independent variable in the study.

- Shirking – shirking will have occurred if a player's end of year WAR is below his pre long-term contract baseline WAR. The player's baseline WAR will be calculated by taking the average WAR for the three years that immediately precede the long-term contract. This average WAR will be used as a baseline performance measure to see if the player's performance increases, decreases, or remains the same over the life of the long-term contract. Each player will be

evaluated for signs of shirking on a yearly basis over the life of the contract. If the player's WAR is below his pre-contract baseline at the end of the season, shirking will have occurred; if his WAR is above his baseline at the end of the season, shirking will not have occurred. For example, if Player A had a baseline WAR of 5.0 but only had a WAR of 3.5 his first season of the long-term contract, shirking would have occurred. Each year of a player's contract will be evaluated in this manner to determine how often shirking occurs over the life of long-term contracts. A player will be guilty of shirking behavior if the majority of the years in the contract are below his baseline WAR. For example, if Player A had four years where his end of season WAR was below his baseline, out of a seven-year contract, then Player A would be guilty of shirking. In the event of a tie (i.e., Player A had four years below his baseline WAR out of an eight-year contract), the player's average WAR over the entire contract will be compared to his baseline (Maxcy, Fort, & Krautmann, 2002).

- Team (TEAM) – the MLB team a player signs the long-term contract with. This is an independent variable in the study.

- Team Payroll (PAY) – the total salary of the team's 25-man opening day roster, in U.S. dollars, the first year of a player's long-term contract. This is an independent variable in the study.

- Throws (THR) – refers to whether the player is right or left-handed when throwing a baseball. This is an independent variable in the study.

- Total Salary (SAL) – the total amount of money, in U.S. dollars, expected to be paid to a player over the length of the long-term contract. This is an independent variable in the study.

- United States (USA) – refers to whether or not the player grew up in the U.S.; this will be determined by where the player lived during his high school years. This is an independent variable in the study.

- Wins Above Replacement (WAR) – a total-player-value statistic popularized in recent years. WAR attempts to measure a player's value - expressed in wins - over that which would have been contributed by a fictional "replacement-level player" (essentially a AAA-quality player who can be readily acquired by a team at any time for the league's minimum salary) in the same amount of playing time. This study will use rWAR, which is calculated by Baseball-Reference. Example: A player with a WAR of 5.0, means that player would contribute to his team winning five more games over the course of a season than a replacement level player. (Baseball-Reference, 2013e)

- Years' Experience (EXP) – the number of complete seasons the player participated in MLB before playing the first year of his long-term contract. This is an independent variable in the study.

CHAPTER TWO

LITERATURE REVIEW

This literature review was arranged into seven sections. The first section provides an historical overview of the use of statistics in baseball. The second section defines Wins Above Replacement (WAR) and explains how it is used to make decisions in MLB. The third section focuses on measuring the value of a win in MLB. The fourth section focuses on how aging impacts on-field performance of MLB players and what age performance begins to decline. The fifth section looks at how MLB salaries have evolved and what factors influence salaries in baseball. The sixth section concentrates on the length of MLB contracts and how previous researchers have defined long-term contracts. The seventh section defines and explains how performance can be influenced by the terms of the contract.

Statistics in Baseball

Baseball statistics have been around as long as the game itself. Henry Chadwick, a N.Y. base sportswriter, is credited as being the “father of baseball” (Schiff, 2008). In 1859, he published a box score which included runs, hits, put-outs, assists, and errors (Pesca, 2009). During the 1860s, Chadwick began recording home runs, hits, and total bases which led to other baseball fans creating batting average (Kornspan, 2014). In 1912, retired baseball player Branch Rickey was hired by the owner of the St. Louis Browns (Polner, 1982). Rickey had a fascination with baseball statistics and paid someone to sit behind home plate and keep track of each how many bases each player gained and how many bases he advanced his teammates (Spatz, 2012).

In 1926, Dr. Coleman Griffith, an educational psychologist at the University of Illinois, published *Psychology of Coaching* (Kornspan, 2014). In the book, Griffith speculated that data analysis could be used in sports and stated:

> There is only one way to be absolutely sure of selecting the right man for the right place and that is to secure all the statistical data about him that can be gotten. Information should be obtained not only from formal games but during every practice hour (Griffith, 1926, p. 28).

In 1937, Chicago Cubs owner Philip Knight Wrigley contacted Griffith to see if he was interested in working with the Cubs during the 1938 season (Green, 2003). Griffith agreed and the “Experimental Laboratories of the Chicago National League Ball Club” was formed. Griffith kept detailed statistical records such as type of pitch thrown, the game situation for each pitch (i.e. number of outs, number of men on base), landing spot for each hit in relation to fielding positions, and also looked at seasonal variations in data (Kornspan, 2014). Many of Griffith’s reports focused on the psychological aspect of players and coaches and recommending ways to be more productive at practice. However, he also reported that most hits occur with runners on base and provided hitters with information on how specific opposing pitchers approached them (i.e. what types of pitches they threw and the location of the pitches) (Kornspan, 2014). Although today Griffith’s work is considered groundbreaking, at the time most of his reports were ignored by coaches and players and his suggestions were rarely implemented (Green, 2003).

In 1947, Branch Rickey hired Allan Roth to work as a full-time statistician for the Brooklyn Dodgers (Schwarz, 2004a). Roth kept track of every pitch for the Dodgers and

looked for trends and outliers in the data to help the team win. His data showed that Jackie Robinson had the highest percentage of RBI's on the team in 1948 (McCue, 2014). In 1949, with Roth's advice, manager Burt Shotton moved Jackie Robinson into the cleanup position in the batting order and Robinson had 124 RBI's and won the National League MVP (McCue, 2014). In the 1950s, Cubs statistician Stan West came up with his own calculation for percentage of runs batted in (Munzel, 1959).

> Specifically, this figure was calculated based upon what occurred when a batter was at the plate with runners on second and third. For example, if a batter came to the plate with a runner on second and third and they got both runners home, West recorded that situation as 2 for 2 for the batter. If the batter did not advance either runner to home plate, West scored that result as 0 for 2 (Kornspan, 2014, p. 14).

In 1961, Philip K. Wrigley pioneered another approach to statistical analysis in baseball by using IBM computers to analyze data (Puerzer, 2006). The computers were mainly used to calculate batting averages for Cub hitters against opposing pitchers and opposing hitters against Cub pitchers (Puerzer, 2006). In 1962, Cubs head coach Elvin Tappe utilized the IBM computer reports to decide which pinch hitter to send in based on the opposing pitcher and what ball park they were playing at (Kornspan, 2014). A few years later, Cubs general manager John Holland began using the IBM reports to make decisions during contract negotiations with players (Munzel, 1964).

In 1964, a retired metallurgist named Earnshaw Cook published a book called *Percentage Baseball* (Schwarz, 2004b). His work was profiled in Sports Illustrated and reached a large audience (Neyer, 2016). Cook's research showed that sacrifice bunts and

platooning were worthless, sluggers should bat first, and that games should be started by a relief pitcher and then they should be taken out for a pinch hitter (Schwarz, 2004b). Cook based all of his recommendations on a statistic he created called the "Scoring Index" (Thorn, 2013). Although Cook's book was highly publicized, neither baseball fans nor professional statisticians agreed with his conclusions (Neyer, 2016). However, Cook's work did inspire a group of young, mathematically inclined baseball fans who would go onto start the Sabermetric revolution (Schwarz, 2004b).

In 1969, *The Baseball Encyclopedia* was published by Macmillan (Neyer, 2016). The book established standard statistical categories (17 for hitters and 19 for pitchers) and included numbers for every MLB player dating back to 1871 (Berring, 2010). *The Baseball Encyclopedia* was an instant success and sold 100,000 copies its first year (Ferkovich, 2015). For the first time, baseball fans had a reliable source of information to analyze players (Berring, 2010). In August 1971, 16 individuals interested in baseball history and statistical research met at The Baseball Hall of Fame in Cooperstown, New York, and formed the Society for American Baseball Research (SABR) (Thompson & Hufford, n.d.). In 1977, Bill James self-published *Baseball Abstract* using information from *The Baseball Encyclopedia* (Neyer, 2016). James is credited with creating many new statistics such as runs created, Pythagorean winning percentage, defensive spectrum, and major-league equivalencies (Neyer, 2016). By 1982, *Baseball Abstract* was a national bestseller and Bill James is probably the most recognized name in sabermetrics today thanks to the bestselling book and movie *Moneyball* (Barra, 2011). Although Billy Beane is credited with starting the use of sabermetrics, Sandy Alderson was using Bill

James' teachings throughout the 1980s in Oakland and introduced Beane to statistical analysis when he joined the A's front office in 1993 (Bos, 2011).

In 2002, James published *Win Shares*, "in which he outlined a method that resulted in the performance of every player in major-league history being summed up by a single number for each season based on his contributions as a hitter, fielder, base runner, or pitcher" (Neyer, 2016). James' win shares statistic would eventually lead to the sabermetrics community creating various versions of Wins Above Replacement (WAR) a few years later (Neyer, 2016). Also in 2002, the Boston Red Sox hired Bill James to a full-time position in their front office (Kenny, 2016). In 2003, all MLB front offices became aware of using sabermetrics to build a winning roster with the publication of the *Moneyball: The Art of Winning an Unfair Game* (Barra, 2011). The Red Sox, with James in the front office, won the World Series in 2004 and again in 2007 (Kenny, 2016). MLB could no longer ignore sabermetrics and by 2012 all 30 MLB teams employed at least one sabermetrician (Neyer, 2016). Today, the Society for American Baseball Research has over 6,000 members and even regular baseball fans can look at and analyze player statistics on websites like *Baseball-Reference, FanGraphs,* and *Baseball Prospectus* (Grosnick, 2014).

Wins Above Replacement (WAR)

"Like all sports, the ultimate goal in baseball is winning, and so the ultimate measure of player performance is each player's contribution to the number of games that his team wins" (Baumer et al., 2013, p. 2). Wins Above Replacement (WAR) is a new baseball statistic that is attempting to become this ultimate measure. WAR is a comprehensive statistic measuring a player's overall performance in each on-field aspect

of the game: hitting, pitching, base running, and fielding (Baumer et al., 2013; Schoenfield, 2012). These on-field contributions are measured separately, then added together to get a complete measure of overall performance. Basically, WAR is the number of wins a player contributes to his team beyond what a replacement level player would. Imagine you have a team that won 75 games last year. The shortstop on the team had a terrible year and only had a 1.0 WAR. You decide to get a new shortstop for the upcoming year. Therefore, you sign a new shortstop that is worth about 6.0 WAR. You could expect that the new shortstop will increase your number of wins to around 80 in the upcoming season, assuming that nothing else changed from the previous season. The fact that the new shortstop's Wins Above Replacement (WAR) is five points higher (6.0 compared to 1.0) than the old shortstop, means that the new player contributes to about five more wins a year. It must be understood that Wins Above Replacement is an estimate, not a definitive number. Just because Player A has a WAR of 2.0 and Player B has a WAR of 1.9, doesn't mean that Player A is the superior player. Furthermore, just because the new shortstop is five WAR higher than the old shortstop, doesn't mean that your team will automatically win exactly five more games this season.

Wins Above Replacement is the number of wins that each player contributes to a team, beyond what a replacement level player would. However, there is no clear definition of what a replacement level player is.

> A natural choice of baseline is the league average player. However, since league average players themselves are quite valuable, it is not reasonable to assume that a team would have the ability to replace the player being evaluated with another player that is at league average. Rather, the team will likely be forced to replace

> him with a minor league player, who is considerably less productive than the average major league player. (Baumer et al., 2013, p. 2)

Therefore, it is best to imagine a replacement level player as a AAAA player, higher performing than a AAA minor leaguer, but not quite good enough to be an everyday MLB player (Baumer & Matthews, 2014). Statisticians use this theoretical player as a baseline to measure the performance of other MLB players. A team of all replacement level players would win about 50 games in a MLB season (Schoenfield, 2012).

Baumer and Matthews (2014) believed that Wins Above Replacement (WAR) has been the biggest success story from the field of SABR metrics in recent years. In 2013, Topps added Wins Above Replacement (WAR) to the back of its baseball cards, joining On-Base plus Slugging (OPS) as the only additions since 1981 (Baumer et al., 2013). WAR has two unique qualities that have contributed to its popularity. First, WAR is a comprehensive statistic that measures a player's total contribution. This aspect is extremely useful to team general managers when trying to place a value on players for the purposes of salaries and trades (Baumer et al., 2013). Second, the units and scale of WAR are easily understood. Unlike many other SABR metrics, you don't need to have an advanced understanding of statistics to comprehend what WAR means. Another benefit to WAR is that it allows you to more accurately compare players from different positions (Schoenfield, 2012). No other single statistic allows you to compare a pitcher and position player, to see which one contributes more to the team over the course of a season. Dupaul (2012) conducted a regression analysis which compared a team's total rWAR to their actual win totals for a season. He selected five random teams per season

from 1996 to 2011 and found a correlation coefficient of 0.91, and a standard deviation of 2.91 wins (Dupaul, 2012). Nevertheless, WAR is not perfect.

While Wins Above Replacement is easy to understand, it is not easy to calculate. You need extensive knowledge in statistics, programming, and Ballpark Effects to calculate WAR. Baumer and Matthews (2014) pointed out three major problems with current versions of WAR: Lack of reproducibility, lack of uncertainty, and lack of a reference implementation of WAR. First, WAR cannot be reproduced; it has no standard formula. There are many different versions of WAR and each has its own calculations. The three most popular versions of WAR are fWAR (FanGraphs), rWAR (baseball-reference), and WARP (Baseball Prospectus) (Baumer & Matthews, 2014). Second, none of the popular versions of WAR provide an estimate of uncertainty. In most statistical calculations, the researcher will give a measure of certainty (i.e. there is a 95% chance that the results are correct); but WAR results provide no mention of how accurate the calculations are. Third, current versions of WAR do not define exactly what a replacement level player is (Baumer & Matthews, 2014). If every version of WAR starts from a different baseline of performance or replacement level player, they will not end up with the same result of WAR, even if they are using the same formulas. Schoenfield (2012) found two additional problems with WAR. First, the author believed that WAR undervalues durable pitchers. While some replacement level pitchers may be able to give a good performance, it is unlikely that they would be able to last seven or eight innings per start like some elite pitchers. Second, WAR is not great when comparing players from different generations. Ultimately, WAR measures a player’s contributions by comparing his performance to that of his peers. Players like Babe Ruth may stand out more than elite

players today because the average player today is much better than the average player back then.

Some researchers are trying to come up with a new version of Wins Above Replacement (WAR), called openWAR, to address some of these shortcomings. OpenWAR will be completely open source and reproducible. Unlike other versions of WAR, which view hitting, pitching, fielding, and base running as four separate problems, openWAR views these aspects as if they are the same problem, and calculates them together (Baumer & Matthews, 2014). Baumer and Matthews (2014) found that openWAR numbers correlate highly with both rWAR (0.88) and fWAR (0.88). However, the authors admitted that openWAR is still a work in progress and their focus is more on reproducibility than accuracy at this point.

Jensen (2013) used fWAR (FanGraphs) to examine the relationship between WAR and players' salaries from 1991 to 2010. The author found that hitters have a median WAR of 1.1 and pitchers have a median of 0.6; and that hitters' WAR is more spread out than pitchers. Jensen (2013) also found a significant slope of 1.2 when researching WAR and salary; this slope means a player with a salary of $10 million is worth about 1.2 more wins per season than a player making $1 million. Jensen's (2013) results suggested that certain long-term contracts are bad deals for teams. However, the author did not believe this is always the case. "Despite being awarded the two largest contracts in MLB history, Alex Rodriguez also has been a good deal over the span of our data" (Jensen, 2013, p. 52). Finally, Jensen (2013) admitted the results are limited because the analysis looked at one player over multiple contracts. The author suggested

future research should examine performance over a single contract to analyze the success of long-term deals.

The Value of a Win

On November 17, 2014, Giancarlo Stanton signed a contract with the Miami Marlins worth $325 million over 13 years. The deal is the largest in the history of North American professional sports and marked the 54th time a MLB player has signed a contract worth more than $100 million (Klutho, 2015). This being the era of advanced statistics in baseball, many researchers and statisticians are researching whether these elite players are worth paying that much money. Numerous researchers are looking into how much teams are paying players for each win they contribute, or $/WAR. Dollars over Wins Above Replacement is a simple calculation of how much a team is paying a player for his contributions to wins. The number is calculated by taking the player's salary and dividing it by his WAR. For example, Madison Bumgarner made $3.75 million in 2014 and his WAR was 4.1 for that same year. Therefore, Bumgarner's $/WAR for 2014 was $914,634, or in simpler terms, the Giants paid Bumgarner $914,634 for each individual Win Above Replacement he contributed to the team that year.

Dave Cameron is at the forefront of calculating dollars per wins. Cameron (2014) concluded that each win in MLB is worth between $5 and $7 million, depending on what calculation you use. The author also applied an aging curve to his data so that team executives can attempt to calculate what players will be worth in the future. This forecast could help make decisions about how much money to offer a player in a long-term deal. The aging forecast "gives players 90% of their prior year forecast for seasons up through age-30, then 85% of prior year for ages 31-35, and 80% of prior year for ages 36 and up"

(Cameron, 2014, p. 1). Cameron (2014) believed teams sign players to long-term deals knowing they probably won't see any return at the end of the contract. The author suggested teams see a 10-year deal as more of a five-year deal with five more years of deferred payments. In other words, it is more beneficial for a team to sign a player to a $100 million over 10 years rather than over 5 years. The player will make less per year, freeing up salary to afford other players in the present time. In many ways, long-term contracts are just a strategic way of buying a player today and paying for him later (Cameron, 2014).

Pollis (2013) disagreed with Cameron's calculations for the cost of a win and cited three specific objections. First, Cameron measured the price of a win in the year it was purchased, rather than at the time each win is produced. This can be problematic because the actual price of a win ($/WAR) in MLB will vary from year to year. Second, Cameron calculated what teams think they are paying for an individual win in a particular year, instead of waiting until the end of year to calculate what each win actually end up costing the team. Pollis (2013) felt this mistake meant Cameron's calculations underestimated what teams are actually paying per win. Third, Cameron's data only included offseason signings and did not include players signed midseason. It is unclear how significantly excluding these players impacted the results. Pollis's (2013) study calculated that a win costs a team about $7 million, or $7,032,099 to be exact. This means that a league average player is worth around $14 million a year. A difference of $2 million per win will also have a tremendous effect on how many contracts are viewed. Under Cameron's formula, paying $60 million dollars for 10 wins would be considered

an unsuccessful result; but under Pollis's system, $60 million for 10 wins would be considered a bargain.

Numerous other baseball researchers are more interested in what teams should be paying players for wins, rather than what they are paying. Just because teams are willing to pay $5 to $7 million per win, doesn't mean that players are worth that much (DeMause, 2013). This group of researchers is more concerned with whether or not GMs are spending money wisely. Basically, "will the extra wins that a player generates bring in enough new revenue to pay off the team's investment" (DeMause, 2013, p.1). To find which teams were spending their money the most wisely, baseball economist Doug Pappas, came up with the statistic, Marginal Payroll per Marginal Win (MP/MW). A team made up entirely of minimum salary players (assuming 3 were on the Disabled List) would cost a team about $5.6 million. This is the least amount of money a team could spend on a roster each year. Therefore, Marginal Payroll is simply the team's opening day payroll, minus $5.6 million. Pappas also calculated that a team made up entirely of replacement level players would finish with a record of 49 wins and 113 losses. Any win above 49 would be considered a Marginal Win. For example, a team that finishes the season with 100 wins would have approximately 51 Marginal Wins. Therefore, Marginal Payroll per Marginal Win is simply the teams Marginal Payroll divided by their Marginal Wins.

Nate Silver took this idea a step further and attempted to calculate the value of a win by using revenue figures from ticket sales, club seats, TV contracts, and any other revenue numbers he could gain access to (DeMause, 2013). Silver's analysis suggested that wins are not all worth the same amount. Wins around number 90 are worth the most

to teams. This makes sense because a single win at about number 90, could mean the difference between making the playoffs or being left out; and making the playoffs could mean a significant amount of extra revenue for the team. DeMause (2013) combined Pappas and Silver's methods in an attempt to figure out if teams are spending more on players than the players are earning them in revenue. The results showed that every team in MLB, except the Athletics, Twins, and Marlins, were spending more than they were earning from the additional wins that those players brought in. This does not mean that MLB teams are losing money every year, it merely means that MLB owners are guaranteed certain money (revenue from TV contracts) whether they have a good team or not. Signing an elite player may help your team win five more games a year, but those five games will probably not increase team revenues enough to offset paying that player $25 million a year. After looking at Silver's graph, Birnbaum (2010) concluded that teams maximize their profits by purchasing exactly 94 wins. However, a replacement level team is expected to win about 47.7 games, so teams should attempt to buy 46.3 WAR each year. Birnbaum (2010) believed teams should either buy at least 90 wins, or stop before buying 60 wins. The author felt anything purchased in between 60 and 90 was a waste of money. The author reasoned that it takes around 90 wins to make the playoffs and making the playoffs would create enough extra revenue for the team to justify spending more money on players.

A man who calls himself the “Sports Marketing Guy,” used his own analysis called, team's cost per win, to measure how efficiently teams are using resources (Bertin, 2012). This statistic takes a team's opening day roster payroll, and divides that number by the number of games a team wins that year. For example, if the team has an opening day

payroll of $50 million and wins 100 games, their cost per win would be $500,000. Bertin (2012) argued that this measurement suffers from a couple of flaws. First, the salary numbers are not complete. Opening day payroll figures will not include any signing bonuses or incentive bonuses that are built into the player's contract. Including these bonuses will most likely increase a team's payroll by tens of millions of dollars. Second, the opening day payroll is nearly obsolete after just a few months. Players are called up from the minors, released, or traded throughout the season. Some teams attempt to get that superstar player just before the trade deadline to help them in the playoffs, while other teams want to dump as much payroll as they can. These transactions can change a team's payroll by tens of millions of dollars as well. Essentially, a team's actual payroll is a fluid number that is impacted by many factors throughout the entire season.

Age Effects on Performance

Age has a significant effect on a human's physical abilities. This effect can be more apparent in occupations that require a high level of physical performance, such as MLB. Numerous studies have been conducted on how age impacts performance in baseball, at what age peak performance is achieved, and how rapidly performance declines after players reach peak performance. Professional baseball players, in most cases, are physically superior to the general population. Compared to other U.S. males, MLB players live five years longer; additionally, there is a positive association between MLB playing career length and longer life expectancies (Saint Onge, Rogers, & Krueger, 2008). Researchers believed that MLB players have longer life expectancies because of "their high physical activity and overall health, selection for talent and fitness, favorable heights and weights; low smoking rates, access to high-quality healthcare during their

careers, and high prestige and incomes, which allow access to high-quality healthcare during and after their baseball careers" (Saint Onge et al., 2008, p. 818).

Even though MLB players can expect longer lives, playing careers are short in most cases. Researchers studied 5,989 position players between 1902 and 1993 and found that the average playing career in MLB is only 5.6 years (Roberts, 2007). Worse yet, 20 percent of position players only play one season, only 24 percent of players make it to 10 years (Saint Onge et al., 2008), and only the most elite one percent have a career that lasts 20 years or longer (Roberts, 2007). However, the outlook is not all bad. Once a player makes it into his second year, the dropout rate goes down to 11 percent; even better, a player in his third year can expect to play six more seasons (Roberts, 2007). In addition, the average career length of MLB position players has increased over the past century. From 1902 to 1945, the average baseball career was only 4.3 years; the average rose to 6.47 years from 1946 to 1968, and to 6.85 years from the period of 1969 to 1993 (Roberts, 2007). Witnauer, Saint Onge, and Rogers (2007) believed that "career length has increased because of better overall health, longer life expectancies, better sports training and medicine, better scouting and recruitment, higher salaries, higher prestige, league expansions, and fewer social and economic disruptions" (p. 384).

The life cycle of MLB players is fairly consistent. Fair (2007) stated that the typical MLB player begins his career and performs better each year because he gains experience, but ultimately, the human aging process takes over and the player gets worse. Simonton (1990) stated this age-related productivity is visually explained by picturing an inverted backward-J curve. Thus, performance or productivity increases rapidly up to the age of peak performance, after which there is slow decline. Fair's (2007) study looked at

players who played 10 or more MLB seasons between 1921 and 2004. The author's results suggested that the age of peak performance is 28 for batters and 26 for pitchers. The findings also showed that age impacts pitchers more significantly than hitters. Pitchers declined at a rate of 1.72 percent in terms of their Earned Run Average (ERA), whereas, hitters declined at a rate of 1.21 percent for OPS (Fair, 2007). These decline rates were modest; however, even a small drop in performance could be enough to send a major league player down to the minor leagues. The author also found evidence that decline rates in baseball have decreased in recent years. Fair also admitted to some limitations in his research. The restrictions he used for the sample almost completely excluded relief pitchers, no adjustments were made for the implementation of the designated hitter rule in 1973, the ballparks in which the player competes were not taken into consideration (i.e., a hitter friendly ballpark could skew statistics), and the implementation of the reserve clause was not accounted for (Fair, 2007).

The results of Fair's study were similar to research conducted a decade before. Schulz, Musa, Staszewski, & Siegler (1994) found that the age of peak performance for both pitchers and hitters is 27 years old. However, these authors found some exceptions to this result. First, both walks and fielding average peak three years later, at age 30, for position players. Second, number of wins and ERA, peak between age 28 and 30, for pitchers. Third, MLB players with higher abilities (i.e., Superstars) peak at older ages, this effect is most noticeable in players elected to the Baseball Hall of Fame.

Baseball Hall of Fame hitters peak later than average players in walks, strikeouts, fielding average, and stolen bases; Hall of Fame pitchers peak later in ERA, wins, hits allowed, and innings pitched (Schulz et al., 1994). Simonton (1990) suggested that MLB

players with higher initial potential make performance contributions earlier in their career, perform at higher rates throughout their career, and make their last major performance contributions later in their career. Schulz et al. (1994) noted that Hall of Fame hitters are active in MLB at a younger age compared to less able players; additionally, better players are provided with more opportunities to play. Top performing hitters achieve 2,000 career at bats in approximately four years, whereas, it takes lower performing players around six to eight years to reach this number. However, Schulz et al. (1994) pointed out that there is a limit to the benefits of experience. The authors' results found that peak hitting performance is achieved after 1,500 at bats and improves little after that; but less talented players never seem to catch up to elite players even after achieving 1,500 at bats. This phenomenon suggested that other factors are affecting performance as well. Schulz et al. (1994) believed that "experiential-based gains become marginal over time and that physiological capacity overrides the benefits of experience" (p. 285). The authors explained that the main difference between elite players and average players is that elite players perform better for a longer period of time, and also that their performance decays more gradually. The authors also noted that elite players have longer careers because they last longer in the league, not because they start at a younger age (Schulz et al., 1994).

Hakes and Turner's (2009) study only strengthened previous findings on age of peak performance. The authors took their analysis a step further and broke down age of peak performance by caliber of player. The study divided players into five groups, or "quintiles." The first quintile represented the lowest level major league player, one who is just above replacement level or in danger of going back down to the minor leagues;

whereas, the fifth quintile represented an elite or superstar player. Players in quintiles one through three were found to achieve peak performance between the ages of 25.6 and 26.8; players in quintile four achieved peak performance at age 27.5, and players in quintile five didn't peak until age 28.2 (Hakes & Turner, 2009). This finding suggested that higher level players' peak at later ages than marginal players, which matched the results of Schulz et al. (1994). Hakes and Turner's (2009) finding was even more specific and showed that elite players achieve peak performance two years later than lower level players. The study also found that higher level players' in-career performance varies significantly more than lower level players. While the authors did analyze age of peak performance, they believed that years of experience is much more useful for baseball executives when deciding on the terms of a new contract (Hakes & Turner, 2009). Their findings showed that lower level players can hit peak performance after only two or three years in MLB, whereas, high level players don't peak until between 5.3 and 7.5 years of experience.

Major League Baseball Salaries

MLB contracts are guaranteed (Meltzer, 2005). Teams must pay players no matter how well the athlete performs on the field or even if the player is injured and cannot play at all. Teams do not have the option to release a player to avoid paying their salary, as with the National Football League (Meltzer, 2005). However, baseball players have not always enjoyed such a beneficial arrangement. Salaries in MLB have changed greatly as players gained bargaining power. Fair (2007) explained that in the era of the reserve clause (before 1975), players had little bargaining power when negotiating with owners and other team executives. The reserve clause meant players were bound to their team

and required to negotiate with that team; this policy prohibited players from placing their skills on the open market to the highest bidder and, therefore, players had to accept whatever their current team offered. The only recourse players had was to “hold out,” or refuse to play, in hopes that the team would give-in and raise the player’s salary (Fair, 2007). This arrangement kept contracts short (most contracts were one-year) and salaries low. In the early 20^{th} century, MLB revenues increased 80-fold, while players’ salaries increased just sevenfold (Davenport, 1969).

In 1975, the reserve clause was abolished and the era of free agency began. Players’ gained a significant amount of bargaining power and MLB salaries have risen significantly ever since (Cassidy, 2014). However, a player’s salary is still intricately tied to bargaining power. Today, players fit into one of three categories of bargaining power: apprentices, journeymen, and free agents (Krautmann et al., 2000; Tarman, 2005).

Apprentice is a term used to describe those players with less than three years in the league. MLB defines one “year” as 172 days on a major league roster (Meltzer, 2005). Apprentices are bound to their team and have little bargaining power in terms of salary. These players are not eligible for arbitration or free agency, so they must accept whatever offer the team makes (Krautmann et al., 2000). This restriction is not ideal for the players (apprentices) but provides needed benefits to MLB team owners. Every MLB team has a minor league system of players as well. The minor league system is used to train players and allow them to develop their skills. MLB team owners provide the money to the minor leagues and, in essence, are paying to train players. The MLB policies restricting the movement and bargaining power of apprentices are used to allow team owners to recoup some of these training costs. If players were allowed to become

free agents after their first year, teams would bid for their services and players' salaries would be much higher. Restricting apprentices' ability to move teams provides owners with an opportunity to pay apprentices below market value for a few years and recoup some of the training costs.

The Los Angeles Angels, Mike Trout, is the perfect example of how beneficial this system can be for owners. Trout's first full season in the major leagues was 2012. In that season, he led the American League in Wins Above Replacement (WAR), won Rookie of the Year, and if it weren't for Miguel Cabrera winning the Triple Crown, Trout would have also been the American League's Most Valuable Player (Rymer, 2012). Trout accomplished all of this making only $510,000, while the league average was over $3 million and other players with his performance statistics were making $20-30 million (Jaffe, 2013). In 2013, Trout again narrowly finished second in the MVP voting behind Miguel Cabrera, and again, made only $510,000. Finally, in 2014, Trout won the American League MVP while still only making $1 million (Klopman, 2014). In Trout's first three full MLB seasons, the Angels paid him around $2 million, while his services could have been worth upwards of $50 million on MLB's free agent market. Considering that Trout was only in the minor leagues for about two years, the Angels more than recouped their training costs in this instance. Krautmann et al. (2000) pointed out that owners only generate a positive surplus from apprentices and that the "largest surpluses are extracted from those who cost the least to train" (p. 37). The surplus created by elite apprentices, like Trout, are usually twice as large as those created by average apprentices. Krautmann et al. (2000) also found that minority apprentices usually generate surpluses 10-15% higher than white apprentices. Unfortunately, Trout's example is not the typical

scenario. Evidence suggests that total surplus generated by young players is probably not sufficient to cover all training costs that owners pay (Krautmann & Oppenheimer, 1996); an analysis of multiple studies concluded that owners recoup only half of their training costs (Krautmann & Oppenheimer, 2002).

Journeymen are players with three to six years' of MLB experience. Players in this category are still bound to their team by the reserve clause, but they are allowed to settle salary disagreements with Final-Offer Arbitration (FOA) (Krautmann et al., 2000). In Final-Offer Arbitration,

> Both the player and his respective team submit their final offers between January 5 and January 15 of each year. The hearings for the cases are then scheduled during the time period of February 1 and February 20. Before the hearings, players and owners are encouraged to continue negotiations. In fact, most players who file for arbitration do not make it to the actual arbitration hearing. If the player and owner cannot reach an agreement, a third party arbitrator will be selected to the hearing. At this hearing, the players and owner are given one hour to present evidence and one-half hour to rebut the other side's case. Following the hearing, the arbitrator has 24 hours to choose one offer, which will become the player's salary for the following season. The criteria which arbitrators use to decide their judgments are: (1) The player's contribution during the past season, including overall performance and special qualities of leadership and public appeal; (2) length and consistency of career contribution; (3) the player's past compensation; (4) comparative baseball salaries; (5) recent club performance; and (6) any physical or mental defects in the player. Arbitrators, however, are not

permitted to decide their cases based upon: (1) financial position of player and club; (2) press comments, testimonials, or similar material regarding player or club performance; (3) offers made by either the player or the club prior to arbitration; (4) expenditures of the player or club on agents, representatives, and so on; and (5) salaries of other sports or occupations. Also, arbitrators are not permitted to explain their choice of awards. They simply write the award into the Uniform Player's Contract. (Tarman, 2005, pp. 2-3)

A major point to remember is that the arbitration decision is not 100% binding. If a team is unhappy with the decision, the owner can always trade or release the player (Hadley & Gustafson, 1991). Tarman (2005) also pointed out that the result of the arbitration process is highly dependent on the arbitrator selected. The results of arbitration seem to be split between teams and players. This uncertainty usually pushes players and teams toward an agreement rather than taking their chances at a hearing (Faurot & McAllister, 1992). Of the cases filed since 1990, players have only received 27% of what they could have made through free agency (Tarman, 2005). However, journeymen do earn higher average salaries than apprentices (Brown & Jepsen, 2009; Kahn, 1993; Meltzer, 2005). In addition, Hakes and Turner (2009) found that playing ability has a significant impact in the salaries of journeymen. The authors suggested that teams want to sign elite players to long-term deals before they have a chance to become free agents and hit the open market.

Free agents are players that have six or more years of experience in MLB. This group of players has the most bargaining power and is free to market their services to any team they choose (Krautmann et al., 2000). MLB's system of free agency is the closest to

an actual free market in the four major U.S. sports. There are no rules stating that the player's current team can offer a salary that no other team can match, like in the National Basketball Association; also, there are no "franchise tags" that allow current teams to prevent players from entering free agency, like in the National Football League (Dinerstein, 2007). Due to experience and bargaining power, free agents have significantly higher average salaries than both journeymen and apprentices (Brown & Jepsen, 2009; Kahn, 1993; Meltzer, 2005). Results show that free agents are paid proportionately to their performance at all ability levels (Hakes & Turner, 2009).

Salaries in MLB follow a trend, or life cycle. Just as age is intricately tied to performance, so is salary. Horowitz and Zappe (1998) found that salary increases with performance and eventually peaks at nine years of MLB service, then, skills decrease and so does salary. Hadley and Gustafson (1991) found similar results, but their analysis reveals that salary peaks at 10.7 years of experience for hitters and 12.8 years for pitchers. Hakes and Turner (2009) suggested that salaries' peak 1.8 years after performance peaks and that salaries decline at a proportionate rate to performance. However, Horowitz and Zappes' (1998) study suggested that some players are rewarded for lifetime performance at the end of their career. The study looked at three levels of high performing players: the frequent All-Star, the serious Hall of Fame candidate, and the certain Hall of Fame player. These players are rewarded monetarily for their lifetime productivity and their place in history. Additionally, these players receive even higher end-of-career salaries for playing for the same team their entire career (Horowitz & Zappe, 1998).

Many other factors have been linked to salary as well. Brown and Jepsen (2009) found that hitting statistics, such as on-base percentage and slugging percentage, are strong determinants of salary and that teams pay the same for them. The authors' analysis also revealed that the variation in free agent salaries cannot be explained by team revenues. This result suggested that high-revenue teams do not pay more for high performing players, but are simply able to purchase more high performing players (Brown & Jepsen, 2009). Tarman's (2005) analysis could find no reason for the variation in free agent salaries; he concluded that this phenomenon must be due to some sort of "star power." Hadley and Gustafson (1991) revealed similar results; they noted that equations consistently underestimate the salaries of elite players. These authors also believed that star power is the only way to account for the disproportionately high salaries. Dinerstein's (2007) results strengthened the idea that star power can lead to a higher salary. This researcher found that predicted salary increases by $1.393 million for players selected to an All-Star game at least one time in the past three MLB seasons. The author believed that a player's marketability is enough to account for the higher salary. Dinerstein (2007) also found player durability, measured in total bases, to be a significant factor when determining salary. The author's analysis showed that an increase of just 10 total bases can increase predicted salary by $128,598.

Reuter (2013) was interested in the extreme upper end of salaries and took a closer look at the 48 MLB contracts worth over $100 million. Of those 48 contracts, only 13 were complete. Reuter (2013) labeled the contracts good, so-so, or bad. The author stated that four of the contracts were good: Albert Pujols averaged 8.2 WAR over the life of his contract and helped the Cardinals win two World Series titles, Manny Ramirez

averaged 4.6 WAR and won two titles with the Red Sox, Alex Rodriguez averaged 7.2 WAR, won three AL MVP’s, and one title with the Yankees during his first mega contract, and Derek Jeter averaged 4.1 WAR and won one title with the Yankees during his contract. Reuter (2013) labeled four of the contracts as so-so (Todd Helton, Carlos Lee, Jason Giambi, Carlos Beltran) and five of the contracts as bad (Ken Griffey Jr., Mike Hampton, Kevin Brown, Johan Santana, Barry Zito). While this was a small sample size, teams should be mindful that only about 30% of the contracts were good deals. Other researchers pointed out just how rare these elite players and $100 million contracts are. Birnbaum (2014) showed that most MLB players are not far from the league minimum, in both salary and talent. The author’s study showed that the 358 lowest paid MLB players, were paid an average of $534,000 in 2013. The league minimum is $500,000, therefore, almost half (47.7%) of MLB players are near the league minimum in salary (Birnbaum, 2014).

Krautmann and Ciecka (2009) suggested a player’s ability to get his team into the playoffs, can also impact salary. Their research showed that making the playoffs can increase a team’s revenues by $11 million, and contending teams pay about $2.8 million over market value to lure an elite player to their roster. Some researchers suggested that teams are willing to pay more for players at crucial defensive positions, such as shortstop and catcher (Krautmann & Ciecka, 2009); but little research has been done on this topic. Finally, studies have looked into the effect of racial discrimination on salary; however, evidence did not show that whites were paid more than minorities in MLB (Kahn, 2000; Kahn, 1991). It is clear that many factors contribute to players’ salaries in MLB; one

thing is for certain, the guaranteed nature of MLB contracts means that organizations need to be absolutely certain the player is worth investing in (Meltzer, 2005).

Length of Contracts

What determines contract length in MLB cannot be explained as easily as salary. Both teams and players face certain risks when considering a long-term deal.

> If players sign short-term contracts, they risk getting injured and being unemployed in the future. If players sign long-term contracts, they lose the opportunity to sign for more money in the future if their performance improves. Teams face the opposite set of risks. If they sign a player to a short-term deal, they risk having the player improve and being forced to either sign that player to a higher contract in the future or have the player leave for another team. If they sign a player to a long-term deal, they risk having the player get injured or having his performance decline and being forced to continue to pay that player. (Meltzer, 2005, p. 7)

Various other factors can affect players and teams when considering a long-term deal. Krautmann and Oppenheimer (2002) believed that players may want long-term contracts to create stability for their families. The authors also suggested some players at the end of their career may want to stay with a team to open up post-career job opportunities. As for teams, there are two main sources of uncertainty: player performance and MLB market uncertainty. A player’s performance can vary widely from year to year; performance can be affected by age, experience, injury, family-life, coaching, training, teammates, etc. (Meltzer, 2005). Market uncertainty refers to teams not knowing what players will be available in the future. Some players in MLB can be easily replaced with a free agent or

minor leaguer. However, some players have skills that cannot be easily replaced, such as a team captain at a key defensive position like catcher or shortstop (Meltzer, 2005). The team does not know when another player of this caliber will be available, so they may be more inclined to sign the player to a long-term deal. Studeman (2007) felt this uncertainty, combined with a low-supply of and high-demand for quality pitchers, works to drive up the price of free agent pitchers and forces teams to overpay. The author recommended that free agent pitchers receive no more than a five-year deal and that younger players should be the only pitchers getting this deal. Studeman (2007) also advised teams to sign relievers to no more than a two-year contract. Lastly, Studeman (2007) explained that contracts appear to be a good deal for the clubs early and a good deal for the players near the end of the contract.

Kahn (1993) suggested that teams sign players to long-term contracts before they become free agents to avoid a bidding war with other MLB teams. Meltzer (2005) felt that teams also look at intangibles such as the comfort of knowing a player, the player’s popularity with fans, and the player’s leadership qualities. Teams may want to keep a player around because they know, and are comfortable with the player; the team knows the player is a hard worker and does not create controversy within the clubhouse. A popular player could benefit the team by increasing attendance, even if the player is no longer in his prime. Finally, teams may want to keep around a marginal player because he has leadership qualities that would be hard to replace (Meltzer, 2005). No matter what the reason, it is still unclear how beneficial long-term contracts are.

Meltzer (2005) found two trends when analyzing contract length. First, some young players do get long-term contracts, but their annual salary is much lower than free

agents with long-term deals. Second, salary does not decrease in players with chronic injuries, but contract length does. The author also found that salary and contract length normally increase together. Other research supports this position. Studeman (2007) found that the average one-year contract in 2007 was worth $2 million, while the average 10-year contract was worth $25 million. Meltzer's (2005) study revealed that the average contract length in MLB is 1.79 years. However, the study only looked at hitters and the author excluded contracts over five years in length because it may skew the results. Maxcy (2004) argued that long-term contracts in MLB should appeal the most to marginal players. These players are the most likely to be replaced and have the desire to guarantee their employment (Akerlof, 1981); however, this phenomenon rarely happens. Even though teams could benefit from signing marginal players to long-term contracts at a low salary, Akerlof (1981) believed teams resist this practice for fear of not being able to add a more high performing player, should one become available. Maxcy (2004) believed high performing players provide less risk than marginal players. The author stated that elite players' performance fluctuates just as much as marginal players, but a drop-off in performance from an elite player would still keep them above a replacement level performance. Maxcy (2004) also discovered that low revenue clubs are the most likely to offer long-term contracts. The researcher's explanation was that low revenue teams are not as affected by risk related to market uncertainty.

Krautmann and Oppenheimer (2002) also found that contract length is positively related to salary in MLB; but they found a negative relationship between length of contract and performance. The authors could find no trade-off between salary and contract duration because only the best players receive long-term contracts and they also

receive the highest salaries. Kahn (1993) pointed out that both journeymen and free agents receive higher salaries than apprentices, but only free agents show an increase in length of contract. The author suggested that teams are more willing to sign players to long-term contracts when they are faced with losing the player to free agency. Many long-term deals also contain player, team, and mutual options. A player option allows the player to decide if he would like to continue the terms of the current contract or negotiate a new contract with his current or another team. A team option allows the team to decide if they want to continue the terms of the current contract or negotiate a new contract with the current or another player. A mutual option means both the team and the player have to agree to continue with the terms of the current contract. Dinerstein (2007) discovered that teams decline contract options in about two-thirds of cases in long-term contracts. The author stated that teams are much more likely to exercise an option when the commitment is small. Stankiewicz (2009a) found that players under long-term contracts are on the disabled list more than players with short-term deals. Many teams protect their long-term contract investment by purchasing insurance for elite players that have guaranteed contracts in the hundreds of millions of dollars (Meltzer, 2005). Lastly, it is important to note that guaranteed contracts are not always 100% guaranteed. Many MLB contracts have specific clauses that void the contract in the event of unacceptable conduct or injuries sustained off the field.

> As a member of the Atlanta Braves in 1994, Ron Gant was injured in a motorcycle crash. If that wasn't painful enough, he then watched the Braves void his $5.5 million US contract. Gant was cut by the team and only received one sixth of his contract, a little under $1 million. A similar fate met former Yankee

> Aaron Boone, who was waived by the team in 2004 after injuring his ACL in a pick-up basketball game. Playing basketball was one of the prohibited items that made Boone's contract no longer guaranteed. The injury cost him all but around $900,000 of his $5.75 million, one-year contract when the Yankees cut him. (Helfand, 2006, p. 1)

Shirking / Performance

To shirk is to "avoid doing something you are supposed to do" (Merriam-Webster, n.d.). In the context of baseball, shirking exists when a player purposely performs at a level below what he is capable of (Knowles, Murray, Sherony, & Haupert, 2013). MLB provides an ideal environment to promote shirking. "Long-term employment contracts that guarantee income are believed to create an incentive toward opportunistic behavior, typically called shirking" in principal-agent models (Alchian & Demsetz, 1972; Holmstrom, 1979). MLB contracts are guaranteed; a team must compensate the player his full salary even if the player's performance drops significantly or if the player is injured and cannot play at all.

Shirking can manifest itself both on-the-field and off-the-field. On-field shirking is subtler and includes low concentration levels during games, less intensity while playing, fewer attempts at diving catches in the field, and not being as aggressive while base-running (Knowles et al., 2013). Fort (2003) suspected that MLB players can't simply turn their effort on and off the way on-field shirking suggests. Professional athletes spend years working hard to make it to the Major Leagues and it is unlikely they would just stop trying as hard because they sign a guaranteed contract. In addition, there are many other factors that can impact a player's on-field performance. Most notably, a

player could go through an entire season with a nagging injury that is not made public (Krautmann & Donley, 2009). The player's statistics could be lower than normal and no explanation will be provided so critics will assume the player is shirking. Other factors that can effect on-field performance are position in the batting order, caliber of the players hitting around the athlete, and the home-field in which the player competes (Krautmann, 1990).

Position in the batting order can impact statistics by the number of plate appearances made throughout the season. A player that bats first in the lineup could have over 100 more plate appearances than someone that bats at the end of the lineup over the course of a full season. Teammates that hit in front of and behind players in the batting order could also have an impact on hitting statistics. A teammate with a high on-base percentage hitting in front of a player would give him more opportunities for Runs Batted In (RBI); an elite hitter after him in the lineup would decrease the amount of intentional walks he receives and could increase the number of runs scored. Finally, the home-field where the player competes could have a significant impact on statistics. A hitter friendly ballpark (i.e., Coors Field) would positively impact batting statistics for hitters but negatively impact statistics for pitchers on the same team.

Critics of on-field shirking don't believe that players would be able to get away with slacking off that easily. Maxcy et al. (2002) pointed out that MLB has a number of mechanisms in place to prevent opportunistic behavior. First, players are closely monitored at all times by "coaches, on-field managers, general managers, owners, teammates, sports writers, and fans" (Maxcy et al., 2002, p. 247). Many of these individuals are paid large sums of money to recognize and develop talent; it is unlikely

that a player's shirking would go unnoticed (Krautmann & Donley, 2009). Second, baseball's pay structure is designed to reward maximum effort. Third, many contracts contain incentive clauses designed to reward a player for attaining certain thresholds. Fourth, team performance is important to many players; winning a World Series is the primary goal of baseball. Finally, obtaining a long-term contract is a powerful incentive itself. Long-term contracts are only given to players that show consistent and superior performance (Maxcy, 1996).

Off-field shirking is the more likely scenario and affects a player's performance through his dedication, preparation before games, and approach to off-season conditioning (Krautmann & Donley, 2009). This type of shirking can also include failing to attend training camp, taking longer to recover from injuries because of lackadaisical rehabilitation, abusing drugs or alcohol, and even selfish behavior that causes controversy in the clubhouse (Knowles et al., 2013).

Whether on-field or off-field, the literature on the existence of shirking in baseball is mixed. MLB owners and executives are convinced that a player's performance decreases after signing a multiyear contract (Krautmann, 1990). This perspective was supported by Scoggins (1993), and Krautmann and Solow (2009). Scoggins (1993) study was a reevaluation of Krautmann's (1990) paper. Scoggins used the same data as Krautmann but decided to measure total bases rather than slugging average (SA). Scoggins believed that total-bases is a better performance measure because it accounts for time spent on the injured reserve list. The results suggested that shirking does occur and also demonstrates how sensitive shirking results are to the performance measured used (Scoggins, 1993). Krautmann and Solow (2009) also found that long-term guaranteed

contracts provide an incentive to shirk. Their results showed that players who are unlikely to sign another contract, because the player will probably retire after his current contract, have a significant reduction in their performance compared to what is expected of them. However, players that plan on signing another contract still have an incentive to perform as expected. The study also showed that “shirking occurs to a greater degree in contracts of length greater than 4 years” (Krautmann & Solow, 2009, p. 20).

Several studies have found results that contradict the existence of shirking. These studies include Krautmann (1990), Maxcy et al. (2002), and Knowles et al. (2013). Krautmann’s (1990) study looked at contracts of more than five years and found no evidence of contract talks negatively affecting performance. The author concluded that allegations of shirking are nothing more than a statistical artifact. Maxcy et al. (2002) measured productivity in both the player’s desire to play and performance once he actually enters the game. The study found that players spend less time on the disabled list the year before negotiating a new contract, even though playing hurt could jeopardize the player’s health and performance. The authors suggested that players are more willing to play through injuries so they do not appear fragile and weaken their bargaining power when it comes time to negotiate a new contract. Another theory is that managers overuse players in their final year of a contract because the team may lose that player to free agency in the off-season (Maxcy et al., 2002).

Maxcy et al.’s (2002) research did not provide any evidence to suggest that long-term contracts negatively impact performance. The authors felt this lack of evidence is due to the fact that mechanisms designed to prevent shirking by players are working well. The only negative affect on performance in the study was that pitchers with injuries are

placed on the disabled list more frequently while in a long-term contract. Knowles et al.'s (2013) study looked at three cases where shirking took place during the reserve clause era. The researchers contended that players have an incentive to shirk anytime a contract is not performance based, not just in long-term contracts. However, the authors believed that what many individuals perceive as shirking is merely the stochastic nature of productivity (the random distribution of player performance). The authors did not go as far as to say that shirking never occurs, but that variations in player performance are most likely a combination of shirking and the stochastic process (Knowles et al., 2013).

CHAPTER THREE

METHODOLOGY

This study used publicly available MLB statistics to explore the characteristics and success of long-term contracts in baseball. For the purposes of this study, a long-term contract was a contract five or more years in length. This definition of long-term has been used in previous studies (Krautmann, 1990, p. 966; Krautmann & Solow, 2009; Meltzer, 2005). This section describes the subjects, procedures, and statistical analysis used to answer each of the five research questions.

RQ1: What are the characteristics of MLB players who sign 5+ year contracts?

Subjects. The subjects for this research question were every MLB player who signed a contract five years or longer, played the first season of the contract between 2001 and 2010, and finished the contract by the end of the 2016 MLB season. A total of 93 long-term contracts were signed during this 10-year period, with 91 fitting the criteria of this research question (see Table A1 in Appendix). Two contracts were excluded, one because it included an Opt-Out Clause which the player exercised after two years and the other because it was still in progress (see Table A2 in Appendix).

Procedures. For this research question, 22 variables related to the player and the contract were examined (see Table B1 in Appendix). These 22 variables are what encompass the “characteristics” that this study refers to. The 22 variables were chosen because they were previously studied by other researchers and they were accessible on internet databases. Data on contract length, total salary, team payroll, and team name were collected from Cot’s Baseball Contracts website and cross-referenced with MLB Transactions website for accuracy. Contract length (LNG) refers to the number of years

in the contract (Dinerstein, 2007). Total salary (SAL) is the total amount of money, in U.S. dollars, expected to be paid to the player over the length of the contract (Hadley & Gustafson, 1991). Team payroll (PAY) is the total salary of the team's 25-man opening day roster, in U.S. dollars, the first year of the player's long-term contract (Meltzer, 2005). Team (TEAM) is the MLB team the player signed the contract with (Dinerstein, 2007). Average yearly salary (AVG) is the average salary the player collected each year of the contract; this number was obtained by dividing the total salary by the contract length (Meltzer, 2005). Metro population (POP) is the 2010 population of the metropolitan area in which the player's team competed for its home games (Hadley & Gustafson, 1991; Hakes & Turner, 2009; Meltzer, 2005). This information was collected from the U.S. Census bureau website and Toronto's was obtained from the Statistics Canada website.

The rest of the data was collected from Baseball-Reference's website. League (LG) refers to the league within MLB (National or American) that the player competed in during the first year of his long-term contract (Fair, 2007; Hadley & Gustafson, 1991). Age (AGE) is the player's age during the first year of his long-term contract, on opening day (Fair, 2007). Years' experience (EXP) is the number of years the player participated in MLB before playing the first year of his long-term contract (Hadley & Gustafson, 1991). Position (POS) refers to the fielding position that the player competed at most often during his contract (Hakes & Turner, 2009; Turvey, 2013). Designated hitter was not included as an option for this variable, all three outfielder positions were grouped under a single outfield category, and all pitchers were grouped under a single pitcher category.

Age of entry (DEB) is the player's age the day he made his debut in MLB (Schulz et al., 1994). All-Star (AS) refers to the number of times the player was selected to the All-Star team before the first year of his long-term contract (Hakes & Turner, 2009). Current team (CRT) refers to whether or not the player signed the long-term contract with the same team he played for the year before his contract, as opposed to changing teams (Maxcy, 2004). Finishes with team (SAM) refers to whether or not the player finished the long-term contract with the same team he signed it with. Round drafted (RD) is the round the player was selected in the MLB draft. United States (USA) refers to whether or not the player grew up in the U.S.; this was determined by where the player lived during his high school years (Kahn, 2000).

Bats (BAT) refers to whether the player was a right, left, or switch-hitter. Throws (THR) refers to whether the player was right or left-handed when throwing a baseball. Height (HT) is the player's height in inches. Most valuable player (MVP) is the number of times the player was selected as the Most Valuable Player or Cy Young winner, before signing his long-term contract (Hakes & Turner, 2009). Career wins above replacement (CWAR) is the player's average career WAR before beginning the first year of his long-term contract (Horowitz & Zappe, 1998). Finishes contract (FIN) is whether or not the player finished his long-term contract, as opposed to being released, retiring, or any other occurrence that stopped the player from completing the contract.

Analysis. The 22 variables from all 91 player contracts were placed into an SPSS spreadsheet (see Table B2 in Appendix). SPSS was used to obtain descriptive statistics for all 22 variables. Mean, median, mode, minimum, maximum, range, and standard deviation were reported for the 12 ratio variables (LNG, SAL, AVG, PAY, AGE, EXP,

POP, DEB, AS, MVP, HT, and CWAR) to gain a better understanding of the team and player characteristics associated with long-term contracts. The 10 nominal variables (RD, FIN, THR, BAT, USA, SAM, CRT, POS, LG, and TEAM) were analyzed using Frequency Tables in order to describe the distribution of those variables.

RQ2: What percentage of 5+ year MLB contracts are successful in terms of $/WAR?

Subjects. The same 91 player contracts used in RQ1 were utilized for this question (see Table A1 in Appendix).

Procedures. Contract success was evaluated using the players' dollar per wins above replacement numbers ($/WAR) and comparing them to the average MLB numbers (Turvey, 2013). Table 1 shows MLB average salary, average WAR, and average dollar per WAR for each year evaluated in the study. MLB average salary was calculated using data from Cot's Baseball website (see Appendix B1). Every team's 25-man roster opening day payroll was collected for every year in the study. Team salaries were added together to get a MLB total and that number was divided by 750 (30 teams x 25 players per team = 750 active MLB players) to get an average salary for players.

Average WAR was calculated using data from Baseball-Reference's website (see Tables C1 and C2 in Appendix). Every MLB club's total team WAR was collected for every year in the study. Team WAR totals were added together to get a MLB total and that number was divided by 750 (30 teams x 25 players per team = 750 active MLB players) to get an average WAR for players. Finally, dollars per wins above replacement ($/WAR) was calculated by taking the average player's salary and dividing it by the player's average WAR. The right-hand column in Table 1 shows the average MLB

$/WAR for each year in the study. These numbers were used to evaluate the success of the 91 long-term contracts.

Table 1

Average MLB $/WAR by Year

Year	Avg. Salary	Avg. WAR	Avg. $/WAR
2001	2,618,483	1.343	$1,949,726.73
2002	2,699,570	1.344	$2,008,608.63
2003	2,836,618	1.343	$2,112,150.41
2004	2,761,760	1.343	$2,056,411.02
2005	2,839,410	1.344	$2,174,491.07
2006	3,102,275	1.343	$2,309,959.05
2007	3,304,850	1.345	$2,457,137.55
2008	3,582,051	1.343	$2,667,201.04
2009	3,555,091	1.343	$2,647,126.58
2010	3,744,492	1.345	$2,784,008.92
2011	3,835,569	1.345	$2,851,724.16
2012	4,014,919	1.346	$2,982,852.15
2013	4,244,763	1.346	$3,153,612.93
2014	4,573,395	1.339	$3,415,530.25
2015	5,010,452	1.339	$3,741,935.77
2016	5,205,001	1.339	$3,887,230.02

If the player’s $/WAR was higher than the average $/WAR, then that year was considered unsuccessful; if the player’s $/WAR was lower than the average, then that year was considered successful. For example, if Player A made $10 million in 2001 and had a WAR of 5.0, his $/WAR for 2001 would be $2 million. Using Table 1, we can see that a $/WAR of $2 million is slightly higher than the league average of $1,949,726.73; therefore, this would be an unsuccessful year for Player A. Each year of a player’s contract was evaluated in this manner to determine if the total contract was successful or not. A contract was deemed successful if the majority of the years were successful. For example, if Player A had four successful years out of a seven-year contract, then Player A’s total contract was successful. In the event of a tie (i.e., Player A had four successful

years out of an eight-year contract), the player's average $/WAR over the entire contract was compared to the average MLB $/WAR for the same period.

Analysis. Each of the 91 player contracts was placed into its own spreadsheet (see Tables D1 through D91 in Appendix). The player's $/WAR was calculated for each year of the contract and then compared to the league average $/WAR for the identical years. Player salary data and WAR were both obtained from Baseball-Reference's website. The player's $/WAR was calculated by dividing the player's salary by the player's WAR for each year in the contract. The spreadsheet identifies successful years with a "Yes" and unsuccessful years with a "No." The spreadsheet also identifies total contract success with a "Yes" or "No" and includes a percentage of success for each contract.

RQ3: At what age does the success rate of 5+ year MLB contracts drop to 50%, 25%, 10%, and 0%?

Subjects. The same 91 player contracts used in RQ1 and RQ2 were utilized for this question (see Table A1 in Appendix).

Procedures. Results from RQ2 were utilized to explore contract "success" rates at different ages. Both total contract and yearly success were evaluated for every age represented in the study. There was no definitive answer as to when the contract success rate is unacceptable; therefore, the analysis looked for when the success rates dropped to 50%, 25%, 10%, and 0%, if at all.

Analysis. Data for all 91 player contracts were placed into two SPSS spreadsheets and separated according to age. The first spreadsheet was success data for total contracts by age (see Table E1 in Appendix) and the second spreadsheet was yearly success data by age (see Table E2 in Appendix). Success rates were calculated for every age included

in the study. The analysis specifically looked for and reported at what ages the success rates fell to 50%, 25%, 10%, and 0%, if they fell to those levels at all.

RQ4: What characteristics significantly impact the success of 5+ year contracts?

Subjects. The same 91 player contracts used in RQ1, RQ2, and RQ3 were used for this question (see Table A1 in Appendix).

Procedures. Results from RQ2 were utilized to explore the relationship between the two dependent variables and the 22 independent variables. The two dependent variables were contract success (SUCCESS) and dollar per wins above replacement ($/WAR). Success was a nominal variable broken into two categories, yes and no. This information was obtained from the results of the RQ2 analysis. Dollar per wins above replacement was a ratio variable; this data was also obtained from the results of RQ2. The same 22 variables used in RQ1 were utilized as the independent variables in this question (see Table B1 in Appendix). Twelve of the variables were ratio (LNG, SAL, AVG, PAY, AGE, EXP, POP, DEB, AS, MVP, HT, CWAR) and 10 were nominal (RD, FIN, THR, BAT, USA, SAM, CRT, POS, LG, TEAM).

Analysis. First, data from the dependent variable $/WAR and the independent variables LNG, SAL, AVG, PAY, AGE, EXP, POP, DEB, AS, MVP, HT, and CWAR, were placed into an SPSS spreadsheet. A Pearson's (R) Correlation test was administered to look for correlation strengths between the dependent variable and each independent variable. Scatterplots were also generated for each comparison to look for non-linear relationships between variables.

Next, each ratio variable from the Pearson's (R) Correlation test was divided into categories in order to convert them into nominal variables (see Table F1 in Appendix).

Finally, all 22 independent variables were placed into a Pivot Table in SPSS with the dependent variable SUCCESS. An analysis was completed using Categorical Cross Tabulations and Chi-Square tests to see if any of the results were statistically significant. A Regression analysis was not utilized as this study was not attempting to show cause and effect, but merely exploring relationships to find any strong correlations that may exist.

RQ5: In what percentage of 5+ year MLB contracts does shirking occur when measured using WAR?

Subjects. The subjects for this research question were every MLB player who signed a contract five years or longer, played the first season of the contract between 2001 and 2010, finished the contract by the end of the 2016 MLB season, and had at least three years of experience before signing their long-term contract. Of the 91 contracts used for RQ1, RQ2, RQ3, and RQ4 (see Table A1 in Appendix), a total of 70 contracts fit the criteria of this research question; 21 contracts were excluded because the players did not have three years of MLB experience before signing their long-term contracts in which to build a baseline WAR (see Table G1 in Appendix).

Procedures. For this research question, a baseline WAR was calculated for each player by taking the average WAR for the three years that immediately preceded the long-term contract (Maxcy et al., 2002). This average WAR was used as a baseline performance measure to see if the player's performance increased, decreased, or remained the same over the life of the long-term contract. Each player was evaluated for signs of shirking on a yearly basis over the life of the contract. If the player's WAR was below his pre-contract baseline at the end of the season, shirking occurred; if his WAR

was above his baseline at the end of the season, or if it was identical to his baseline, shirking did not occur. For example, if Player A had a baseline WAR of 5.0 but only had a WAR of 3.5 his first season of the long-term contract, shirking would have occurred.

Each year of a player's contract was evaluated in this manner to determine how often shirking occurred over the life of long-term contracts. A player was guilty of shirking behavior if the majority of the years in the contract were below his baseline WAR (Maxcy et al., 2002). For example, if Player A had four years where his end of season WAR was below his baseline, out of a seven-year contract, then Player A would be guilty of shirking. In the event of a tie (i.e., Player A had four years below his baseline WAR out of an eight-year contract), the player's average WAR over the entire contract was compared to his baseline. Next, the baseline WAR was adjusted for the natural decrease in performance as baseball players' age. Starting at age 28 (players peak at age 27), the baseline WAR was decreased at 1.5% per year to account for a decrease in performance (Hakes & Turner, 2009). The age adjusted results were compared to the non-adjusted results. This comparison helped to gain a better understanding of whether shirking was due to lack of effort or just a natural decrease in performance as players' age.

Analysis. Each of the 70 player contracts was placed into its own spreadsheet (see Tables H1 through H70 in Appendix). The player's baseline WAR was compared to their end of season WAR for each year of the long-term contract. The player's baseline WAR and end of season WAR were both obtained from Baseball-Reference's website. The spreadsheet identifies shirking years with a "Yes" and non-shirking years with a "No." The spreadsheet also identifies total contract shirking with a "Yes" or "No" and includes

a percentage of shirking for each contract. Lastly, the player's baseline WAR was decreased at a rate of 1.5% per year starting at age 28. The player's end of season WAR was compared to the adjusted baseline for each year of the long-term contract just as before. The spreadsheet identifies shirking years with a "Yes" and non-shirking years with a "No" in the same manner as the non-adjusted analysis.

CHAPTER FOUR

RESULTS

RQ1: What are the characteristics of MLB players who sign 5+ year contracts?

Table 2.1

Descriptive Statistics of Ratio Variables

		LNG	SAL	AVG	PAY	AGE
N	Valid	91	91	91	91	91
	Missing	0	0	0	0	0
Mean		5.85	$64,175,320.45	$10,422,677.16	$91,453,196.67	26.93
Median		5.00	$62,402,957.00	$10,546,666.60	$87,759,000.00	27.00
Mode		5	$47,000,000*	$9,400,000	$99,670,332*	27
Std. Deviation		1.255	$46,654,736.834	$5,996,421.736	$35,980,823.142	3.415
Range		6	$249,839,252	$24,728,925	$177,325,689	17
Minimum		5	$2,550,000	$510,000	$24,123,500	20
Maximum		11	$252,389,252	$25,238,925	$201,449,189	37

* Multiple modes exist. The smallest value is shown.

Table 2.2

Descriptive Statistics of Ratio Variables (continued)

		EXP	POP	DEB	AS	MVP	HT	CWAR
N	Valid	91	91	90	91	91	91	91
	Missing	0	0	1*	0	0	0	0
Mean		4.99	6,805,660.23	22.16791	1.33	0.15	74.00	2.77100
Median		5.00	4,552,402.00	22.19500	1.00	0.00	74.00	2.83300
Mode		3	19,567,410	23.121	0	0	73	0.000
Std. Deviation		3.268	5,442,803.937	1.639568	1.720	0.536	2.241	1.721162
Range		16	18,011,502	8.922	10	4	14	7.175
Minimum		0	1,555,908	18.346	0	0	67	0.000
Maximum		16	19,567,410	27.268	10	4	81	7.175

* Noel Arguelles never made his MLB debut.

Tables 2.1 and 2.2 show descriptive statistics for the 12 ratio variables used in the study. The mean length (LNG) of the 91 long-term contracts was 5.85 years and the mean salary (SAL) was $64,175,320.45. Tables 2.1 and 2.2 also show that players had a mean

age (AGE) of 26.93 years and a mean of 4.99 years of MLB experience (EXP) when signing the long-term contract.

Table 3

Contract Length (in Years)

Years	Frequency	Percent
5	50	54.9
6	22	24.2
7	9	9.9
8	7	7.7
10	2	2.2
11	1	1.1
Total	91	100.0

Table 3 shows frequency for the ratio variable contract length (LNG). Fifty (54.9%) of the 91 long-term contracts were five years in length. Three (3.3%) of the contracts were 10 years or more.

Table 4

Age Contract Signed

Age	Frequency	Percent
20	1	1.1
21	3	3.3
22	8	8.8
23	4	4.4
24	7	7.7
25	9	9.9
26	9	9.9
27	11	12.1
28	7	7.7
29	10	11.0
30	7	7.7
31	7	7.7
32	6	6.6
34	1	1.1
37	1	1.1
Total	91	100.0

Table 4 displays frequency for the ratio variable age (AGE). Eleven players (12.1%) were age 27 the first year of their long-term contract. Twenty-two players (24.2%) were age 30 or older the first year of their contract.

Table 5

MLB Experience When Contract Signed (in Years)

Experience	Frequency	Percent
0	13	14.3
1	1	1.1
2	7	7.7
3	15	16.5
4	5	5.5
5	5	5.5
6	11	12.1
7	12	13.2
8	12	13.2
9	5	5.5
10	3	3.3
12	1	1.1
16	1	1.1
Total	91	100.0

Table 5 illustrates frequency for the ratio variable experience (EXP). Fifteen players (16.5%) had three years of MLB experience before signing their long-term contract. Thirteen players (14.3%) had never played MLB before signing their contract.

Table 6

All-Star Selections Before Signing Contract

All-Star	Frequency	Percent
0	37	40.7
1	24	26.4
2	13	14.3
3	8	8.8
4	5	5.5
5	2	2.2
7	1	1.1
10	1	1.1
Total	91	100.0

Table 6 shows frequency for the ratio variable All-Star (AS). Thirty-seven players (40.7%) had never been selected as an All-Star at the time they signed their long-term contract. Four players (4.4%) had been selected as an All-Star five or more times at the time they signed their contract.

Table 7

MVP/Cy Young Awards Before Signing Contract

MVP	Frequency	Percent
0	81	89.0
1	8	8.8
2	1	1.1
4	1	1.1
Total	91	100.0

Table 7 displays frequency for the ratio variable Most Valuable Player (MVP). Eighty-one players (89%) had never won an MVP or Cy Young award at the time they signed their long-term contract. Two players (2.2%) had won multiple MVP awards before signing their contract.

Table 8

Player's Height (in Inches)

Height	Frequency	Percent
67	1	1.1
69	2	2.2
70	2	2.2
71	3	3.3
72	12	13.2
73	19	20.9
74	16	17.6
75	14	15.4
76	12	13.2
77	4	4.4
78	5	5.5
81	1	1.1
Total	91	100.0

Table 8 illustrates frequency for the ratio variable height (HT). Nineteen (20.9%) of the 91 players were 73 inches tall. Eight (8.8%) players were shorter than 72 inches (6 feet) tall.

Table 9

Round Player Selected in MLB Draft

Round	Frequency	Percent
1	40	44.0
11	1	1.1
13	4	4.4
15	1	1.1
16	1	1.1
17	2	2.2
2	9	9.9
23	1	1.1
24	1	1.1
3	4	4.4
4	1	1.1
5	2	2.2
6	1	1.1
7	1	1.1
8	1	1.1
U	21*	23.1
Total	91	100.0

* Undrafted Players

Table 9 shows frequency for the nominal variable MLB draft round (RD). Forty (44%) of the 91 players were selected in the first round of the MLB draft. Twenty (23.1%) of the players were undrafted.

Table 10

Player Finished the Contract

Finished?	Frequency	Percent
No	8	8.8
Yes	83	91.2
Total	91	100.0

Table 10 shows frequency for the nominal variable finished contract (FIN). Eight (8.8%) of the 91 players did not finish their long-term contract. Noel Arguelles signed a five-year contract with the Royals but never played in MLB. Kei Igawa played the final

three-years of his five-year contract with the Yankees in the minor leagues. Gary Matthews Jr. was released with one-year left on his five-year contract with the Angels. Gil Meche retired from MLB with one-year left on his five-year contract with the Royals. Aaron Rowand was released with one-year left on his five-year contract with the Giants. B.J. Ryan was released with one-year left on his five-year contract with the Blue Jays. Johan Santana missed the last year of his six-year contract with the Mets due to injury. Vernon Wells was released with one-year left on his seven-year contract with the Blue Jays.

Table 11

Throwing Hand

Hand	Frequency	Percent
L	19	20.9
R	72	79.1
Total	91	100.0

Table 11 illustrates frequency for the nominal variable throwing hand (THR). Seventy-two (79.1%) of the 91 players threw a baseball with their right-hand.

Table 12

Batting Side

Side	Frequency	Percent
L	30	33.0
R	51	56.0
S	10*	11.0
Total	91	100.0

* Player is a Switch Hitter

Table 12 displays frequency for the nominal variable batting side (BAT). Fifty-one players (56%) batted right-handed and 10 (11%) of the players batted both right and left-handed.

Table 13

Player is from USA

USA?	Frequency	Percent
No	26	28.6
Yes	65	71.4
Total	91	100.0

Table 13 shows frequency for the nominal variable United States player (USA). Twenty-six (28.6%) of the 91 players grew up outside of the United States.

Table 14

Player Finished Contract with Same Team

Same Team?	Frequency	Percent
No	40	44.0
Yes	51	56.0
Total	91	100.0

Table 14 illustrates frequency for the nominal variable same team (SAM). Forty players (44%) did not finish their long-term contract with the same MLB team they signed it with.

Table 15

Player Signed Contract with His Current Team

Current Team?	Frequency	Percent
N/A	13*	14.3
No	28	30.8
Yes	50	54.9
Total	91	100.0

* Contract was the Player's First

Table 15 shows frequency for the nominal variable current team (CRT). Twenty-eight players (30.8%) switched teams when signing their long-term contracts.

Table 16

Player's Fielding Position

Position	Frequency	Percent
1B	12	13.2
2B	4	4.4
3B	11	12.1
C	3	3.3
OF	28	30.8
P	25	27.5
SS	8	8.8
Total	91	100.0

Table 16 displays frequency for the nominal variable fielding position (POS). Twenty-eight players (30.8%) played in the outfield the majority of their long-term contracts and 25 players (27.5%) were pitchers.

Table 17

Player's League

League	Frequency	Percent
AL	50	54.9
NL	41	45.1
Total	91	100.0

Table 17 illustrates frequency for the nominal variable league (LG). Fifty (54.9%) of the 91 players signed their long-term contract with a team located in MLB's American League.

Table 18

Team Contract Signed With

Team	Frequency	Percent
Angels	4	4.4
Astros	3	3.3
Athletics	3	3.3
Blue Jays	3	3.3
Braves	2	2.2
Brewers	2	2.2
Cardinals	4	4.4
Cubs	5	5.5
Diamondbacks	3	3.3
Dodgers	1	1.1
Giants	3	3.3
Indians	3	3.3
Mariners	4	4.4
Marlins	2	2.2
Mets	4	4.4
Nationals	1	1.1
Orioles	2	2.2
Padres	1	1.1
Phillies	5	5.5
Rangers	5	5.5
Rays	3	3.3
Red Sox	6	6.6
Reds	2	2.2
Rockies	3	3.3
Royals	3	3.3
Tigers	4	4.4
Twins	2	2.2
White Sox	1	1.1
Yankees	7	7.7
Total	91	100.0

Table 18 shows frequency for the nominal variable team (TEAM). The Yankees signed seven (7.7%) of the 91 players to long-term contracts and the Red Sox signed six players (6.6%). The only team which did not sign a player to a long-term contract during the period of the study was the Pirates.

RQ2: What percentage of 5+ year MLB contracts are successful in terms of $/WAR?

Table 19

Contract Success

Success?	Frequency	Percent
No	64	70.3
Yes	27	29.7
Total	91	100.0

Table 19 illustrates frequency for the nominal variable contract success (SUCCESS). Twenty-seven (29.7%) of the 91 long-term contracts were successful.

Table 20

Contract Success Descriptive Statistics

		Avg. WAR	Avg. $/WAR	Success Years	% Success
N	Valid	91	91	91	91
	Missing	0	0	0	0
Mean		2.9527	$5,318,151.0484	1.98	34.3334%
Median		2.6800	$3,414,634.1500	1.00	20.0000%
Mode		.00*	$0.00	1	0.00%
Std. Deviation		1.77719	$6,788,667.17162	1.838	31.35893%
Range		8.63	$49,600,000.00	7	100.00%
Minimum		0.00	$0.00	0	0.00%
Maximum		8.63	$49,600,000.00	7	100.00%

* Multiple modes exist. The smallest value is shown.

Table 20 shows the descriptive statistics for the cumulative contract success data for all 91 long-term contracts (see Table I1 in Appendix). The mean WAR for all 91 players during their long-term contracts was 2.95 and the mean $/WAR was $5,318,151.05. The mean number of successful years in the long-term contract was 1.98 and the mean percentage of years successful was 34.33%.

Table 21

Percent of Contract Success

% Success	Frequency	Percent
0.00%	22	24.2
10.00%	1	1.1
12.50%	1	1.1
14.29%	5	5.5
16.67%	5	5.5
20.00%	14	15.4
28.57%	1	1.1
33.33%	5	5.5
36.36%	1	1.1
37.50%	1	1.1
40.00%	7	7.7
50.00%	1	1.1
57.14%	1	1.1
60.00%	7	7.7
62.50%	1	1.1
66.67%	3	3.3
75.00%	1	1.1
80.00%	4	4.4
83.33%	4	4.4
100.00%	6	6.6
Total	91	100.0

Table 21 illustrates frequency for the players' percent of contract success. Twenty-two (24.2%) of the 91 players did not have any successful years during their long-term contracts. Six (6.6%) of the players were successful every year of their contract: David DeJesus averaged $1,117,647.06 $/WAR during his five-year contract with the Royals, Ian Kinsler averaged $880,165.29 $/WAR during his five-year contract with the Rangers, Evan Longoria averaged $402,777.78 $/WAR during his six-year contract with the Rays, Dustin Pedroia averaged $1,265,151.52 $/WAR during his six-year contract with the Red Sox, Albert Pujols averaged $1,454,172.86 $/WAR during his

seven-year contract with the Cardinals, and Denard Span averaged $1,059,602.65 $/WAR during his five-year contract with the Twins.

RQ3: At what age does the success rate of 5+ year MLB contracts drop to 50%, 25%, 10%, and 0%?

Table 22

Success by Age at Start of Contract

	Successful?			
Age	No	Yes	Total	Percent
20	1	0	1	0.0
21	1	2	3	66.7
22	4	4	8	50.0
23	1	3	4	75.0
24	2	5	7	71.4
25	7	2	9	22.2
26	5	4	9	44.4
27	8	3	11	27.3
28	4	3	7	42.9
29	10	0	10	0.0
30	7	0	7	0.0
31	7	0	7	0.0
32	6	0	6	0.0
34	1	0	1	0.0
37	0	1	1	100.0
Total	64	27	91	29.7

Table 22 shows the number of successful contracts by age. Age represents the player's age when signing the long-term contract. Eleven (12.1%) of the 91 players signed their contract at age 27. Thirty-seven was the only age with a 100% success rate. Barry Bonds signed a five-year contract with the Giants at age 37 and had three successful years in the contract (see Table D9 in Appendix). Ages 21, 22, 23, and 24 all had success rates above 50%; ages 26, 27, and 28 had success rates above 25%; age 25 had a success rate above 10%; and all other ages had a 0% success rate.

Table 23

Yearly Contract Success by Age

Age	Successful? No	Successful? Yes	Total	Percent
20	1	0	1	0.0
21	3	0	3	0.0
22	8	4	12	33.3
23	7	9	16	56.3
24	8	15	23	65.2
25	10	21	31	67.7
26	12	27	39	69.2
27	21	23	44	52.3
28	24	22	46	47.8
29	25	24	49	49.0
30	37	15	52	28.9
31	38	9	47	19.1
32	42	2	44	4.6
33	37	2	39	5.1
34	32	3	35	8.6
35	23	1	24	4.2
36	15	0	15	0.0
37	5	1	6	16.7
38	2	1	3	33.3
39	0	1	1	100.0
40	1	0	1	0.0
41	1	0	1	0.0
Total	352	180	532	33.8

Table 23 displays the number of successful MLB seasons in each of the 91 long-term contracts by age. There was a total of 532 MLB seasons represented in the 91 contracts; 180 of the seasons (33.8%) were successful. Fifty-two (57.1%) of the 91 players played a season at age 30 during their contract. Twenty-seven players (29.7%) had a successful season at age 26. Thirty-nine was the only age with a 100% success rate and was the oldest age any player had a successful season during their long-term contract. Barry Bonds had a WAR of 10.6 at age 39 during his third season of his five-year contract with the Giants (see Table D9 in Appendix). Ages 23, 24, 25, 26, and 27 all had

success rates above 50%; ages 22, 28, 29, 30, and 38 had success rates above 25%; ages 31 and 37 had success rates above 10%; and all other ages had below a 10% success rate.

Table 24

Yearly Contract Success by Year

	Successful?			
Year	No	Yes	Total	Percent
2001	4	2	6	33.3
2002	5	6	11	54.5
2003	8	6	14	42.9
2004	10	8	18	44.4
2005	22	7	29	24.1
2006	26	10	36	27.8
2007	34	17	51	33.3
2008	42	24	66	36.4
2009	44	25	69	36.2
2010	43	28	71	39.4
2011	41	16	57	28.1
2012	29	15	44	34.1
2013	23	8	31	25.8
2014	15	5	20	25.0
2015	4	3	7	42.9
2016	2	0	2	0.0
Total	352	180	532	33.8

Table 24 illustrates the number of successful MLB seasons in each of the 91 long-term contracts by year. Seventy-one (78.0%) of the 91 players played a season of their contract during the 2010 MLB season; 28 players had a successful season in 2010. In 2002, six of the 11 (54.5%) players had successful seasons.

Table 25

Averages by Age for Each Year of Contract

Age	Avg. Salary	Avg. WAR	Avg. $/WAR
20	$1,380,000.00	0.00	$0.00
21	$643,333.33	0.00	$0.00
22	$781,527.75	0.59	$391,782.39
23	$1,228,381.56	2.11	$1,770,910.79
24	$1,932,404.52	3.39	$777,840.19
25	$4,371,736.68	3.76	$1,682,240.96
26	$5,497,632.00	3.54	$1,820,848.06
27	$7,749,257.09	3.71	$3,989,556.84
28	$9,704,437.78	3.78	$6,062,870.82
29	$11,481,199.47	4.20	$5,950,052.27
30	$12,484,215.96	3.24	$5,428,886.05
31	$14,077,038.91	3.16	$5,879,151.37
32	$14,966,943.98	2.54	$8,715,494.41
33	$15,845,657.21	2.00	$9,724,984.07
34	$16,655,802.80	2.32	$10,749,182.78
35	$16,827,185.42	2.07	$13,259,970.87
36	$17,930,082.00	1.94	$14,929,709.63
37	$18,395,039.50	3.57	$11,062,055.07
38	$16,833,333.33	3.67	$3,709,742.35
39	$18,000,000.00	10.60	$1,698,113.21
40	$22,000,000.00	0.60	$36,666,666.67
41	$19,331,470.00	4.00	$4,832,867.50

Table 25 displays averages for players' salary, WAR, and $/WAR by age. The averages represent 532 MLB seasons of data (see Table E2 in Appendix). For example, Table 23 shows that 52 of the 91 players played a season at age 30 during their contract. Table 25 shows that those 52 players, at age 30, had an average salary of $12,484,215.96, an average WAR of 3.24, and an average $/WAR of $5,428,886.05.

RQ4: What characteristics significantly impact the success of 5+ year contracts?

Table 26

Pearson Correlations for Ratio Variables

		$/WAR
LNG	Pearson Correlation	0.011
	Sig. (2-tailed)	0.918
	N	91
SAL	Pearson Correlation	0.184
	Sig. (2-tailed)	0.080
	N	91
AVG	Pearson Correlation	.243*
	Sig. (2-tailed)	0.020
	N	91
PAY	Pearson Correlation	0.170
	Sig. (2-tailed)	0.108
	N	91
AGE	Pearson Correlation	.375**
	Sig. (2-tailed)	0.000
	N	91
EXP	Pearson Correlation	.329**
	Sig. (2-tailed)	0.001
	N	91
POP	Pearson Correlation	.227*
	Sig. (2-tailed)	0.031
	N	91
DEB	Pearson Correlation	0.073
	Sig. (2-tailed)	0.495
	N	90
AS	Pearson Correlation	0.089
	Sig. (2-tailed)	0.401
	N	91
MVP	Pearson Correlation	0.008
	Sig. (2-tailed)	0.938
	N	91
HT	Pearson Correlation	0.004
	Sig. (2-tailed)	0.968
	N	91
CWAR	Pearson Correlation	-0.020
	Sig. (2-tailed)	0.849
	N	91

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 26 shows Pearson Correlations for the 12 independent ratio variables and the dependent ratio variable $/WAR. There was a moderate positive correlation between $/WAR and the player's age during the first year of his long-term contract (AGE), r = .375, $p < .01$. There was also a moderate positive correlation between $/WAR and the player's MLB experience before signing his contract (EXP), r = .329, $p < .01$. There were weak positive correlations between $/WAR and both the player's average annual salary during the contract (AVG), r = .243, $p < .05$, and the population of the city the team played home games in (POP), r = .227, $p < .05$. Scatterplots of the variables in Table 26 did not reveal any significant non-linear relationships (see Figures J1 through J12 in Appendix). After completing the Pearson Correlation analysis, the 12 independent variables listed in Table 26 were converted into nominal data for further statistical assessment (see Table K1 in Appendix).

Table 27

SAL/SUCCESS Cross Tabulation (Partial)

		SUCCESS		
SAL		No	Yes	Total
20,000,000 - 29,999,999	Count	3	8	11
	% within SAL	27.3%	72.7%	100.0%
	% within SUCCESS	4.7%	29.6%	12.1%
	% of Total	3.3%	8.8%	12.1%
10,000,000 - 19,999,999	Count	3	6	9
	% within SAL	33.3%	66.7%	100.0%
	% within SUCCESS	4.7%	22.2%	9.9%
	% of Total	3.3%	6.6%	9.9%

Table 27 displays a partial cross tabulation between the independent variable SAL and the dependent variable SUCCESS. The complete version of the cross tabulation is in the Appendix (see Table L3). SAL represents the total amount of money paid to the

player over his entire long-term contract. The two salary categories listed in Table 27 were the only two in which the majority of the contracts were successful. The two categories accounted for 14 (51.9%) of the 27 successful contracts in the study. A Chi-Square test of the two variables in Table 27 was completed but it failed to satisfy the second assumption (see Table L4 in Appendix).

Table 28

AVG/SUCCESS Cross Tabulation (Partial)

		SUCCESS		
AVG		No	Yes	Total
5,000,000 - 5,999,999	Count	2	4	6
	% within AVG	33.3%	66.7%	100.0%
	% within SUCCESS	3.1%	14.8%	6.6%
	% of Total	2.2%	4.4%	6.6%
4,000,000 - 4,999,999	Count	1	3	4
	% within AVG	25.0%	75.0%	100.0%
	% within SUCCESS	1.6%	11.1%	4.4%
	% of Total	1.1%	3.3%	4.4%
3,000,000 - 3,999,999	Count	1	3	4
	% within AVG	25.0%	75.0%	100.0%
	% within SUCCESS	1.6%	11.1%	4.4%
	% of Total	1.1%	3.3%	4.4%
2,000,000 - 2,999,999	Count	2	4	6
	% within AVG	33.3%	66.7%	100.0%
	% within SUCCESS	3.1%	14.8%	6.6%
	% of Total	2.2%	4.4%	6.6%
1,000,000 - 1,999,999	Count	2	3	5
	% within AVG	40.0%	60.0%	100.0%
	% within SUCCESS	3.1%	11.1%	5.5%
	% of Total	2.2%	3.3%	5.5%

Table 28 illustrates a partial cross tabulation between the independent variable AVG and the dependent variable SUCCESS. The complete version of the cross tabulation is in the Appendix (see Table L5). AVG represents the average salary paid to

the player each year of his long-term contract. The five categories listed in Table 28 accounted for 17 (63.0%) of the 27 successful contracts in the study. A Chi-Square test of the two variables in Table 28 was completed but it failed to satisfy the second assumption (see Table L6 in Appendix).

Table 29

AGE/SUCCESS Cross Tabulation (Partial)

		SUCCESS		
AGE		No	Yes	Total
24	Count	2	5	7
	% within AGE	28.6%	71.4%	100.0%
	% within SUCCESS	3.1%	18.5%	7.7%
	% of Total	2.2%	5.5%	7.7%
23	Count	1	3	4
	% within AGE	25.0%	75.0%	100.0%
	% within SUCCESS	1.6%	11.1%	4.4%
	% of Total	1.1%	3.3%	4.4%
22	Count	4	4	8
	% within AGE	50.0%	50.0%	100.0%
	% within SUCCESS	6.3%	14.8%	8.8%
	% of Total	4.4%	4.4%	8.8%
21	Count	1	2	3
	% within AGE	33.3%	66.7%	100.0%
	% within SUCCESS	1.6%	7.4%	3.3%
	% of Total	1.1%	2.2%	3.3%

Table 29 shows a partial cross tabulation between the independent variable AGE and the dependent variable SUCCESS. The complete version of the cross tabulation is in the Appendix (see Table L9). AGE represents the player’s age during the first year of his long-term contract. Ages 21, 23, and 24 were the only categories in which a majority of the contracts were successful. Ages 21 through 24 accounted for 14 (51.9%) of the 27

successful contracts in the study. A Chi-Square test of the two variables in Table 29 was completed but it failed to satisfy the second assumption (see Table L10 in Appendix).

Table 30

EXP/SUCCESS Cross Tabulation (Partial)

		SUCCESS		
EXP		No	Yes	Total
3	Count	6	9	15
	% within EXP	40.0%	60.0%	100.0%
	% within SUCCESS	9.4%	33.3%	16.5%
	% of Total	6.6%	9.9%	16.5%
2	Count	2	5	7
	% within EXP	28.6%	71.4%	100.0%
	% within SUCCESS	3.1%	18.5%	7.7%
	% of Total	2.2%	5.5%	7.7%
1	Count	0	1	1
	% within EXP	0.0%	100.0%	100.0%
	% within SUCCESS	0.0%	3.7%	1.1%
	% of Total	0.0%	1.1%	1.1%

Table 30 displays a partial cross tabulation between the independent variable EXP and the dependent variable SUCCESS. The complete version of the cross tabulation is in the Appendix (see Table L11). EXP represents the number of years the player participated in MLB before playing the first season of his long-term contract. Players with one to three years of experience accounted for 15 (55.6%) of the 27 successful contracts in the study. A Chi-Square test of the two variables in Table 30 was completed but it failed to satisfy the second assumption (see Table L12 in Appendix).

Table 31

USA/SUCCESS Cross Tabulation

USA		SUCCESS No	SUCCESS Yes	Total
Yes	Count	42	23	65
	% within USA	64.6%	35.4%	100.0%
	% within SUCCESS	65.6%	85.2%	71.4%
	% of Total	46.2%	25.3%	71.4%
No	Count	22	4	26
	% within USA	84.6%	15.4%	100.0%
	% within SUCCESS	34.4%	14.8%	28.6%
	% of Total	24.2%	4.4%	28.6%
Total	Count	64	27	91
	% within USA	70.3%	29.7%	100.0%
	% within SUCCESS	100.0%	100.0%	100.0%
	% of Total	70.3%	29.7%	100.0%

Table 32

USA/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.560*	1	0.059		
Continuity Correction**	2.666	1	0.103		
Likelihood Ratio	3.866	1	0.049		
Fisher's Exact Test				0.077	0.048
N of Valid Cases	91				

* 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.71.

** Computed only for a 2x2 table.

Table 31 shows a cross tabulation between the independent variable USA and the dependent variable SUCCESS. USA represents whether or not the player grew up in the United States; this was determined by where the player lived during his high school years. Twenty-three out of 65 players (35.4%) from the USA had successful contracts

compared to four out of 26 (15.4%) for non-USA players. However, the Chi-Square test in Table 32 shows that the relationship between USA and SUCCESS was not statistically significant, x^2 (1, N = 91) = 3.560, p > .05.

Table 33

SAM/SUCCESS Cross Tabulation

SAM		SUCCESS No	SUCCESS Yes	Total
Yes	Count	30	21	51
	% within SAM	58.8%	41.2%	100.0%
	% within SUCCESS	46.9%	77.8%	56.0%
	% of Total	33.0%	23.1%	56.0%
No	Count	34	6	40
	% within SAM	85.0%	15.0%	100.0%
	% within SUCCESS	53.1%	22.2%	44.0%
	% of Total	37.4%	6.6%	44.0%
Total	Count	64	27	91
	% within SAM	70.3%	29.7%	100.0%
	% within SUCCESS	100.0%	100.0%	100.0%
	% of Total	70.3%	29.7%	100.0%

Table 34

SAM/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.361*	1	0.007		
Continuity Correction**	6.160	1	0.013		
Likelihood Ratio	7.743	1	0.005		
Fisher's Exact Test				0.010	0.006
N of Valid Cases	91				

* 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.87.

** Computed only for a 2x2 table.

Table 33 displays a cross tabulation between the independent variable SAM and the dependent variable SUCCESS. SAM represents whether the player finished his long-term contract with the same team he signed it with. Twenty-one out of 51 players (41.2%) who finished their contract with the same team had successful contracts compared to six out of 40 (15.0%) for players who finished with a different team. The Chi-Square test in Table 34 shows that the relationship between SAM and SUCCESS was statistically significant, x^2 (1, N = 91) = 7.361, p < .01.

Table 35

CRT/SUCCESS Cross Tabulation

CRT		SUCCESS No	SUCCESS Yes	Total
Yes	Count	28	22	50
	% within CRT	56.0%	44.0%	100.0%
	% within SUCCESS	43.8%	81.5%	54.9%
	% of Total	30.8%	24.2%	54.9%
No	Count	28	0	28
	% within CRT	100.0%	0.0%	100.0%
	% within SUCCESS	43.8%	0.0%	30.8%
	% of Total	30.8%	0.0%	30.8%
N/A	Count	8	5	13
	% within CRT	61.5%	38.5%	100.0%
	% within SUCCESS	12.5%	18.5%	14.3%
	% of Total	8.8%	5.5%	14.3%
Total	Count	64	27	91
	% within CRT	70.3%	29.7%	100.0%
	% within SUCCESS	100.0%	100.0%	100.0%
	% of Total	70.3%	29.7%	100.0%

Table 36

CRT/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.214*	2	0.000
Likelihood Ratio	24.748	2	0.000
N of Valid Cases	91		

* 1 cell (16.7%) has expected count less than 5. The minimum expected count is 3.86.

Table 35 illustrates a cross tabulation between the independent variable CRT and the dependent variable SUCCESS. CRT represents whether or not the player signed his long-term contract with the same team he played for the year before his contract. Twenty-two out of 50 players (44.0%) who signed with the same team had successful contracts compared to zero out of 28 (0.0%) for players who changed teams. The Chi-Square test in Table 36 shows that the relationship between CRT and SUCCESS was statistically significant, x^2 (2, N = 91) = 17.214, p < .01.

Table 37

POS/SUCCESS Cross Tabulation (Partial)

		SUCCESS		
POS		No	Yes	Total
SS	Count	4	4	8
	% within POS	50.0%	50.0%	100.0%
	% within SUCCESS	6.3%	14.8%	8.8%
	% of Total	4.4%	4.4%	8.8%
C	Count	1	2	3
	% within POS	33.3%	66.7%	100.0%
	% within SUCCESS	1.6%	7.4%	3.3%
	% of Total	1.1%	2.2%	3.3%
2B	Count	0	4	4
	% within POS	0.0%	100.0%	100.0%
	% within SUCCESS	0.0%	14.8%	4.4%
	% of Total	0.0%	4.4%	4.4%

Table 37 shows a partial cross tabulation between the independent variable POS and the dependent variable SUCCESS. The complete version of the cross tabulation is in the Appendix (see Table L39). POS represents the fielding position the player competed at most often during his long-term contract. Catcher and second base are the only positions in which a majority of the contracts were successful. Catcher, second base, and shortstop accounted for 10 (37.0%) of the 27 successful contracts in the study. A Chi-Square test of the two variables in Table 37 was completed but it failed to satisfy the second assumption (see Table L40 in Appendix).

Table 38

TEAM/SUCCESS Cross Tabulation (Partial)

		SUCCESS		
TEAM		No	Yes	Total
Rays	Count	1	2	3
	% within TEAM	33.3%	66.7%	100.0%
	% within SUCCESS	1.6%	7.4%	3.3%
	% of Total	1.1%	2.2%	3.3%
Phillies	Count	2	3	5
	% within TEAM	40.0%	60.0%	100.0%
	% within SUCCESS	3.1%	11.1%	5.5%
	% of Total	2.2%	3.3%	5.5%
Indians	Count	0	3	3
	% within TEAM	0.0%	100.0%	100.0%
	% within SUCCESS	0.0%	11.1%	3.3%
	% of Total	0.0%	3.3%	3.3%
Diamondbacks	Count	1	2	3
	% within TEAM	33.3%	66.7%	100.0%
	% within SUCCESS	1.6%	7.4%	3.3%
	% of Total	1.1%	2.2%	3.3%
Brewers	Count	0	2	2
	% within TEAM	0.0%	100.0%	100.0%
	% within SUCCESS	0.0%	7.4%	2.2%
	% of Total	0.0%	2.2%	2.2%

Table 38 displays a partial cross tabulation between the independent variable TEAM and the dependent variable SUCCESS. The complete version of the cross tabulation is in the Appendix (see Table L43). TEAM represents the MLB team the player signed his long-term contract with. The Rays, Phillies, Indians, Diamondbacks, and Brewers were the only teams in which a majority of the contracts were successful. The five teams accounted for 12 (44.4%) of the 27 successful contracts in the study. A Chi-Square test of the two variables in Table 38 was completed but it failed to satisfy the second assumption (see Table L44 in Appendix).

RQ5: In what percentage of 5+ year MLB contracts does shirking occur when measured using WAR?

Table 39

Contract Shirking

Shirking?	Frequency	Percent
No	23	32.9
Yes	47	67.1
Total	70	100.0

Table 39 shows frequency for contract shirking. The player was guilty of shirking if he performed below his baseline WAR during the majority of seasons in his long-term contract. Forty-seven (67.1%) of the 70 players shirked during their contract.

Table 40

Age Adjusted Shirking

Shirking?	Frequency	Percent
No	23	32.9
Yes	47	67.1
Total	70	100.0

Table 40 shows frequency for shirking after being adjusted for the player's age. Forty-seven (67.1%) of the 70 players shirked after adjusting for age. Adjusting the baseline WAR by 1.5% annually starting at age 28 made a difference in one season for three players (see Table H2, Table H22, and Table H48 in Appendix). However, the age adjustment did not change the outcome of any player's total contract shirking result.

Table 41

Contract Shirking Descriptive Statistics

		Years Shirked	% Shirk	Avg. WAR	Baseline
N	Valid	70	70	70	70
	Missing	0	0	0	0
Mean		3.81	62.8889%	3.2050	4.143
Median		4.00	66.6700%	2.8400	4.200
Mode		5	100.00%	1.82*	5.0
Std. Deviation		2.142	29.67581%	1.70152	1.7159
Range		10	100.00%	8.43	7.3
Minimum		0	0.00%	0.20	0.6
Maximum		10	100.00%	8.63	7.9

* Multiple modes exist. The smallest value is shown.

Table 41 displays the descriptive statistics for the cumulative contract shirking data for the 70 long-term contracts used in research question five (see Table M1 in Appendix). The mean WAR for all 70 players during their long-term contracts was 3.21 and the mean baseline WAR was 4.14. The mean number of years shirked in the long-term contract was 3.81 and the mean percentage of years shirked was 62.89%.

Table 42

Percent of Contract Shirking

	Frequency	Percent
0.00%	2	2.9
12.50%	1	1.4
16.67%	2	2.9
20.00%	8	11.4
40.00%	8	11.4
42.86%	1	1.4
50.00%	3	4.3
60.00%	7	10.0
63.64%	1	1.4
66.67%	4	5.7
71.43%	3	4.3
75.00%	2	2.9
80.00%	7	10.0
83.33%	3	4.3
85.71%	2	2.9
87.50%	1	1.4
100.00%	15	21.4
Total	70	100.0

Table 42 shows frequency for the players' percent of contract shirking. Fifteen (21.4%) of the 70 players shirked every year during their long-term contracts. Two (2.9%) of the players did not shirk at all during their contract: Albert Pujols averaged 8.63 WAR compared to a baseline WAR of 6.9 during his seven-year contract with the Cardinals and Jorge Posada averaged 4.34 WAR compared to a baseline WAR of 3.2 during his five-year contract with the Yankees.

CHAPTER FIVE

DISCUSSION

RQ1: What are the characteristics of MLB players who sign 5+ year contracts?

This study sought to reveal characteristics that could assist MLB team executives with deciding which players to give long-term contracts to. Research question one identified the characteristics being explored in the study and provided descriptive statistics for those characteristics.

The results from Table 2.1 showed that the average age of the 91 players when signing their long-term contracts was 26.93 years old. This corresponded with Schulz et al.'s (1994) finding that MLB players' peak performance occurs at 27 years old and that MLB executives are aware of when players perform the highest. However, one could question why MLB executives don't sign players to long-term contracts before reaching the age of peak performance. One explanation could be that MLB executives believe the player they are signing is an elite player and will peak about two years later than marginal players (Hakes & Turner, 2009). Another answer could be that executives believe performance decline rates have decreased recently and the player's performance will not drop significantly during the long-term contract (Fair, 2007).

The player's average MLB experience when signing his contract varied more than age. This can be explained by the fact that players debut in MLB at different ages. Table 2.2 showed the average MLB experience was 4.99 years. This result supported Turvey's (2013) belief that teams are attempting to sign their young star players before they become free agents, which occurs after six-years of MLB experience. If the team waited until the player became a free-agent, they would have to outbid other MLB teams and

that would drive up the price of the contract. Table 5 showed that 35 of the 91 players (38.5%) signed their contracts between six and eight-years' experience. This result corresponded to Krautmann and Solow's (2009) study which said that peak performance occurs around the sixth or seventh year of experience.

Table 16 showed a breakdown of the contracts by fielding position. Catcher was the least represented position with only three out of the 91 (3.3%) contracts being signed by catchers. This result raised questions considering that Meltzer (2005) stated players at tough defensive positions like shortstop and catcher are harder to replace than players at other positions. One would assume that if catchers are harder to replace, teams would be trying to sign their catchers to long-term deals to avoid losing them. However, an explanation could be that the catcher they have does not perform at a high enough level to justify signing to a long-term contract.

Limitations

Although 22 independent variables were evaluated in this study, they were not an exhaustive list nor was there any evidence that they were the most appropriate variables to research in terms of contract success.

Future Research

Future studies should explore additional variables. For example, the player's position in the batting order could significantly impact his hitting statistics (Krautmann, 1990). In addition, this study used the variable USA which divided players into two categories, USA and Non-USA. Future studies could expand this variable to identify the country of origin or even look to see if race impacts contract performance (Kahn, 2000). Future studies could also look at contract success in terms of Return on Investment (ROI)

rather than just the player's performance. A ROI study should look at changes in variables such as game attendance, television viewership, merchandise sales, media contracts, and a player's ability to propel their team into the playoffs/World Series.

RQ2: What percentage of 5+ year MLB contracts are successful in terms of $/WAR?

The purpose of the study was to apply a framework for what a "successful" MLB contract is and then provide objective data on the success rate of those long-term contracts. Research question two identified which of the 91 contracts were successful. The results showed that only 27 of the 91 contracts (29.7%) were successful. This success rate supported Reuter's (2013) findings where he evaluated 21 MLB contracts over $100 million and found eight (38%) to be good deals for the teams involved. The results also supported Krautmann and Donley's (2009) belief that teams should not continue to offer contracts longer than three or four years to players.

The low success rate of the long-term contracts was troubling as it meant that 64 of the 91 players (70.3%) performed below the league average in terms of $/WAR. The result suggested that MLB teams are not spending their money as efficiently as they could be. However, an unsuccessful contract did not mean that the player performed at a low level; it merely meant that other players performed at a similar level for less salary. For example, Barry Bonds' five-year contract with the Giants was successful because he averaged 7.24 WAR and had an average salary of just under $18 million (see Table D9 in Appendix). In comparison, Alex Rodriguez's 10-year contract with the Rangers/Yankees was unsuccessful despite him averaging an MVP level WAR of 7.14 because his average salary during the contract was over $25 million (see Table D64 in Appendix). This result

contradicted Jensen's (2013) finding that Alex Rodriguez has been a good deal for the Yankees. Conversely, some players performed at a low level and still had successful contracts because they had such a low salary. For example, Stephen Drew's five-year contract with the Diamondbacks was successful despite him having an average WAR of just 1.52 because his average salary was only $1.02 million (see Table D20 in Appendix).

Table 20 showed that the 91 players had an average WAR of 2.95 which was over twice as much as the league average WAR of 1.34. This result implied that most of the long-term contracts were going to higher level players, in terms of WAR. This result supported Maxcy's (1996) finding that long-term contracts are only given to players that show consistent and superior performance. However, these higher performing players were also being paid at a higher level as the average yearly salary of the 91 contracts was $10.4 million (see Table 2.1). The results of research question two reiterated Meltzer's (2005) findings that teams take a tremendous risk when signing players to long-term deals. This was most apparent in the fact that 22 players (24.2%) did not have a single successful season during their contract (see Table 21).

Studeman (2007) explained that contracts appear to be a good deal for the clubs early and a good deal for the players near the end of the contract. The results of the current study supported this claim. Fifty-three of the 91 players (58.2%) performed successfully in the first year of their long-term contract compared to just 22 players (24.2%) performing successfully in the last year of their contract (see Tables D1 through D91 in Appendix). One explanation for this phenomenon is that most players received an annual increase in their salary during the contract. Therefore, a player would have to perform better (in terms of WAR) each year to maintain the same $/WAR.

Cameron (2014) believed that teams sign players to long-term deals knowing they probably won't see any return at the end of the contract. The author suggested teams see a 10-year deal as more of a five-year deal with five more years of deferred payments. In other words, it is more beneficial for a team to sign a player to a $100 million over 10 years rather than over five years. The player will make less per year, freeing up salary to afford other players in the present time. In many ways, long-term contracts are just a strategic way of buying a player today and paying for him later (Cameron, 2014).

Limitations

A major limitation of the study was the framework used to describe "success." The framework used the assumption that a successful contract was one in which the player performed better than the MLB average (in terms of $/WAR) for more than 50% of the long-term contract. This framework was applied because there was no definition of what a successful MLB contract was and league average was an appropriate place to start. In addition, league average players were quite valuable to teams so anyone performing better than league average, in terms of $/WAR, was a noteworthy player (Baumer et al., 2013). Furthermore, Table 21 provided a breakdown for the players' percent of contract success for anyone who believes a different framework should be applied. For example, only six contracts (6.6%) had a 100% success rate, meaning that the player performed better than the MLB average in every year of his long-term contract. Eighteen players (19.8%) had above a 66% success rate and 42 (46.2%) had above a 33% success rate.

Another limitation of the study was the objective measurement itself, $/WAR. Although this measurement was used in both academic studies (Turvey, 2013) and within

the sabermetric community (Cameron, 2014; Pollis, 2013), it was not around long enough to be considered a gold standard in measuring a player's performance. Dupaul (2012) conducted a regression analysis comparing a team's total rWAR and their actual win totals for a season. The results showed a correlation coefficient of 0.91. This suggested that rWAR was a good measure to use but more studies are needed to validate the measurement.

Future Research

Future studies should attempt to validate $/WAR as an appropriate measure of a player's performance in MLB. Part of this validation will need to identify which WAR calculation is the best. This study chose to use rWAR from Baseball Reference's website. However, there was no indication that it was any more accurate than fWAR or WARP. Researchers are continuously fine-tuning WAR calculations and future studies should utilize these newer versions of WAR, such as OpenWAR (Baumer & Matthews, 2014).

Future research should also expand on the framework used in this study. In the current study, contract success was labeled as yes or no. However, this did not tell the whole story and future studies could identify success more specifically. For example, Miguel Cabrera's eight-year contract with the Tigers was unsuccessful based on the framework of this study. However, Cabrera had an average WAR of 5.80 during the contract, won the AL MVP twice, won the Triple Crown for the first time in MLB since 1967, and led his team to the World Series in 2012. I doubt that any team in MLB would have turned down those results at $18.96 million per season.

Turvey (2013) labeled contracts as Big Bargain, Underpaid, and Overpaid. Future studies should attempt to create additional objective categories like this to better explain

contract success. In addition, future research should look at contract success from the player's perspective. The study could measure success by looking to see if the player earned his market value, won a World Series, was signed by his first choice, or any other variables that a player would use to define a successful contract.

RQ3: At what age does the success rate of 5+ year MLB contracts drop to 50%, 25%, 10%, and 0%?

The study explored how age impacted contract success. The results showed that age was a significant factor in a player's performance in terms of $/WAR. Table 22 showed that only one player in the study had a successful long-term contract in which he signed after the age of 28. The successful contract was signed by Barry Bonds at the age of 37 (see Table D9 in Appendix). Bonds had successful seasons at the age of 37, 38, and 39. However, even he was not immune to the effects of age and he had unsuccessful seasons at age 40 and 41. Thirty-two players (35.2%) signed contracts after the age of 28 and all but Bonds' were unsuccessful. The results supported previous studies which found that MLB players' performance peaks around age 27 and then declines (Fair, 2007; Schulz et al., 1994). The previous studies were further strengthened by Table 23, which showed that players over the age of 30 only had 20 successful seasons out of 216 attempts (9.1%). Compare this to players aged 24 through 26 who had 63 successful seasons out of 93 attempts (67.7%).

Table 25 showed the players average yearly salary, WAR, and $/WAR by age. The table supported Fair's (2007) results that players follow a fairly consistent lifecycle in which they increase performance "rapidly up to the age of peak performance, after which there is a slow decline." Table 25 displayed that average WAR increased until age

29, where it peaked at 4.20, then gradually declined. The table did show an increase in average WAR at age 37. However, these numbers were skewed by Barry Bonds' extremely high WAR in his contract with the Giants. Although only one player, Bonds' high performance late in his career supported previous studies which found that elite players peak later than other players (Hakes & Turner, 2009; Schulz et al., 1994; Simonton, 1990).

Average salary did not follow the same life cycle as performance. Salary numbers gradually increased up until around the age of 37. This result contradicted previous studies which found that salaries peak around the same time as performance and then decline at a proportionate rate to productivity (Hadley & Gustafson, 1991; Hakes & Turner, 2009; Horowitz & Zappe, 1998). This contradiction could be explained by Horowitz and Zappe's (1998) finding that high performing players are rewarded for lifetime performance at the end of their career. Tarman (2005) suggested that higher salaries may be accounted for by the players' "star power" and Krautmann and Ciecka (2009) thought a player's ability to propel his team to the playoffs may increase salary. The current study's results did support previous findings which show that salary is intricately tied to bargaining power (Krautmann et al., 2000; Tarman, 2005). The average salary rose significantly around age 25. Considering that the average debut age in the study was 22.168 (see Table 2.2), this suggested that players get a significant rise in their salaries after completing their third year in MLB. Although not allowed to become free agents, players with three years' experience gain substantial bargaining power as they become eligible for Final-Offer Arbitration (Krautmann et al., 2000).

Limitations

The major limitation for this research question was that it only evaluated 91 players who signed long-term contracts. The results cannot be generalized for all MLB players as the players in the study only represented a small fraction of baseball players and the data suggested that these 91 players were higher performing than most in MLB. Another limitation may have been the variable age itself. Hakes and Turner (2009) believed that years of experience would be a much more useful measurement to use.

Future Research

Future studies should look at all MLB contracts and players to see if age impacts performance in the same manner as it did in this study. Future studies should also compare age and years' experience to see if performance follows the same life cycle for both variables.

RQ4: What characteristics significantly impact the success of 5+ year contracts?

This study sought to identify variables/characteristics that were highly correlated to contract success. Once identified, MLB teams can use those characteristics to decide which players to sign to long-term contracts. The results showed that four variables had a statistically significant correlation to $/WAR: AGE, EXP, AVG, and POP. The player's age during the first year of his contract (AGE) was the highest correlation (see Table 26). As mentioned in research question three, this result supported previous findings that age has a significant impact on performance (Fair, 2007; Hakes & Turner, 2009; Schulz et al., 1994).

The player's MLB experience before signing his contract (EXP) was the second highest correlation (see Table 26). This result did not support Hakes and Turner's

contention that experience is a better measurement to use than age. However, age and experience were similarly correlated to $/WAR and the difference was not significant enough to show that one was better than the other. Average annual salary during the contract (AVG) was the third highest correlation (see Table 26). This result was not surprising as salary was one of the two factors in $/WAR. Population of the city the team plays its home games in (POP) was the only other variable to have a significant correlation to $/WAR (see Table 26). Hakes and Turner (2009) found “population of the player’s host city” to be a variable which influences salary. As salary is an important part of $/WAR, it makes sense that population was also found to influence $/WAR. However, it was unclear why population was correlated to $/WAR. One explanation could be that teams in larger markets can afford to pay higher salaries and that could lead to lower $/WAR numbers (Meltzer, 2005). Another explanation could be that some players perform worse in large markets with critical fans and media, such as New York.

The results also showed that two variables had statistically significant relationships with contract success (SUCCESS): SAM and CRT. A player who completed his long-term contract on the same team he signed it with (SAM) proved to be statistically significant to contract success (see Tables 33 and 34). Thirty-four out of 40 players (85.0%) who finished their contracts with a different MLB team had unsuccessful contracts. This result was not surprising because a team is not likely to trade or release a player that is performing up to expectations. However, it was interesting that six players had successful contracts and finished with different teams. The six contracts belong to Curtis Granderson, Victor Martinez, Jhonny Peralta, Scott Rolen, Denard Span, and Justin Upton (see Tables D23, D42, D55, D65, D74, and D81 in Appendix). It was

unclear what the motivation was for the players changing teams because all but Peralta had an average WAR above 3.02 and the highest average $/WAR was only $2.45 million.

Players that changed teams when signing their long-term contract (CRT) also proved to be statistically significant to contract success (see Tables 35 and 36). Zero out of 28 players (0.0%) had a successful contract when signing with a new team. The cause of this result was unclear. However, Hakes and Turner's (2009) theory that "teams want to sign elite players to long-term deals before they have a chance to become free agents and hit the open market" would explain this result. These 28 players would not have been allowed to sign with a different team if they were not free agents (Gorman, 2012). As previous studies have shown, free agents have significantly higher salaries because they can market their services to any MLB team (Brown & Jepsen, 2009; Kahn, 1993; Meltzer, 2005). A higher salary could increase a player's $/WAR and cause the player to have an unsuccessful contract. Returning to our previous example, Barry Bonds had a successful contract while averaging 7.24 WAR and $18 million a year (see Table D9 in Appendix); Alex Rodriguez's contract was unsuccessful while averaging 7.14 WAR because he had a salary of over $25 million a year (see Table D64 in Appendix). Both players performed at a similarly high level but Rodriguez's higher salary put his $/WAR above the league average and led to him having an unsuccessful contract.

This theory was further supported by the cross-tabulation results of player's age (see Table 29) and experience (see Table 30). Although neither of these variables were shown to have a statistically significant relationship with contract success, they both had interesting results which warrant further discussion. Table 29 showed the relationship between the player's age when signing the long-term contract and contract success. Ages

21 through 24 had the highest percentage of successful contracts in the study. Table 30 showed the relationship between MLB experience before signing the contract and contract success. Players with one to three years of MLB experience had the highest percentage of successful contracts in the study. Players at these ages and experience levels would not have been in MLB long enough to be eligible for free agency. Therefore, the higher success rates were most likely due to these players having a lower salary, and in turn, a lower $/WAR. These results supported Hakes and Turner's (2009) theory that teams are attempting to sign players to long-term deals before they become free agents. Furthermore, the results suggested that this strategy is paying off for teams by leading to successful long-term contracts.

Four other variables also had interesting results which warrant further discussion: SAL, AVG, POS, and TEAM. Table 27 showed the relationship between total contract salary (SAL) and contract success. Players with a total contract salary between $10 million and $30 million had the highest percentage of successful contracts in the study. This result was not surprising considering that these lower salaries will most likely lead to lower $/WAR numbers. What was surprising was that players with a total contract salary between $0 and $10 million were only 28.6% successful (see Table L3 in Appendix). The only explanation for having an unsuccessful contract at such a low salary is that the players performed at an extremely low level, in terms of WAR.

Further research revealed that the five unsuccessful contracts at this low salary level belonged to Yonder Alonso, Noel Arguelles, Philip Humber, Kendrys Morales, and Jeff Niemann (see Tables D3, D4, D29, D48, and D50 in Appendix). All five of these contracts were signed before the player had any MLB experience. It is shocking that

teams would sign a player with zero MLB experience to a long-term contract. However, teams may have been thinking that the potential rewards (i.e. signing the next superstar) outweighed the risks (i.e. the player never contributing to the team). Although the teams were not investing a great deal of money in these players, the evidence showed that this extreme example of trying to sign players before they hit free agency is not paying off for teams.

The player's average yearly salary (AVG) showed similar results to that of total contract salary (see Table 28). Players with an average yearly salary between $1 million and $6 million had the highest percentage of successful contracts in the study. Yet again, the surprising result was that players with an average salary below $1 million per year had a zero percent success rate (see Table L5 in Appendix). Further research revealed that the three unsuccessful contracts belong to Yonder Alonso, Philip Humber, and Kendrys Morales which were previously discussed (see Tables D3, D29, and D48 in Appendix).

The player's fielding position (POS) also revealed interesting results (see Table 37). Shortstop, catcher, and second base had the highest percentage of successful contracts in the study. However, they also happened to be the least represented positions in the study (see Table L39 in Appendix). Meltzer (2005) suggested that market uncertainty (i.e. not knowing when another high performing player will be available) plays a role in signing certain players. The author stated that some players have skills that cannot be easily replaced with a free agent or minor leaguer, such as a team captain at a key defensive position like catcher or shortstop. If hard to replace catchers and shortstops

are in short supply, it would explain why those positions were underrepresented in terms of long-term contracts.

First basemen had the lowest percentage of successful contracts in the study with only one successful contract out of 12 (see Table L39 in Appendix). The successful contract belonged to Albert Pujols (see Table D59 in Appendix). However, it was unclear what the other 11 first basemen had in common which led to them having unsuccessful contracts. Pitchers had the second lowest percentage of successful contracts in the study with only five successful contracts out of 25 (see Table L39 in Appendix). This result may also be explained by market uncertainty. Studeman (2007) believed that market uncertainty, combined with a low-supply of and high-demand for quality pitchers, works to drive up the price of free agent pitchers and forces teams to overpay. Further research revealed that the five successful contracts belonged to Aroldis Chapman, Yovani Gallardo, Jon Lester, David Price, and Justin Verlander (see Tables D15, D21, D39, D58, and D83 in Appendix). None of the five players were free agents when signing their long-term deals and all were age 27 or younger. The fact that not a single free agent pitcher in this study had a successful contract supported Studeman's (2007) belief that free agent pitchers are overpaid. In addition, Studeman's (2007) recommendation that pitchers receive no more than a five-year deal and that younger players should be the only pitchers getting this deal appears to be good advice.

The MLB team the player signed their long-term contract with (TEAM) also had interesting results. Only five MLB teams had a success rate over 50.0% and only the Indians and Brewers had a 100% success rate. The Brewers successful contracts belonged to Ryan Braun and Yonani Gallardo (see Tables D10 and D21 in Appendix). The Indians

successful contracts belonged to Victor Martinez, Jhonny Peralta, and Grady Sizemore (see Tables D42, D55, and D72 in Appendix). It was unclear if these two teams are doing anything different than other MLB teams which was leading to successful contracts. However, all five of these contracts were signed when the player was between 23 and 26 years old, all of the players had between one and three years of MLB experience, all of the players had an average annual salary of under $6 million, and both of the teams had a payroll of under $90 million.

In contrast, 12 MLB teams had a zero percent success rate. The Yankees, White Sox, Padres, Orioles, Nationals, Marlins, Dodgers, Cubs, Blue Jays, Athletics, Astros, and Angels all had zero successful contracts. The reason for this lack of success was unclear. The Pirates were the only MLB team that did not sign a player to a long-term contract during the period in the study. Considering the low success rate in the study, it would appear the Pirates were smart to avoid signing players to long-term contracts. However, the Pirates win percentage was under .500 every single year in the study period so it obviously did not translate into wins for them.

Limitations

The major limitation in research question four was the measurement used, $/WAR. All the results were based on performance measured in terms of WAR. Although most researchers believed WAR is the ultimate measure of a player's performance (Baumer et al., 2013; Dupaul, 2012), some have questioned its accuracy. Schoenfield (2012) believed that WAR undervalues durable pitchers. If correct, this could explain the low success rate of pitchers in the current study.

Another limitation of the study was basing contract success on the MLB average $/WAR. As previously discussed, this did not always tell the whole story. It does tell teams that they may have overpaid for the performance they received, but it did not take into account other factors that teams find important. Teams may not care about paying a few million dollars more to a player that gets them to a World Series, increases attendance, or increases merchandise sales.

In addition, only 91 contracts were examined (see Table A1 in Appendix). Although this did represent all but two long-term contracts over the period from 2001 to 2010 (see Table A2 in Appendix), it was not a large enough sample to make any definitive conclusions. However, one could argue that the results of research question four were significant enough to formulate more narrow hypotheses for future testing.

Future Research

Future studies should research the statistically significant variables (i.e. SAM, CRT, SAL, AVG, AGE, EXP, POS, and TEAM) in this study to look for a causal relationship between the variables and contract success. One future study should look at why the variable population had a positive correlation to $/WAR. Another study could research into when a team should cut its losses during a long-term contract and trade or release the player. This type of study could figure out at what $/WAR amount a player is no longer worth keeping. In addition, future studies could research what factors motivate teams into releasing or trading players and what factors motivate players into requesting trades.

Future studies should also attempt to find a causation between successful contracts and signing with your current team. The study should see if this correlation can

be explained by lower salaries because most players are signing before they hit the free agent market or if other factors are also contributing to success. Future studies should also attempt to find what causes different fielding positions to be more successful than others.

RQ5: In what percentage of 5+ year MLB contracts does shirking occur when measured using WAR?

The purpose of research question five was to reveal the percentage of players that shirked (i.e. played below expectations) during their long-term contracts. The results showed that 47 of the 70 players (67.1%) shirked during the majority of their contracts (see Table 39). This result supported previous findings which also found players shirked after signing a long-term contract (Krautmann & Solow, 2009; Scoggins, 1993) and contradicted other studies which did not find evidence of shirking (Knowles et al., 2013; Krautmann, 1990; Maxcy et al., 2002). Krautmann and Donley (2009) stated that tests for shirking can be dependent on the approach utilized. This would explain the mixed results in previous shirking studies as almost all of the studies used a different statistic to measure performance. The current study was the only one referenced which used WAR as its performance measure. It will be interesting to see if future shirking studies also utilize WAR to measure performance and find evidence of shirking.

Table 40 showed the percentage of players that shirked after adjusting for the decrease in performance which comes naturally with age. However, the adjustment did not make any difference in the results as shirking was found in 47 (67.1%) of the adjusted contracts. This result supported Krautmann and Donley's (2009) findings as they also found that shirking is not affected by aging. The fact that the age adjustment did not

change the outcome for any of the players is interesting. One explanation could be that players decline rates have decreased in recent years (Fair, 2007). Another explanation could be that the 1.5% rate of decline used in this study was not large enough when applied to WAR and therefore did not accurately account for the decline in performance.

Table 41 displayed descriptive statistics for contract shirking. The average WAR for the 70 long-term contracts was 3.21 and the average baseline WAR was 4.14. This result supported Krautmann's (1990) belief that a player's performance decreases after signing a multiyear contract. However, this result was not conclusive as 32 of the 70 players (45.7%) had a higher average WAR during their long-term contract than their average career WAR (CWAR). This meant that the 32 players performed better during their long-term contract compared to their careers before signing the contract.

Krautmann (1990) believed that allegations of shirking are nothing more than statistical artifact. Knowles et al. (2013) also believed that shirking is merely the stochastic nature of productivity (i.e. the random distribution of player performance). Whether or not these authors were correct was unclear from the results of this study. One explanation could be that "long-term employment contracts that guarantee income" create an incentive to shirk (Maxcy et al., 2002, p. 246). Another explanation could be that MLB is a hard game and performance will vary from year to year. Furthermore, there could be other factors out of the players control that were causing the player to perform worse such as the performance of teammates in front of or behind him in the batting order.

Stankiewicz (2009b) believed that a one-year contract positively effects performance because of the pressure it provides. The author argued that if a player only

has one year to prove himself, he is more likely perform at a high level. However, pressure could also negatively impact a player's performance. Many of the contracts analyzed in the study were for over $100 million. Such a high salary can also create pressure for a player because he may feel like he must prove he is worth that amount of money. Some players may not be able to handle the added pressure that comes along with the high-dollar long-term contracts and this could explain why performance decreased in many of the long-term contracts analyzed in the study.

Limitations

A limitation of research question five was that some factors which may impact performance were not accounted for such as the player's position in the batting order or the home-field in which the player competes. Coates (2008) found that the on-deck hitter can have a statistically significant effect on the performance of the current batter. Krautmann (1990) found that the home-field where the player competes could have a significant impact on statistics. A hitter friendly ballpark (i.e., Coors Field) would positively impact batting statistics for hitters but negatively impact statistics for pitchers on the same team.

Other limitations include the age of peak performance and the age adjustment used. The study used age 27 as the age of peak performance. Although this age was the most common finding in the literature, other studies have found different ages of peak performance when accounting for ability level, experience, and position (Hakes & Turner, 2009). This study also used a 1.5% annual decrease to the player's baseline WAR to account for a decrease in performance due to age. However, previous findings of this 1.5% decrease in performance were found in ERA for pitchers and OPS for hitters (Fair,

2007). There was no indication that the same rate of decline can be applied to WAR and achieve similar results. Cameron (2014) applied an aging curve in which he gives players 90% of their previous year's performance up to age 30, then 85% of the prior year's performance from ages 31 through 35, and finally 80% of the prior year's performance for age 36 and older.

Future Research

Future studies should continue to use different measures of performance to compare differences between WAR and other performance measures such as OPS and ERA. Other studies should research how position in the batting order, changing teams, and home-field effects WAR so these factors can be accounted for in shirking studies. Future research should also attempt to reveal what the rate of performance decline is in MLB, in terms of WAR. Once discovered, this information can be used to create more accurate age adjustments for performance and help teams understand how age will affect the player's performance over the next five or more years.

Practical Implications

The results of the study revealed that long-term contracts were unsuccessful 70.3% of the time. However, some contracts proved to be a great deal for the team because they were able to sign the player to a long-term contract before he reached free agency and the player developed into a superstar. Teams should be cautious when signing players to long-term contracts but that does not mean that teams should avoid long-term contracts under any circumstances.

The following criteria should help teams when deciding which players to give long-term contracts to: (1) the contract should be no more than eight-years in length and

ideally would be only five or six-years in length (see Table L1 in Appendix); (2) the total contract salary should be less than $90 million (see Table L3 in Appendix); (3) the average annual salary should be less than $18 million and ideally would be under $6 million per year (see Table L5 in Appendix); (4) the player will be 28 years old or younger the first year of the long-term contract and ideally would be between the ages of 21 and 24 (see Table L9 in Appendix); (5) the player will have seven-years of MLB experience or less and ideally have one to three years of experience (see Table L11 in Appendix); (6) smaller markets (under 6 million people) have a higher success rate with long-term contracts than larger markets (see Table L13 in Appendix); (7) the player will already play on your team. Players who switched teams when signing their long-term contract had a zero percent success rate (see Table L37 in Appendix); and (8) the player is a catcher, shortstop, or second baseman (see Table L39 in Appendix).

Following the criteria is not a guarantee that the contract will be successful. However, they may serve as a helpful tie-breaker when trying to decide between several players and could ultimately lead to a higher success rate when signing players to long-term contracts in MLB.

APPENDIX A

Long-Term Contracts

Table A1

MLB Contracts Used for Research Questions One, Two, Three, and Four

Last	First	Length	Start	End	Amount ($)	Position	Team
Abreu	Bobby	5	2002	2006	52,733,333	OF	Phillies
Ackley	Dustin	5	2010	2014	6,600,000	2B	Mariners
Alonso	Yonder	5	2008	2012	2,550,000	1B	Reds
Arguelles	Noel	5	2010	2014	6,900,000	P	Royals
Beltran	Carlos	7	2005	2011	115,307,782	OF	Mets
Beltre	Adrian	5	2005	2009	64,000,000	3B	Mariners
Berkman	Lance	6	2005	2010	83,000,000	1B	Astros
Blalock	Hank	5	2004	2008	15,250,000	3B	Rangers
Bonds	Barry	5	2002	2006	89,831,470	OF	Giants
Braun	Ryan	8	2008	2015	44,562,500	3B	Brewers
Burnett	A.J.	5	2009	2013	82,500,000	P	Yankees
Burrell	Pat	6	2003	2008	50,000,000	OF	Phillies
Cabrera	Miguel	8	2008	2015	151,683,049	1B	Tigers
Carpenter	Chris	5	2007	2011	62,402,957	P	Cardinals
Chapman	Aroldis	6	2010	2015	21,885,772	P	Reds
Chavez	Eric	6	2005	2010	63,000,000	3B	Athletics
Crosby	Bobby	5	2005	2009	12,550,000	SS	Athletics
DeJesus	David	5	2006	2010	13,300,000	OF	Royals
Drew	J.D.	5	2007	2011	70,000,000	OF	Red Sox
Drew	Stephen	5	2005	2009	5,100,000	SS	Diamondbacks
Gallardo	Yovani	5	2010	2014	28,450,000	P	Brewers
Giambi	Jason	7	2002	2008	114,999,997	1B	Yankees
Granderson	Curtis	5	2008	2012	28,250,000	OF	Tigers
Guerrero	Vladimir	5	2004	2008	67,000,000	OF	Angels
Hampton	Mike	8	2001	2008	108,357,270	P	Rockies
Helton	Todd	11*	2001	2011	149,200,000	1B	Rockies
Hernandez	Felix	5	2010	2014	80,114,000	P	Mariners
Holliday	Matt	7	2010	2016	117,651,101	OF	Cardinals
Humber	Philip	5	2005	2009	4,200,000	P	Mets
Hunter	Torii	5	2008	2012	89,500,000	OF	Angels
Igawa**	Kei	5	2007	2011	20,000,000	P	Yankees
Jeter	Derek	10	2001	2010	189,000,000	SS	Yankees
Jones	Andruw	6	2002	2007	75,000,000	OF	Braves

Last	First	Length	Start	End	Amount ($)	Position	Team
Kinsler	Ian	5	2008	2012	21,300,000	2B	Rangers
Konerko	Paul	5	2006	2010	60,000,000	1B	White Sox
Lackey	John	5	2010	2014	80,400,000	P	Red Sox
Lee	Carlos	6	2007	2012	99,500,000	OF	Astros
Lee	Derrek	5	2006	2010	62,416,667	1B	Cubs
Lester	Jon	5	2009	2013	29,750,000	P	Red Sox
Longoria	Evan	6	2008	2013	14,500,000	3B	Rays
Markakis	Nick	6	2009	2014	63,050,000	OF	Orioles
Martinez	Victor	5	2005	2009	14,922,100	C	Indians
Matsuzaka***	Daisuke	6	2007	2012	51,666,665	P	Red Sox
Matthews Jr.	Gary	5	2007	2011	49,600,000	OF	Angels
McCann	Brian	6	2007	2012	29,006,666	C	Braves
Meche	Gil	5	2007	2011	42,600,000	P	Royals
Millwood	Kevin	5	2006	2010	52,942,793	P	Rangers
Morales	Kendrys	6	2005	2010	3,900,000	1B	Angels
Morneau	Justin	6	2008	2013	78,000,000	1B	Twins
Niemann	Jeff	5	2005	2009	5,200,000	P	Rays
Ordonez	Magglio	5	2005	2009	71,339,770	OF	Tigers
Oswalt	Roy	5	2007	2011	71,000,000	P	Astros
Peavy****	Jake	5	2008	2012	65,500,000	P	Padres
Pedroia	Dustin	6	2009	2014	41,750,000	2B	Red Sox
Peralta	Jhonny	5	2006	2010	12,377,300	SS	Indians
Pierre	Juan	5	2007	2011	41,000,000	OF	Dodgers
Posada	Jorge	5	2002	2006	47,000,000	C	Yankees
Price	David	6	2007	2012	10,169,342	P	Rays
Pujols	Albert	7	2004	2010	87,832,041	1B	Cardinals
Ramirez	Aramis	5	2007	2011	72,000,000	3B	Cubs
Ramirez	Hanley	6	2009	2014	70,000,000	SS	Marlins
Ramirez	Manny	8	2001	2008	147,238,269	OF	Red Sox
Rios	Alex	7	2008	2014	70,935,000	OF	Blue Jays
Rodriguez	Alex	10	2001	2010	252,389,252	3B	Rangers
Rolen	Scott	8	2003	2010	83,559,639	3B	Cardinals
Rollins	Jimmy	5	2006	2010	38,000,000	SS	Phillies
Rowand	Aaron	5	2008	2012	58,400,000	OF	Giants
Ryan	B.J.	5	2006	2010	47,000,000	P	Blue Jays
Sabathia	C.C.	7	2009	2015	155,857,142	P	Yankees
Samardzija	Jeff	5	2007	2011	12,300,000	P	Cubs
Santana	Johan	6	2008	2013	127,149,769	P	Mets
Sizemore	Grady	6	2006	2011	22,783,331	OF	Indians
Soriano	Alfonso	8	2007	2014	133,000,000	OF	Cubs

Last	First	Length	Start	End	Amount ($)	Position	Team
Span	Denard	5	2010	2014	16,000,000	OF	Twins
Suzuki	Ichiro	5	2008	2012	88,102,149	OF	Mariners
Swisher	Nick	5	2007	2011	25,350,000	OF	Athletics
Teixeira	Mark	8	2009	2016	178,125,000	1B	Yankees
Tejada	Miguel	6	2004	2009	71,245,658	SS	Orioles
Thome	Jim	6	2003	2008	81,166,667	1B	Phillies
Tulowitzki	Troy	6	2008	2013	29,000,000	SS	Rockies
Upton	Justin	6	2010	2015	50,416,666	OF	Diamondbacks
Utley	Chase	7	2007	2013	84,428,570	2B	Phillies
Verlander	Justin	5	2010	2014	79,700,000	P	Tigers
Wells	Vernon	7	2008	2014	113,250,000	OF	Blue Jays
Wilson	Preston	5	2001	2005	32,500,000	OF	Marlins
Wright	David	6	2007	2012	53,750,000	3B	Mets
Young	Chris	5	2009	2013	26,100,000	OF	Diamondbacks
Young	Michael	5	2009	2013	74,404,474	3B	Rangers
Zambrano	Carlos	5	2008	2012	90,500,000	P	Cubs
Zimmerman	Ryan	5	2009	2013	44,700,000	3B	Nationals
Zito	Barry	7	2007	2013	119,000,000	P	Giants

Note. Position is the one played most often under the length of the contract and DH was not included as a position.

*Helton signed a 9-year contract extension for $141.5 million in 2001 with 2-years and $10 million left on his contract.
**The Yankees also had to pay Igawa's team in Japan $26,000,194 to earn the right to sign him.
***The Red Sox also had to pay Matsuzaka's team in Japan $51,111,111.11 to earn the right to sign him.
****Peavy signed a 3-year contract extension for $52 million in 2007 with 2-years and $17.5 million left on his contract.

Table A2

MLB Contracts Excluded from Research Questions One, Two, Three, and Four

Last	First	Length	Start	End	Amount ($)	Position	Team
Drew*	J.D.	5	2005	2009	55,000,000	OF	Dodgers
Rodriguez**	Alex	10	2008	2017	275,000,000	3B	Yankees

*Drew's contract is excluded because it included an Opt-Out Clause which he exercised after the 2006 MLB season, after two seasons with the Dodgers.
**Rodriguez's contract is excluded because the contract does not end until after the 2017 MLB season.

APPENDIX B

Player and Team Variables/Characteristics

Table B1

List of Variables/Characteristics

Code	Definition
LNG	the number of years in the contract
SAL	the total amount of money, in U.S. dollars, expected to be paid to the player over the length of the contract
AVG	the average salary the player collects each year of the contract; this number is calculated by dividing the total salary by the contract length
PAY	the total salary of the team's 25-man opening day roster, in U.S. dollars, the first year of the player's long-term contract
AGE	the player's age during the first year of his long-term contract, on opening day
EXP	the number of years the player participated in MLB before playing the first year of his long-term contract
POP	the population of the metropolitan area in which the player's team competed for its home games
DEB	the player's age the day he made his debut in MLB
AS	the number of times the player was selected as an All-Star before the first year of his long-term contract
MVP	the number of times the player was selected as the Most Valuable Player or Cy Young winner, before the first year of his long-term contract
HT	the player's height in inches
CWAR	the player's average career WAR before beginning the first year of his long-term contract
RD	the round the player was selected in the MLB draft
FIN	whether or not the player finished his long-term contract, as opposed to being released, retiring, or any other occurrence that stopped the player from completing the contract
THR	whether the player throws with his right or left hand
BAT	whether the player bats right, left, or is a switch hitter
USA	whether or not the player grew up in the United States; this is determined by where the player lived during his high school years
SAM	whether or not the player finished the contract with the same team he signed it with
CRT	whether or not the player signed the long-term contract with the same team he played for the year before his contract, as opposed to changing teams
POS	the fielding position that the player competed at most often during his contract; designated hitter is not included as an option and all three outfielders are grouped as the same position
LG	the league within MLB (National or American) that the player competed during the first year of his long-term contract
TEAM	the MLB team that the player signed the long-term contract with

Table B2

Player and Team Variable/Characteristic Data

Last	First	LNG	SAL	AVG	PAY	AGE	EXP
Abreu	Bobby	5	52,733,333	10,546,667	57,954,999	28	5
Ackley	Dustin	5	6,600,000	1,320,000	98,904,166	21	0
Alonso	Yonder	5	2,550,000	510,000	74,117,695	21	0
Arguelles	Noel	5	6,900,000	1,380,000	74,985,210	20	0
Beltran	Carlos	7	115,307,782	16,472,540	101,305,821	28	6
Beltre	Adrian	5	64,000,000	12,800,000	87,754,334	26	7
Berkman	Lance	6	83,000,000	13,833,333	76,779,000	29	6
Blalock	Hank	5	15,250,000	3,050,000	55,050,417	23	2
Bonds	Barry	5	89,831,470	17,966,294	78,299,835	37	16
Braun	Ryan	8	44,562,500	5,570,313	80,937,499	24	1
Burnett	A.J.	5	82,500,000	16,500,000	201,449,189	32	10
Burrell	Pat	6	50,000,000	8,333,333	70,780,000	26	3
Cabrera	Miguel	8	151,683,049	18,960,381	137,685,196	25	5
Carpenter	Chris	5	62,402,957	12,480,591	90,286,823	32	9
Chapman	Aroldis	6	21,885,772	3,647,629	76,151,500	22	0
Chavez	Eric	6	63,000,000	10,500,000	55,425,762	27	7
Crosby	Bobby	5	12,550,000	2,510,000	55,425,762	25	2
DeJesus	David	5	13,300,000	2,660,000	47,294,000	26	3
Drew	J.D.	5	70,000,000	14,000,000	143,026,214	31	9
Drew	Stephen	5	5,100,000	1,020,000	62,329,166	22	0
Gallardo	Yovani	5	28,450,000	5,690,000	90,408,000	24	3
Giambi	Jason	7	114,999,997	16,428,571	125,928,583	31	7
Granderson	Curtis	5	28,250,000	5,650,000	137,685,196	27	4
Guerrero	Vladimir	5	67,000,000	13,400,000	100,534,667	29	8
Hampton	Mike	8	108,357,270	13,544,659	71,541,333	28	8
Helton	Todd	11	149,200,000	13,563,636	71,541,333	27	4
Hernandez	Felix	5	80,114,000	16,022,800	91,143,333	24	5
Holliday	Matt	7	117,651,101	16,807,300	94,220,500	30	6
Humber	Philip	5	4,200,000	840,000	101,305,821	22	0
Hunter	Torii	5	89,500,000	17,900,000	119,216,333	32	10
Igawa	Kei	5	20,000,000	4,000,000	189,639,045	27	0
Jeter	Derek	10	189,000,000	18,900,000	112,287,143	27	6
Jones	Andruw	6	75,000,000	12,500,000	93,470,367	25	6
Kinsler	Ian	5	21,300,000	4,260,000	67,712,326	26	2
Konerko	Paul	5	60,000,000	12,000,000	102,750,667	30	10
Lackey	John	5	80,400,000	16,080,000	168,109,833	31	8
Lee	Carlos	6	99,500,000	16,583,333	87,759,000	31	8

Last	First	LNG	SAL	AVG	PAY	AGE	EXP
Lee	Derrek	5	62,416,667	12,483,333	94,424,499	30	9
Lester	Jon	5	29,750,000	5,950,000	121,745,999	25	3
Longoria	Evan	6	14,500,000	2,416,667	43,745,597	22	0
Markakis	Nick	6	63,050,000	10,508,333	67,101,666	25	3
Martinez	Victor	5	14,922,100	2,984,420	41,502,500	26	3
Matsuzaka	Daisuke	6	51,666,665	8,611,111	143,026,214	26	0
Matthews Jr	Gary	5	49,600,000	9,920,000	109,251,333	32	8
McCann	Brian	6	29,006,666	4,834,444	87,290,833	23	2
Meche	Gil	5	42,600,000	8,520,000	67,166,500	28	8
Millwood	Kevin	5	52,942,793	10,588,559	68,228,662	31	9
Morales	Kendrys	6	3,900,000	650,000	97,725,322	22	0
Morneau	Justin	6	78,000,000	13,000,000	56,932,766	27	5
Niemann	Jeff	5	5,200,000	1,040,000	29,679,067	22	0
Ordonez	Magglio	5	71,339,770	14,267,954	69,092,000	31	8
Oswalt	Roy	5	71,000,000	14,200,000	87,759,000	29	6
Peavy	Jake	5	65,500,000	13,100,000	73,677,616	27	6
Pedroia	Dustin	6	41,750,000	6,958,333	121,745,999	25	3
Peralta	Jhonny	5	12,377,300	2,475,460	56,031,500	24	3
Pierre	Juan	5	41,000,000	8,200,000	108,454,524	29	7
Posada	Jorge	5	47,000,000	9,400,000	125,928,583	30	7
Price	David	6	10,169,342	1,694,890	24,123,500	21	0
Pujols	Albert	7	87,832,041	12,547,434	83,228,333	24	3
Ramirez	Aramis	5	72,000,000	14,400,000	99,670,332	29	9
Ramirez	Hanley	6	70,000,000	11,666,667	36,834,000	25	3
Ramirez	Manny	8	147,238,269	18,404,784	110,035,883	29	8
Rios	Alex	7	70,935,000	10,133,571	97,973,900	27	4
Rodriguez	Alex	10	252,389,252	25,238,925	87,819,000	25	6
Rolen	Scott	8	83,559,639	10,444,955	83,786,666	28	7
Rollins	Jimmy	5	38,000,000	7,600,000	88,273,333	27	6
Rowand	Aaron	5	58,400,000	11,680,000	76,594,500	30	7
Ryan	B.J.	5	47,000,000	9,400,000	71,915,000	30	7
Sabathia	C.C.	7	155,857,142	22,265,306	201,449,189	28	8
Samardzija	Jeff	5	12,300,000	2,460,000	99,670,332	22	0
Santana	Johan	6	127,149,769	21,191,628	137,793,376	29	8
Sizemore	Grady	6	22,783,331	3,797,222	56,031,500	23	2
Soriano	Alfonso	8	133,000,000	16,625,000	99,670,332	31	7
Span	Denard	5	16,000,000	3,200,000	97,659,167	26	2
Suzuki	Ichiro	5	88,102,149	17,620,430	117,666,482	34	7
Swisher	Nick	5	25,350,000	5,070,000	79,366,940	26	3
Teixeira	Mark	8	178,125,000	22,265,625	201,449,189	29	6

Last	First	LNG	SAL	AVG	PAY	AGE	EXP
Tejada	Miguel	6	71,245,658	11,874,276	51,623,333	30	7
Thome	Jim	6	81,166,667	13,527,778	70,780,000	32	12
Tulowitzki	Troy	6	29,000,000	4,833,333	68,655,500	23	2
Upton	Justin	6	50,416,666	8,402,778	75,484,833	22	3
Utley	Chase	7	84,428,570	12,061,224	89,428,213	28	4
Verlander	Justin	5	79,700,000	15,940,000	133,995,400	27	5
Wells	Vernon	7	113,250,000	16,178,571	97,973,900	29	8
Wilson	Preston	5	32,500,000	6,500,000	35,762,500	26	3
Wright	David	6	53,750,000	8,958,333	115,231,663	24	3
Young	Chris	5	26,100,000	5,220,000	73,516,666	25	3
Young	Michael	5	74,404,474	14,880,895	68,178,798	32	8
Zambrano	Carlos	5	90,500,000	18,100,000	118,345,833	27	6
Zimmerman	Ryan	5	44,700,000	8,940,000	60,328,000	24	4
Zito	Barry	7	119,000,000	17,000,000	90,219,056	29	7

Last	First	POP	DEB	AS	MVP	HT	CWAR	RD	FIN
Abreu	Bobby	5,965,343	22.174	0	0	72	4.860	1	Yes
Ackley	Dustin	3,439,809	23.111	0	0	73	0.000	1	Yes
Alonso	Yonder	2,114,580	23.146	0	0	73	0.000	1	Yes
Arguelles	Noel	2,009,342	N/A*	0	0	76	0.000	U	No
Beltran	Carlos	19,567,410	21.143	1	0	73	4.800	2	Yes
Beltre	Adrian	3,439,809	19.078	0	0	71	3.329	U	Yes
Berkman	Lance	5,920,416	23.156	3	0	73	4.133	1	Yes
Blalock	Hank	6,426,214	21.131	1	0	73	3.050	3	Yes
Bonds	Barry	4,335,391	21.310	10	4	73	7.175	1	Yes
Braun	Ryan	1,555,908	23.189	0	0	74	2.000	1	Yes
Burnett	A.J.	19,567,410	22.226	0	0	76	1.870	8	Yes
Burrell	Pat	5,965,343	23.227	0	0	76	2.000	1	Yes
Cabrera	Miguel	4,296,250	20.063	4	0	76	3.640	U	Yes
Carpenter	Chris	2,787,701	22.015	2	0	78	2.411	1	Yes
Chapman	Aroldis	2,114,580	22.184	0	0	76	0.000	U	Yes
Chavez	Eric	4,335,391	20.275	0	0	73	3.657	1	Yes
Crosby	Bobby	4,335,391	23.233	0	0	75	1.350	1	Yes
DeJesus	David	2,009,342	23.256	0	0	71	2.067	4	Yes
Drew	J.D.	4,552,402	22.292	0	0	73	3.722	1	Yes
Drew	Stephen	4,192,887	23.121	0	0	72	0.000	1	Yes
Gallardo	Yovani	1,555,908	21.111	0	0	74	2.000	2	Yes
Giambi	Jason	19,567,410	24.120	2	1	75	4.157	2	Yes
Granderson	Curtis	4,296,250	23.181	0	0	73	3.250	3	Yes
Guerrero	Vladimir	12,828,837	21.223	4	0	75	4.300	U	Yes
Hampton	Mike	2,543,482	20.220	1	0	70	2.288	6	Yes
Helton	Todd	2,543,482	23.347	1	0	74	3.700	1	Yes
Hernandez	Felix	3,439,809	19.118	1	0	75	3.580	U	Yes
Holliday	Matt	2,787,701	24.092	3	0	76	3.950	7	Yes
Humber	Philip	19,567,410	23.277	0	0	75	0.000	1	Yes
Hunter	Torii	12,828,837	22.035	2	0	74	2.710	1	Yes
Igawa	Kei	19,567,410	27.268	0	0	73	0.000	U	No
Jeter	Derek	19,567,410	20.337	3	0	75	4.667	1	Yes
Jones	Andruw	5,286,728	19.114	1	0	73	5.167	U	Yes
Kinsler	Ian	6,426,214	23.285	0	0	72	3.000	17	Yes
Konerko	Paul	9,461,105	21.187	2	0	74	1.260	1	Yes
Lackey	John	4,552,402	23.244	1	0	78	3.125	2	Yes
Lee	Carlos	5,920,416	22.321	2	0	74	2.488	U	Yes
Lee	Derrek	9,461,105	21.234	1	0	77	2.778	1	Yes
Lester	Jon	4,552,402	22.154	0	0	76	2.867	2	Yes
Longoria	Evan	2,783,243	22.188	0	0	74	0.000	1	Yes

Last	First	POP	DEB	AS	MVP	HT	CWAR	RD	FIN
Markakis	Nick	2,710,489	22.137	0	0	73	4.700	1	Yes
Martinez	Victor	2,077,240	23.261	1	0	74	1.367	U	Yes
Matsuzaka	Daisuke	4,552,402	26.204	0	0	72	0.000	U	Yes
Matthews Jr.	Gary	12,828,837	24.283	1	0	75	1.850	13	No
McCann	Brian	5,286,728	21.110	1	0	75	2.300	2	Yes
Meche	Gil	2,009,342	20.301	0	0	75	0.850	1	No
Millwood	Kevin	6,426,214	22.202	1	0	76	2.222	11	Yes
Morales	Kendrys	12,828,837	22.337	0	0	73	0.000	U	Yes
Morneau	Justin	3,348,859	22.026	1	1	76	1.820	3	Yes
Niemann	Jeff	2,783,243	25.045	0	0	81	0.000	1	Yes
Ordonez	Magglio	4,296,250	23.213	4	0	72	3.163	U	Yes
Oswalt	Roy	5,920,416	23.250	2	0	72	5.050	23	Yes
Peavy	Jake	3,095,313	21.022	2	1	73	3.383	15	Yes
Pedroia	Dustin	4,552,402	23.005	1	1	69	3.333	2	Yes
Peralta	Jhonny	2,077,240	21.015	0	0	74	1.867	U	Yes
Pierre	Juan	12,828,837	22.359	0	0	70	1.943	13	Yes
Posada	Jorge	19,567,410	24.018	2	0	74	1.829	24	Yes
Price	David	2,783,243	23.019	0	0	78	0.000	1	Yes
Pujols	Albert	2,787,701	21.076	2	0	75	6.900	13	Yes
Ramirez	Aramis	9,461,105	19.335	1	0	73	1.489	U	Yes
Ramirez	Hanley	5,564,635	21.271	1	0	74	5.300	U	Yes
Ramirez	Manny	4,552,402	21.095	4	0	72	3.725	1	Yes
Rios	Alex	5,769,800	23.099	2	0	77	3.250	1	Yes
Rodriguez	Alex	6,426,214	18.346	4	0	75	6.333	1	Yes
Rolen	Scott	2,787,701	21.119	1	0	76	4.557	2	Yes
Rollins	Jimmy	5,965,343	21.295	3	0	67	2.833	2	Yes
Rowand	Aaron	4,335,391	23.291	1	0	72	2.614	1	No
Ryan	B.J.	5,769,800	23.121	1	0	78	1.100	17	No
Sabathia	C.C.	19,567,410	20.261	3	1	78	4.038	1	Yes
Samardzija	Jeff	9,461,105	23.184	0	0	77	0.000	5	Yes
Santana	Johan	19,567,410	21.021	3	2	72	4.425	U	No
Sizemore	Grady	2,077,240	21.354	0	0	74	3.850	3	Yes
Soriano	Alfonso	9,461,105	22.250	5	0	73	2.757	U	Yes
Span	Denard	3,348,859	24.039	0	0	72	4.050	1	Yes
Suzuki	Ichiro	3,439,809	27.162	7	1	71	5.843	U	Yes
Swisher	Nick	4,335,391	23.283	0	0	72	1.600	1	Yes
Teixeira	Mark	19,567,410	22.355	1	0	75	5.217	1	Yes
Tejada	Miguel	2,710,489	23.094	1	1	69	3.157	U	Yes
Thome	Jim	5,965,343	21.008	3	0	76	3.942	13	Yes
Tulowitzki	Troy	2,543,482	21.324	0	0	75	3.200	1	Yes

Last	First	POP	DEB	AS	MVP	HT	CWAR	RD	FIN
Upton	Justin	4,192,887	19.342	1	0	74	1.600	1	Yes
Utley	Chase	5,965,343	24.108	1	0	73	4.275	1	Yes
Verlander	Justin	4,296,250	22.134	2	0	77	3.120	1	Yes
Wells	Vernon	5,769,800	20.265	2	0	73	2.713	1	No
Wilson	Preston	5,564,635	23.292	0	0	74	0.667	1	Yes
Wright	David	19,567,410	21.214	1	0	72	3.667	1	Yes
Young	Chris	4,192,887	22.347	0	0	74	0.767	16	Yes
Young	Michael	6,426,214	23.346	5	0	73	2.513	5	Yes
Zambrano	Carlos	9,461,105	20.080	2	0	76	4.517	U	Yes
Zimmerman	Ryan	5,636,232	20.338	0	0	75	2.700	1	Yes
Zito	Barry	4,335,391	22.070	3	1	74	4.414	1	Yes

*Arguelles has yet to play in the major leagues.

Last	First	THR	BAT	USA	SAM	CRT	POS	LG	TEAM
Abreu	Bobby	R	L	No	Yes	Yes	OF	NL	Phillies
Ackley	Dustin	R	L	Yes	Yes	N/A	2B	AL	Mariners
Alonso	Yonder	R	L	Yes	No	N/A	1B	NL	Reds
Arguelles*	Noel	L	L	No	Yes	N/A	P	AL	Royals
Beltran	Carlos	R	S	No	No	No	OF	NL	Mets
Beltre	Adrian	R	R	No	Yes	No	3B	AL	Mariners
Berkman	Lance	L	S	Yes	No	Yes	1B	NL	Astros
Blalock	Hank	R	L	Yes	Yes	Yes	3B	AL	Rangers
Bonds	Barry	L	L	Yes	Yes	Yes	OF	NL	Giants
Braun	Ryan	R	R	Yes	Yes	Yes	3B	NL	Brewers
Burnett	A.J.	R	R	Yes	No	No	P	AL	Yankees
Burrell	Pat	R	R	Yes	Yes	Yes	OF	NL	Phillies
Cabrera	Miguel	R	R	No	Yes	No	1B	AL	Tigers
Carpenter	Chris	R	R	Yes	Yes	Yes	P	NL	Cardinals
Chapman	Aroldis	L	L	No	Yes	N/A	P	NL	Reds
Chavez	Eric	R	L	Yes	Yes	Yes	3B	AL	Athletics
Crosby	Bobby	R	R	Yes	Yes	Yes	SS	AL	Athletics
DeJesus	David	L	L	Yes	Yes	Yes	OF	AL	Royals
Drew	J.D.	R	L	Yes	Yes	No	OF	AL	Red Sox
Drew	Stephen	R	L	Yes	Yes	N/A	SS	NL	Diamondbacks
Gallardo	Yovani	R	R	Yes	Yes	Yes	P	NL	Brewers
Giambi	Jason	R	L	Yes	Yes	No	1B	AL	Yankees
Granderson	Curtis	R	L	Yes	No	Yes	OF	AL	Tigers
Guerrero	Vladimir	R	R	No	Yes	No	OF	AL	Angels
Hampton	Mike	L	R	Yes	No	No	P	NL	Rockies
Helton	Todd	L	L	Yes	Yes	Yes	1B	NL	Rockies
Hernandez	Felix	R	R	No	Yes	Yes	P	AL	Mariners
Holliday	Matt	R	R	Yes	Yes	No	OF	NL	Cardinals
Humber	Philip	R	R	Yes	No	N/A	P	NL	Mets
Hunter	Torii	R	R	Yes	Yes	No	OF	AL	Angels
Igawa	Kei	L	L	No	No	N/A	P	AL	Yankees
Jeter	Derek	R	R	Yes	Yes	Yes	SS	AL	Yankees
Jones	Andruw	R	R	No	Yes	Yes	OF	NL	Braves
Kinsler	Ian	R	R	Yes	Yes	Yes	2B	AL	Rangers
Konerko	Paul	R	R	Yes	Yes	Yes	1B	AL	White Sox
Lackey	John	R	R	Yes	No	No	P	AL	Red Sox
Lee	Carlos	R	R	No	No	No	OF	NL	Astros
Lee	Derrek	R	R	Yes	No	Yes	1B	NL	Cubs
Lester	Jon	L	L	Yes	Yes	Yes	P	AL	Red Sox
Longoria	Evan	R	R	Yes	Yes	N/A	3B	AL	Rays

Last	First	THR	BAT	USA	SAM	CRT	POS	LG	TEAM
Markakis	Nick	L	L	Yes	Yes	Yes	OF	AL	Orioles
Martinez	Victor	R	S	No	No	Yes	C	AL	Indians
Matsuzaka	Daisuke	R	R	No	Yes	N/A	P	AL	Red Sox
Matthews Jr.	Gary	R	S	Yes	No	No	OF	AL	Angels
McCann	Brian	R	L	Yes	Yes	Yes	C	NL	Braves
Meche	Gil	R	R	Yes	No	No	P	AL	Royals
Millwood	Kevin	R	R	Yes	No	No	P	AL	Rangers
Morales	Kendrys	R	S	No	Yes	N/A	1B	AL	Angels
Morneau	Justin	R	L	No	No	Yes	1B	AL	Twins
Niemann	Jeff	R	R	Yes	Yes	N/A	P	AL	Rays
Ordonez	Magglio	R	R	No	Yes	No	OF	AL	Tigers
Oswalt	Roy	R	R	Yes	No	Yes	P	NL	Astros
Peavy	Jake	R	R	Yes	No	Yes	P	NL	Padres
Pedroia	Dustin	R	R	Yes	Yes	Yes	2B	AL	Red Sox
Peralta	Jhonny	R	R	No	No	Yes	SS	AL	Indians
Pierre	Juan	L	L	Yes	No	No	OF	NL	Dodgers
Posada	Jorge	R	S	No	Yes	Yes	C	AL	Yankees
Price	David	L	L	Yes	Yes	N/A	P	AL	Rays
Pujols	Albert	R	R	Yes	Yes	Yes	1B	NL	Cardinals
Ramirez	Aramis	R	R	No	Yes	Yes	3B	NL	Cubs
Ramirez	Hanley	R	R	No	No	Yes	SS	NL	Marlins
Ramirez	Manny	R	R	Yes	No	No	OF	AL	Red Sox
Rios	Alex	R	R	No	No	Yes	OF	AL	Blue Jays
Rodriguez	Alex	R	R	Yes	No	No	3B	AL	Rangers
Rolen	Scott	R	R	Yes	No	Yes	3B	NL	Cardinals
Rollins	Jimmy	R	S	Yes	Yes	Yes	SS	NL	Phillies
Rowand	Aaron	R	R	Yes	No	No	OF	NL	Giants
Ryan	B.J.	L	L	Yes	No	No	P	AL	Blue Jays
Sabathia	C.C.	L	L	Yes	Yes	No	P	AL	Yankees
Samardzija	Jeff	R	R	Yes	Yes	N/A	P	NL	Cubs
Santana	Johan	L	L	No	No	No	P	NL	Mets
Sizemore	Grady	L	L	Yes	Yes	Yes	OF	AL	Indians
Soriano	Alfonso	R	R	No	No	No	OF	NL	Cubs
Span	Denard	L	L	Yes	No	Yes	OF	AL	Twins
Suzuki	Ichiro	R	L	No	No	Yes	OF	AL	Mariners
Swisher	Nick	L	S	Yes	No	Yes	OF	AL	Athletics
Teixeira	Mark	R	S	Yes	Yes	No	1B	AL	Yankees
Tejada	Miguel	R	R	No	No	No	SS	AL	Orioles
Thome	Jim	R	L	Yes	No	No	1B	NL	Phillies
Tulowitzki	Troy	R	R	Yes	Yes	Yes	SS	NL	Rockies

Last	First	THR	BAT	USA	SAM	CRT	POS	LG	TEAM
Upton	Justin	R	R	Yes	No	Yes	OF	NL	Diamondbacks
Utley	Chase	R	L	Yes	Yes	Yes	2B	NL	Phillies
Verlander	Justin	R	R	Yes	Yes	Yes	P	AL	Tigers
Wells	Vernon	R	R	Yes	No	Yes	OF	AL	Blue Jays
Wilson	Preston	R	R	Yes	No	Yes	OF	NL	Marlins
Wright	David	R	R	Yes	Yes	Yes	3B	NL	Mets
Young	Chris	R	R	Yes	No	Yes	OF	NL	Diamondbacks
Young	Michael	R	R	Yes	No	Yes	3B	AL	Rangers
Zambrano	Carlos	R	S	No	No	Yes	P	NL	Cubs
Zimmerman	Ryan	R	R	Yes	Yes	Yes	3B	NL	Nationals
Zito	Barry	L	L	Yes	Yes	No	P	NL	Giants

APPENDIX C

Major League Baseball Averages

Table C1

MLB 25-Man Opening Day Payrolls by Year (in Dollars)

Team	2001	2002	2003	2004
Arizona	85,508,000	102,819,999	80,640,333	69,780,750
Atlanta	91,936,167	93,470,367	106,243,667	90,182,500
Baltimore	74,279,540	60,493,387	73,877,500	51,623,333
Boston	110,035,883	108,366,060	99,946,500	127,298,500
Chicago Cubs	64,715,833	75,690,833	79,868,333	90,560,000
Chicago White Sox	65,628,667	57,052,833	51,010,000	65,212,500
Cincinnati	48,986,000	45,050,390	59,355,667	46,615,250
Cleveland	93,360,000	78,909,499	48,584,834	34,319,300
Colorado	71,541,333	56,851,043	67,179,667	65,445,167
Detroit	49,456,167	55,048,000	49,168,000	46,832,000
Houston	60,897,667	63,448,417	71,040,000	75,397,000
Kansas City	35,422,500	47,257,000	40,518,000	47,609,000
L.A. Angels	47,735,167	61,721,667	79,031,667	100,534,667
L.A. Dodgers	109,105,952	94,850,953	105,872,620	92,902,001
Miami	35,762,500	41,979,917	45,050,000	42,143,042
Milwaukee	43,886,883	50,287,833	40,627,000	27,528,500
Minnesota	24,130,000	40,225,000	55,505,000	53,585,000
N.Y. Mets	93,674,429	94,633,593	117,476,429	96,660,970
N.Y. Yankees	112,287,143	125,928,583	152,749,814	184,193,950
Oakland	33,810,750	40,004,167	50,260,834	59,425,667
Philadelphia	41,663,833	57,954,999	70,780,000	93,219,167
Pittsburgh	57,760,833	42,323,599	54,812,429	32,227,929
San Diego	38,882,833	41,425,000	47,928,000	55,384,833
Seattle	74,720,833	80,282,668	86,959,167	81,515,834
San Francisco	63,280,167	78,299,835	82,852,167	82,019,166
St. Louis	78,538,333	74,660,875	83,786,666	83,228,333
Tampa Bay	56,980,000	34,380,000	19,630,000	29,556,667
Texas	87,819,000	105,726,122	103,491,667	55,050,417
Toronto	76,896,000	76,864,333	51,269,000	50,071,000
Washington*	35,159,500	38,670,500	51,948,500	41,197,500
League Total Salary	1,963,861,913	2,024,677,472	2,127,463,461	2,071,319,943
Team Avg. Salary	65,462,064	67,489,249	70,915,449	69,043,998
Avg. Player Salary	**2,618,483**	**2,699,570**	**2,836,618**	**2,761,760**

Team	2005	2006	2007	2008
Arizona	62,329,166	59,684,226	52,067,546	66,202,712
Atlanta	86,457,302	90,156,876	87,290,833	102,365,683
Baltimore	73,914,333	72,585,582	93,554,808	67,196,246
Boston	123,505,125	120,099,824	143,026,214	133,390,035
Chicago Cubs	87,032,933	94,424,499	99,670,332	118,345,833
Chicago White Sox	75,178,000	102,750,667	108,671,833	121,189,332
Cincinnati	61,892,583	60,909,519	68,904,980	74,117,695
Cleveland	41,502,500	56,031,500	61,673,267	78,970,066
Colorado	48,155,000	41,233,000	54,424,000	68,655,500
Detroit	69,092,000	82,612,866	95,180,369	137,685,196
Houston	76,779,000	92,551,503	87,759,000	88,930,414
Kansas City	36,881,000	47,294,000	67,166,500	58,245,500
L.A. Angels	97,725,322	103,472,000	109,251,333	119,216,333
L.A. Dodgers	83,039,000	98,447,187	108,454,524	118,588,536
Miami	60,408,834	14,998,500	30,507,000	21,811,500
Milwaukee	39,934,833	57,568,333	70,986,500	80,937,499
Minnesota	56,186,000	63,396,006	71,439,500	56,932,766
N.Y. Mets	101,305,821	101,084,963	115,231,663	137,793,376
N.Y. Yankees	208,306,817	194,663,079	189,639,045	209,081,577
Oakland	55,425,762	62,242,079	79,366,940	47,967,126
Philadelphia	95,522,000	88,273,333	89,428,213	98,269,880
Pittsburgh	38,133,000	46,717,750	38,133,000	48,689,783
San Diego	63,290,833	69,896,642	58,110,567	73,677,616
Seattle	87,754,334	87,959,833	106,460,833	117,666,482
San Francisco	90,199,500	90,056,419	90,219,056	76,594,500
St. Louis	92,106,833	88,891,371	90,286,823	99,624,449
Tampa Bay	29,679,067	35,417,967	24,123,500	43,745,597
Texas	55,849,000	68,228,662	68,318,675	67,712,326
Toronto	45,719,500	71,915,000	81,942,800	97,973,900
Washington*	48,581,500	63,143,000	37,347,500	54,961,000
League Total Salary	2,191,886,898	2,326,706,186	2,478,637,154	2,686,538,458
Team Avg. Salary	73,062,897	77,556,873	82,621,238	89,551,282
Avg. Player Salary	**2,922,516**	**3,102,275**	**3,304,850**	**3,582,051**

Team	2009	2010	2011	2012
Arizona	73,516,666	75,484,833	56,489,833	75,417,833
Atlanta	96,726,166	83,890,334	91,044,524	93,529,667
Baltimore	67,101,666	73,812,500	86,942,583	84,102,333
Boston	121,745,999	168,109,833	163,822,475	175,249,119
Chicago Cubs	134,809,000	144,359,000	134,004,000	109,316,000
Chicago White Sox	96,068,500	103,080,000	127,789,000	97,669,500
Cincinnati	73,558,500	76,151,500	80,826,667	87,826,167
Cleveland	81,579,166	61,453,967	49,426,567	65,430,300
Colorado	75,201,000	84,268,333	82,311,404	81,135,571
Detroit	115,085,145	133,995,400	106,953,000	133,995,400
Houston	102,996,500	92,605,500	76,969,000	60,799,000
Kansas City	70,519,333	74,985,210	38,176,000	64,001,725
L.A. Angels	113,709,000	121,113,867	141,755,666	151,381,000
L.A. Dodgers	100,414,592	102,090,283	119,771,499	105,419,833
Miami	36,834,000	47,429,719	57,695,000	101,628,000
Milwaukee	80,182,502	90,408,000	83,590,833	98,150,833
Minnesota	65,299,266	97,659,167	113,237,000	100,435,000
N.Y. Mets	149,373,987	126,498,096	142,797,166	94,508,822
N.Y. Yankees	201,449,189	213,359,389	207,047,964	209,792,900
Oakland	62,310,000	58,304,900	67,094,000	52,873,000
Philadelphia	113,004,046	138,178,379	165,976,381	172,093,902
Pittsburgh	48,693,000	39,068,000	42,047,000	51,932,333
San Diego	43,734,200	37,799,300	45,869,140	55,621,900
Seattle	98,904,166	91,143,333	94,623,191	84,928,100
San Francisco	82,616,450	96,277,833	118,198,333	131,355,298
St. Louis	88,528,409	94,220,500	109,048,000	111,858,500
Tampa Bay	63,313,034	72,847,133	42,171,308	63,627,200
Texas	68,178,798	64,810,570	92,124,290	120,836,000
Toronto	80,538,300	78,689,357	70,567,800	83,739,200
Washington*	60,328,000	66,275,000	68,306,929	92,534,929
League Total Salary	2,666,318,580	2,808,369,236	2,876,676,553	3,011,189,365
Team Avg. Salary	88,877,286	93,612,308	95,889,218	100,372,979
Avg. Player Salary	**3,555,091**	**3,744,492**	**3,835,569**	**4,014,919**

Team	2013	2014	2015	2016
Arizona	86,300,500	112,315,500	88,187,000	98,172,683
Atlanta	90,039,583	112,008,731	97,086,461	86,580,791
Baltimore	92,238,333	107,976,153	118,975,833	147,693,713
Boston	154,555,500	156,350,125	184,345,996	197,899,679
Chicago Cubs	106,837,810	92,677,368	120,337,385	171,611,834
Chicago White Sox	118,914,500	90,062,659	118,619,378	114,498,667
Cincinnati	106,855,533	114,170,439	115,373,953	89,871,228
Cleveland	80,605,733	85,416,235	87,997,101	96,304,400
Colorado	73,949,071	93,581,071	97,069,630	112,645,071
Detroit	148,693,600	163,635,500	172,792,250	198,593,000
Houston	26,105,600	50,485,800	72,464,200	96,893,700
Kansas City	81,871,725	92,185,521	112,857,025	131,487,125
L.A. Angels	137,271,250	154,546,500	146,341,583	164,673,333
L.A. Dodgers	216,753,286	229,335,934	271,608,629	249,781,668
Miami	50,526,900	45,825,400	69,031,500	74,364,500
Milwaukee	88,828,333	103,697,967	104,237,000	63,908,300
Minnesota	82,010,000	85,465,000	108,262,500	105,333,700
N.Y. Mets	93,684,590	84,951,365	101,344,283	135,188,085
N.Y. Yankees	228,106,125	197,230,609	217,758,571	225,997,792
Oakland	61,964,500	82,320,900	83,889,167	86,806,234
Philadelphia	159,585,714	177,729,967	146,889,667	88,646,667
Pittsburgh	66,805,000	71,929,333	90,053,000	99,945,500
San Diego	68,333,600	90,636,600	108,387,033	99,284,500
Seattle	84,199,643	90,239,643	123,225,843	142,330,193
San Francisco	136,908,777	149,089,475	173,179,277	172,086,610
St. Louis	116,790,787	111,250,000	122,066,500	145,553,500
Tampa Bay	61,928,975	76,872,384	75,794,234	66,681,991
Texas	125,340,100	133,525,939	141,733,540	158,955,390
Toronto	119,277,800	137,177,700	125,915,800	136,782,027
Washington*	118,289,679	137,356,579	162,014,559	145,178,886
League Total Salary	3,183,572,547	3,430,046,397	3,757,838,898	3,903,750,767
Team Avg. Salary	106,119,085	114,334,880	125,261,297	130,125,026
Avg. Player Salary	**4,244,763**	**4,573,395**	**5,010,452**	**5,205,001**

*The Montreal Expos became the Washington Nationals in 2005.

Table C2

MLB Team WAR by Year

Team	2001	2002	2003	2004	2005	2006
Arizona	48.6	47.6	36.2	5.8	19.5	30.5
Atlanta	35.6	46.3	45.5	41.9	40.4	32.6
Baltimore	18.8	29.7	31.6	38.7	32.7	26.3
Boston	38.7	53.1	54.7	54.5	47.9	37.6
Chicago Cubs	37.4	25.2	37.2	45.6	35.8	20.2
Chicago White Sox	36.9	36.9	43.6	36.1	46.1	42.1
Cincinnati	19.8	23.2	11.9	13.2	23.4	29.8
Cleveland	41.4	25.4	30.4	36.8	52.7	40.8
Colorado	37.2	17.6	22.6	25.2	18.9	32.0
Detroit	23.6	11.9	4.2	35.1	29.9	47.9
Houston	39.8	35.1	41.4	40.1	41.2	32.0
Kansas City	26.2	21.2	31.5	16.6	9.0	14.4
L.A. Angels	39.8	55.2	34.0	43.5	46.4	41.2
L.A. Dodgers	31.0	39.0	33.5	40.0	17.4	38.3
Miami	26.4	25.9	38.3	30.5	31.5	32.2
Milwaukee	21.7	11.5	16.9	21.9	34.3	19.7
Minnesota	41.4	43.1	42.3	45.8	37.1	47.2
N.Y. Mets	24.6	28.2	18.1	26.1	40.2	41.0
N.Y. Yankees	45.1	56.5	57.1	45.6	48.5	51.3
Oakland	56.0	52.8	47.5	44.2	46.7	38.6
Philadelphia	29.3	32.6	36.9	34.8	35.8	38.0
Pittsburgh	10.2	18.6	26.7	23.8	23.6	21.4
San Diego	27.7	17.2	16.6	38.9	26.8	41.9
Seattle	67.8	49.1	50.4	28.7	27.5	32.9
San Francisco	41.7	50.6	40.0	36.4	20.6	23.3
St. Louis	41.2	40.7	35.9	48.0	47.2	31.1
Tampa Bay	16.5	15.3	26.4	24.3	21.3	20.7
Texas	33.2	34.6	24.5	40.4	34.6	35.8
Toronto	38.1	33.1	41.7	27.4	41.0	45.3
Washington*	11.7	31.1	29.7	17.1	30.2	21.5
League Total WAR	1007.4	1008.3	1007.3	1007.0	1008.2	1007.6
Team Avg. WAR	33.6	33.6	33.6	33.6	33.6	33.6
MLB Player Avg. WAR	**1.343**	**1.344**	**1.343**	**1.343**	**1.344**	**1.343**

Team	2007	2008	2009	2010	2011
Arizona	30.0	31.0	26.6	17.6	34.9
Atlanta	39.5	29.1	42.8	41.5	32.8
Baltimore	27.2	24.3	22.6	26.1	21.3
Boston	60.3	54.1	51.6	47.5	50.6
Chicago Cubs	37.4	50.2	34.9	25.9	21.6
Chicago White Sox	22.3	45.2	34.8	43.5	31.0
Cincinnati	24.4	21.8	25.1	39.8	31.8
Cleveland	46.7	38.7	26.0	25.6	29.1
Colorado	41.6	26.5	40.1	37.1	25.8
Detroit	40.6	31.2	33.9	36.5	41.8
Houston	23.6	27.1	20.0	15.2	13.3
Kansas City	28.6	29.9	20.0	23.6	34.5
L.A. Angels	41.7	41.0	43.7	32.5	44.0
L.A. Dodgers	31.7	36.4	48.9	27.0	33.9
Miami	23.4	28.3	32.9	30.7	27.4
Milwaukee	32.5	41.1	25.5	25.3	41.3
Minnesota	35.6	37.8	40.2	47.2	13.1
N.Y. Mets	38.6	39.1	25.8	30.8	26.9
N.Y. Yankees	54.8	43.6	56.5	49.6	59.1
Oakland	35.9	32.3	31.1	42.3	31.1
Philadelphia	38.2	42.4	40.7	44.5	53.8
Pittsburgh	17.9	15.6	17.2	4.0	21.1
San Diego	37.8	21.1	18.1	36.2	25.2
Seattle	34.6	20.8	34.3	21.6	24.7
San Francisco	26.1	18.8	35.3	46.7	34.4
St. Louis	22.0	41.0	41.3	40.7	35.9
Tampa Bay	26.0	50.4	42.5	49.8	49.3
Texas	27.8	28.1	39.4	41.4	55.0
Toronto	41.4	46.9	40.7	38.6	35.1
Washington*	20.9	13.8	15.0	19.8	29.3
League Total WAR	1009.1	1007.6	1007.5	1008.6	1009.1
Team Avg. WAR	33.6	33.6	33.6	33.6	33.6
MLB Player Avg. WAR	**1.345**	**1.343**	**1.343**	**1.345**	**1.345**

Team	2012	2013	2014	2015	2016
Arizona	35.9	30.9	18.3	38.3	21.0
Atlanta	38.8	45.8	30.6	16.6	19.1
Baltimore	38.7	36.6	46.8	35.5	38.1
Boston	26.6	56.1	25.5	37.0	52.6
Chicago Cubs	13.8	26.4	23.5	41.3	57.4
Chicago White Sox	44.6	24.2	26.9	24.2	34.8
Cincinnati	45.5	43.9	29.8	23.5	18.9
Cleveland	18.8	39.2	38.1	39.3	47.1
Colorado	23.8	32.1	26.4	24.5	31.0
Detroit	41.3	55.2	41.6	25.0	37.3
Houston	10.2	8.7	25.8	46.6	37.0
Kansas City	30.2	39.3	40.5	42.1	31.8
L.A. Angels	44.7	34.6	46.7	29.3	30.2
L.A. Dodgers	34.9	47.4	46.4	43.5	38.8
Miami	18.2	18.5	28.3	24.9	31.1
Milwaukee	31.5	28.4	32.0	18.3	30.3
Minnesota	23.9	19.8	25.8	27.9	18.5
N.Y. Mets	24.0	21.0	29.4	37.0	38.1
N.Y. Yankees	52.3	30.6	32.6	41.7	33.0
Oakland	48.4	43.6	45.4	29.3	23.4
Philadelphia	29.9	16.9	25.4	14.2	13.4
Pittsburgh	24.2	42.9	40.6	41.9	30.0
San Diego	27.6	23.5	26.4	21.6	16.6
Seattle	31.8	23.1	39.6	27.9	38.6
San Francisco	37.9	27.4	35.4	40.7	42.2
St. Louis	43.0	41.9	33.9	49.9	39.6
Tampa Bay	46.7	41.1	36.6	38.5	31.4
Texas	47.7	48.3	20.4	37.0	35.8
Toronto	29.3	30.7	38.8	50.5	42.2
Washington*	45.1	31.3	46.9	36.4	44.6
League Total WAR	1009.3	1009.4	1004.4	1004.4	1003.9
Team Avg. WAR	33.6	33.6	33.5	33.5	33.5
MLB Player Avg. WAR	**1.346**	**1.346**	**1.339**	**1.339**	**1.339**

*The Montreal Expos became the Washington Nationals in 2005.

APPENDIX D

Individual Player Data For Contract Success

Table D1

Abreu, Bobby

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2002	28	6,333,333	5.8	1,091,953.97	2,008,608.63	Yes
2003	29	9,100,000	5.3	1,716,981.13	2,112,150.41	Yes
2004	30	10,600,000	6.5	1,630,769.23	2,056,411.02	Yes
2005	31	13,100,000	3.5	3,742,857.14	2,174,491.07	No
2006	32	13,600,000	3.9	3,487,179.49	2,309,959.05	No

Total	52,733,333	25	11,669,741	10,661,620	
Avg.	10,546,666.60	5	2,109,333.32	2,132,324.04	N/A

Years Successful	3/5
% Successful	60.00%

Was the contract successful?	Yes

Table D2

Ackley, Dustin

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	22	400,000	0.0*	0.00	2,784,008.92	No
2011	23	1,500,000	3.8	394,736.84	2,851,724.16	Yes
2012	24	1,500,000	2.6	576,923.08	2,982,852.15	Yes
2013	25	1,500,000	1.1	1,363,636.36	3,153,612.93	Yes
2014	26	1,700,000	1.9	894,736.84	3,415,530.25	Yes

Total	6,600,000.00	9.40	3,230,033.12	15,187,728.41	
Avg.	1,320,000.00	1.88	702,127.66	3,037,545.68	N/A

Years Successful	4/5
% Successful	80.00%

Was the contract successful?	Yes

* Ackley played in the Minor Leagues in 2010.

Table D3

Alonso, Yonder

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	21	50,000	0.0*	0.00	2,667,201.04	No
2009	22	400,000	0.0*	0.00	2,647,126.58	No
2010	23	500,000	0.0	0.00	2,784,008.92	No
2011	24	600,000	0.2	3,000,000.00	2,851,724.16	No
2012	25	1,000,000	1.5	666,666.67	2,982,852.15	Yes

Total	2,550,000.00	1.70	3,666,666.67	13,932,912.86	
Avg.	510,000.00	0.34	1,500,000.00	2,786,582.57	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

*Alonso played in the Minor Leagues in 2008 and 2009.

Table D4

Arguelles, Noel

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	20	1,380,000	0.0*	0.00	2,784,008.92	No
2011	21	1,380,000	0.0*	0.00	2,851,724.16	No
2012	22	1,380,000	0.0*	0.00	2,982,852.15	No
2013	23	1,380,000	0.0*	0.00	3,153,612.93	No
2014	24	1,380,000	0.0*	0.00	3,415,530.25	No

Total	6,900,000.00	0.00	0.00	15,187,728.41	
Avg.	1,380,000.00	0.00	0.00	3,037,545.68	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

*Arguelles has never played in the Major Leagues.

Table D5

Beltran, Carlos

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	28	11,571,429	2.9	3,990,147.93	2,174,491.07	No
2006	29	13,571,428	8.2	1,655,052.20	2,309,959.05	Yes
2007	30	13,571,429	5.4	2,513,227.59	2,457,137.55	No
2008	31	18,622,809	6.9	2,698,957.83	2,667,201.04	No
2009	32	19,243,682	3.6	5,345,467.22	2,647,126.58	No
2010	33	19,401,569	0.7	27,716,527.14	2,784,008.92	No
2011	34	19,325,436	4.6	4,201,181.74	2,851,724.16	No

Total	115,307,782.00	32.30	48,120,561.65	17,891,648.38	
Avg.	16,472,540.29	4.61	3,569,900.37	2,555,949.77	N/A

Years Successful	1/7
% Successful	14.29%

Was the contract successful?	No

Table D6

Beltre, Adrian

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	26	11,400,000	3.2	3,562,500.00	2,174,491.07	No
2006	27	12,900,000	5.4	2,388,888.89	2,309,959.05	No
2007	28	12,900,000	3.8	3,394,736.84	2,457,137.55	No
2008	29	13,400,000	5.6	2,392,857.14	2,667,201.04	Yes
2009	30	13,400,000	3.3	4,060,606.06	2,647,126.58	No

Total	64,000,000.00	21.30	15,799,588.93	12,255,915.29	
Avg.	12,800,000.00	4.26	3,004,694.84	2,451,183.06	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D7

Berkman, Lance

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	29	10,500,000	3.2	3,281,250.00	2,174,491.07	No
2006	30	14,500,000	6.0	2,416,666.67	2,309,959.05	No
2007	31	14,500,000	2.2	6,590,909.09	2,457,137.55	No
2008	32	14,500,000	6.8	2,132,352.94	2,667,201.04	Yes
2009	33	14,500,000	3.5	4,142,857.14	2,647,126.58	No
2010	34	14,500,000	1.4	10,357,142.86	2,784,008.92	No

Total	83,000,000.00	23.10	28,921,178.70	15,039,924.21	
Avg.	13,833,333.33	3.85	3,593,073.59	2,506,654.04	N/A

Years Successful	1/6
% Successful	16.67%

Was the contract successful?	No

Table D8

Blalock, Hank

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2004	23	550,000	4.6	119,565.22	2,056,411.02	Yes
2005	24	850,000	0.3	2,833,333.33	2,174,491.07	No
2006	25	3,050,000	0.2	15,250,000.00	2,309,959.05	No
2007	26	4,800,000	1.3	3,692,307.69	2,457,137.55	No
2008	27	6,000,000	0.9	6,666,666.67	2,667,201.04	No

Total	15,250,000.00	7.30	28,561,872.91	11,665,199.73	
Avg.	3,050,000.00	1.46	2,089,041.10	2,333,039.95	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D9

Bonds, Barry

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2002	37	15,000,000	11.8	1,271,186.44	2,008,608.63	Yes
2003	38	15,500,000	9.2	1,684,782.61	2,112,150.41	Yes
2004	39	18,000,000	10.6	1,698,113.21	2,056,411.02	Yes
2005	40	22,000,000	0.6	36,666,666.67	2,174,491.07	No
2006	41	19,331,470	4.0	4,832,867.50	2,309,959.05	No

Total	89,831,470.00	36.20	46,153,616.42	10,661,620.18	
Avg.	17,966,294.00	7.24	2,481,532.32	2,132,324.04	N/A

Years Successful	3/5
% Successful	60.00%

Was the contract successful?	Yes

Table D10

Braun, Ryan

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	24	455,000	4.5	101,111.11	2,667,201.04	Yes
2009	25	1,032,500	6.2	166,532.26	2,647,126.58	Yes
2010	26	1,287,500	5.7	225,877.19	2,784,008.92	Yes
2011	27	4,287,500	7.8	549,679.49	2,851,724.16	Yes
2012	28	6,000,000	6.9	869,565.22	2,982,852.15	Yes
2013	29	8,500,000	2.1	4,047,619.05	3,153,612.93	No
2014	30	10,000,000	1.0	10,000,000.00	3,415,530.25	No
2015	31	13,000,000	3.8	3,421,052.63	3,741,935.77	Yes

Total	44,562,500.00	38.00	19,381,436.95	24,243,991.81	
Avg.	5,570,312.50	4.75	1,172,697.37	3,030,498.98	N/A

Years Successful	6/8
% Successful	75.00%

Was the contract successful?	Yes

Table D11

Burnett, A.J.

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	32	16,500,000	4.4	3,750,000.00	2,647,126.58	No
2010	33	16,500,000	0.0	0.00	2,784,008.92	No
2011	34	16,500,000	0.8	20,625,000.00	2,851,724.16	No
2012	35	16,500,000	2.2	7,500,000.00	2,982,852.15	No
2013	36	16,500,000	1.7	9,705,882.35	3,153,612.93	No

Total	82,500,000.00	9.10	41,580,882.35	14,419,324.75	
Avg.	16,500,000.00	1.82	9,065,934.07	2,883,864.95	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

Table D12

Burrell, Pat

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2003	26	1,250,000	0.6	2,083,333.33	2,112,150.41	Yes
2004	27	4,250,000	1.5	2,833,333.33	2,056,411.02	No
2005	28	7,250,000	3.6	2,013,888.89	2,174,491.07	Yes
2006	29	9,750,000	1.1	8,863,636.36	2,309,959.05	No
2007	30	13,250,000	1.5	8,833,333.33	2,457,137.55	No
2008	31	14,250,000	2.3	6,195,652.17	2,667,201.04	No

Total	50,000,000.00	10.60	30,823,177.43	13,777,350.14	
Avg.	8,333,333.33	1.77	4,716,981.13	2,296,225.02	N/A

Years Successful	2/6
% Successful	33.33%

Was the contract successful?	No

Table D13

Cabrera, Miguel

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	25	11,300,000	2.7	4,185,185.19	2,667,201.04	No
2009	26	14,383,049	5.1	2,820,205.69	2,647,126.58	No
2010	27	20,000,000	6.4	3,125,000.00	2,784,008.92	No
2011	28	20,000,000	7.5	2,666,666.67	2,851,724.16	Yes
2012	29	21,000,000	7.2	2,916,666.67	2,982,852.15	Yes
2013	30	21,000,000	7.3	2,876,712.33	3,153,612.93	Yes
2014	31	22,000,000	5.0	4,400,000.00	3,415,530.25	No
2015	32	22,000,000	5.2	4,230,769.23	3,741,935.77	No

Total	151,683,049.00	46.40	27,221,205.76	24,243,991.81	
Avg.	18,960,381.13	5.80	3,269,031.23	3,030,498.98	N/A

Years Successful	3/8
% Successful	37.50%

Was the contract successful?	No

Table D14

Carpenter, Chris

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	32	8,500,000	0.0	0.00	2,457,137.55	No
2008	33	10,500,000	0.4	26,250,000.00	2,667,201.04	No
2009	34	13,302,583	6.5	2,046,551.23	2,647,126.58	Yes
2010	35	15,840,971	3.2	4,950,303.44	2,784,008.92	No
2011	36	14,259,403	3.5	4,074,115.14	2,851,724.16	No

Total	62,402,957.00	13.60	37,320,969.81	13,407,198.26	
Avg.	12,480,591.40	2.72	4,588,452.72	2,681,439.65	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D15

Chapman, Aroldis

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	22	1,000,000	0.4	2,500,000.00	2,784,008.92	Yes
2011	23	3,835,772	0.4	9,589,430.00	2,851,724.16	No
2012	24	2,000,000	3.6	555,555.56	2,982,852.15	Yes
2013	25	2,000,000	2.0	1,000,000.00	3,153,612.93	Yes
2014	26	5,000,000	1.9	2,631,578.95	3,415,530.25	Yes
2015	27	8,050,000	2.7	2,981,481.48	3,741,935.77	Yes

Total	21,885,772.00	11.00	19,258,045.98	18,929,664.18	
Avg.	3,647,628.67	1.83	1,989,615.64	3,154,944.03	N/A

Years Successful	5/6
% Successful	83.33%

Was the contract successful?	Yes

Table D16

Chavez, Eric

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	27	8,500,000	4.8	1,770,833.33	2,174,491.07	Yes
2006	28	9,500,000	2.8	3,392,857.14	2,309,959.05	No
2007	29	9,500,000	2.1	4,523,809.52	2,457,137.55	No
2008	30	11,500,000	0.2	57,500,000.00	2,667,201.04	No
2009	31	11,500,000	0.0	0.00	2,647,126.58	No
2010	32	12,500,000	0.0	0.00	2,784,008.92	No

Total	63,000,000.00	9.90	67,187,500.00	15,039,924.21	
Avg.	10,500,000.00	1.65	6,363,636.36	2,506,654.04	N/A

Years Successful	1/6
% Successful	16.67%

Was the contract successful?	No

Table D17

Crosby, Bobby

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	25	350,000	3.7	94,594.59	2,174,491.07	Yes
2006	26	800,000	0.1	8,000,000.00	2,309,959.05	No
2007	27	2,550,000	0.4	6,375,000.00	2,457,137.55	No
2008	28	3,550,000	1.0	3,550,000.00	2,667,201.04	No
2009	29	5,300,000	0.0	0.00	2,647,126.58	No

Total	12,550,000.00	5.20	18,019,594.59	12,255,915.29	
Avg.	2,510,000.00	1.04	2,413,461.54	2,451,183.06	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D18

DeJesus, David

Year	**Age**	**Salary**	**WAR**	**$/WAR**	**MLB $/WAR**	**Success**
2006	26	500,000	3.0	166,666.67	2,309,959.05	Yes
2007	27	2,000,000	2.6	769,230.77	2,457,137.55	Yes
2008	28	2,500,000	2.2	1,136,363.64	2,667,201.04	Yes
2009	29	3,600,000	2.2	1,636,363.64	2,647,126.58	Yes
2010	30	4,700,000	1.9	2,473,684.21	2,784,008.92	Yes

Total	13,300,000.00	11.90	6,182,308.92	12,865,433.14	
Avg.	2,660,000.00	2.38	1,117,647.06	2,573,086.63	N/A

Years Successful	5/5
% Successful	100%

Was the contract successful?	Yes

Table D19

Drew, J.D.

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	31	14,000,000	2.1	6,666,666.67	2,457,137.55	No
2008	32	14,000,000	2.6	5,384,615.38	2,667,201.04	No
2009	33	14,000,000	4.4	3,181,818.18	2,647,126.58	No
2010	34	14,000,000	3.1	4,516,129.03	2,784,008.92	No
2011	35	14,000,000	0.0	0.00	2,851,724.16	No

Total	70,000,000.00	12.20	19,749,229.27	13,407,198.26	
Avg.	14,000,000.00	2.44	5,737,704.92	2,681,439.65	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

Table D20

Drew, Stephen

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	22	300,000	0.0*	0.00	2,174,491.07	No
2006	23	300,000	1.7	176,470.59	2,309,959.05	Yes
2007	24	1,500,000	0.0	0.00	2,457,137.55	No
2008	25	1,500,000	3.0	500,000.00	2,667,201.04	Yes
2009	26	1,500,000	2.9	517,241.38	2,647,126.58	Yes

Total	5,100,000.00	7.60	1,193,711.97	12,255,915.29	
Avg.	1,020,000.00	1.52	671,052.63	2,451,183.06	N/A

Years Successful	3/5
% Successful	60.00%

Was the contract successful?	Yes

*Drew played in the Minor Leagues in 2005.

Table D21

Gallardo, Yovani

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	24	450,000	1.7	264,705.88	2,784,008.92	Yes
2011	25	3,500,000	2.3	1,521,739.13	2,851,724.16	Yes
2012	26	5,500,000	2.9	1,896,551.72	2,982,852.15	Yes
2013	27	7,750,000	0.5	15,500,000.00	3,153,612.93	No
2014	28	11,250,000	2.5	4,500,000.00	3,415,530.25	No

Total	28,450,000.00	9.90	23,682,996.74	15,187,728.41	
Avg.	5,690,000.00	1.98	2,873,737.37	3,037,545.68	N/A

Years Successful	3/5
% Successful	60.00%

Was the contract successful?	Yes

Table D22

Giambi, Jason

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2002	31	10,428,571	7.1	1,468,812.82	2,008,608.63	Yes
2003	32	11,428,571	4.8	2,380,952.29	2,112,150.41	No
2004	33	12,428,571	0.0	0.00	2,056,411.02	No
2005	34	13,428,571	4.6	2,919,254.57	2,174,491.07	No
2006	35	20,428,571	2.8	7,295,918.21	2,309,959.05	No
2007	36	23,428,571	0.9	26,031,745.56	2,457,137.55	No
2008	37	23,428,571	1.9	12,330,826.84	2,667,201.04	No

Total	114,999,997.00	22.10	52,427,510.29	15,785,958.77	
Avg.	16,428,571.00	3.16	5,203,619.77	2,255,136.97	N/A

Years Successful	1/7
% Successful	14.29%

Was the contract successful?	No

Table D23

Granderson, Curtis

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	27	1,000,000	3.9	256,410.26	2,667,201.04	Yes
2009	28	3,500,000	4.3	813,953.49	2,647,126.58	Yes
2010	29	5,500,000	4.4	1,250,000.00	2,784,008.92	Yes
2011	30	8,250,000	5.7	1,447,368.42	2,851,724.16	Yes
2012	31	10,000,000	3.0	3,333,333.33	2,982,852.15	No

Total	28,250,000.00	21.30	7,101,065.50	13,932,912.86	
Avg.	5,650,000.00	4.26	1,326,291.08	2,786,582.57	N/A

Years Successful	4/5
% Successful	80.00%

Was the contract successful?	Yes

Table D24

Guerrero, Vladimir

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2004	29	11,000,000	5.6	1,964,285.71	2,056,411.02	Yes
2005	30	12,500,000	5.7	2,192,982.46	2,174,491.07	No
2006	31	13,500,000	3.7	3,648,648.65	2,309,959.05	No
2007	32	14,500,000	4.6	3,152,173.91	2,457,137.55	No
2008	33	15,500,000	2.5	6,200,000.00	2,667,201.04	No

Total	67,000,000.00	22.10	17,158,090.73	11,665,199.73	
Avg.	13,400,000.00	4.42	3,031,674.21	2,333,039.95	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D25

Hampton, Mike

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2001	28	10,500,000	0.3	35,000,000.00	1,949,726.73	No
2002	29	9,503,543	0.0	0.00	2,008,608.63	No
2003	30	13,625,000	1.9	7,171,052.63	2,112,150.41	No
2004	31	14,625,000	1.5	9,750,000.00	2,056,411.02	No
2005	32	15,125,000	1.1	13,750,000.00	2,174,491.07	No
2006	33	14,503,543	0.0*	0.00	2,309,959.05	No
2007	34	14,500,000	0.0*	0.00	2,457,137.55	No
2008	35	15,975,184	0.1	159,751,840.00	2,667,201.04	No

Total	108,357,270.00	4.90	225,422,892.63	17,735,685.50	
Avg.	13,544,658.75	0.61	22,113,728.57	2,216,960.69	N/A

Years Successful	0/8
% Successful	0.00%

Was the contract successful?	No

*Did not play in the Major or Minor Leagues due to injury.

Table D26

Helton, Todd

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2001	27	4,950,000	7.8	634,615.38	1,949,726.73	Yes
2002	28	5,000,000	6.3	793,650.79	2,008,608.63	Yes
2003	29	10,600,000	6.2	1,709,677.42	2,112,150.41	Yes
2004	30	11,600,000	8.3	1,397,590.36	2,056,411.02	Yes
2005	31	12,600,000	4.6	2,739,130.43	2,174,491.07	No
2006	32	16,600,000	2.2	7,545,454.55	2,309,959.05	No
2007	33	16,600,000	4.4	3,772,727.27	2,457,137.55	No
2008	34	16,600,000	1.0	16,600,000.00	2,667,201.04	No
2009	35	16,600,000	3.3	5,030,303.03	2,647,126.58	No
2010	36	17,775,000	0.2	88,875,000.00	2,784,008.92	No
2011	37	20,275,000	2.5	8,110,000.00	2,851,724.16	No

Total	149,200,000.00	46.80	137,208,149.24	26,018,545.17	
Avg.	13,563,636.36	4.25	3,188,034.19	2,365,322.29	N/A

Years Successful	4/11
% Successful	36.36%

Was the contract successful?	No

Table D27

Hernandez, Felix

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	24	7,200,000	7.1	1,014,084.51	2,784,008.92	Yes
2011	25	11,700,000	3.7	3,162,162.16	2,851,724.16	No
2012	26	18,500,000	4.7	3,936,170.21	2,982,852.15	No
2013	27	19,857,000	5.2	3,818,653.85	3,153,612.93	No
2014	28	22,857,000	6.8	3,361,323.53	3,415,530.25	Yes

Total	80,114,000.00	27.50	15,292,394.26	15,187,728.41	
Avg.	16,022,800.00	5.50	2,913,236.36	3,037,545.68	N/A

Years Successful	2/5
% Successful	40.00%

Was the contract successful?	No

Table D28

Holliday, Matt

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	30	16,333,327	5.9	2,768,360.51	2,784,008.92	Yes
2011	31	16,317,774	3.9	4,184,044.62	2,851,724.16	No
2012	32	17,000,000	4.0	4,250,000.00	2,982,852.15	No
2013	33	17,000,000	2.5	6,800,000.00	3,153,612.93	No
2014	34	17,000,000	3.3	5,151,515.15	3,415,530.25	No
2015	35	17,000,000	0.8	21,250,000.00	3,741,935.77	No
2016	36	17,000,000	0.3	56,666,666.67	3,887,230.02	No

Total	117,651,101.00	20.70	101,070,586.94	22,816,894.20	
Avg.	16,807,300.14	2.96	5,683,628.07	3,259,556.31	N/A

Years Successful	1/7
% Successful	14.29%

Was the contract successful?	No

Table D29

Humber, Philip

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	22	762,500	0.0*	0.00	2,174,491.07	No
2006	23	762,500	0.1**	7,625,000.00	2,309,959.05	No
2007	24	762,500	0.0**	0.00	2,457,137.55	No
2008	25	762,500	0.1**	7,625,000.00	2,667,201.04	No
2009	26	1,150,000	0.0**	0.00	2,647,126.58	No

Total	4,200,000.00	0.20	15,250,000.00	12,255,915.29	
Avg.	840,000.00	0.04	21,000,000.00	2,451,183.06	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

*Humber played in the Minor Leagues in 2005.

**Humber played the majority of his games in the Minor Leagues.

Table D30

Hunter, Torii

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	32	16,500,000	3.5	4,714,285.71	2,667,201.04	No
2009	33	18,000,000	5.2	3,461,538.46	2,647,126.58	No
2010	34	18,500,000	3.0	6,166,666.67	2,784,008.92	No
2011	35	18,500,000	3.8	4,868,421.05	2,851,724.16	No
2012	36	18,000,000	5.7	3,157,894.74	2,982,852.15	No

Total	89,500,000.00	21.20	22,368,806.63	13,932,912.86	
Avg.	17,900,000.00	4.24	4,221,698.11	2,786,582.57	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

Table D31

Igawa, Kei

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	27	4,000,000	0.0	0.00	2,457,137.55	No
2008	28	4,000,000	0.0	0.00	2,667,201.04	No
2009	29	4,000,000	0.0*	0.00	2,647,126.58	No
2010	30	4,000,000	0.0*	0.00	2,784,008.92	No
2011	31	4,000,000	0.0*	0.00	2,851,724.16	No

Total	20,000,000.00	0.00	0.00	13,407,198.26	
Avg.	4,000,000.00	0.00	0.00	2,681,439.65	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

*Igawa played in the Minor Leagues in 2009, 2010, and 2011.

Table D32

Jeter, Derek

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2001	27	12,600,000	5.2	2,423,076.92	1,949,726.73	No
2002	28	14,600,000	3.7	3,945,945.95	2,008,608.63	No
2003	29	15,600,000	3.5	4,457,142.86	2,112,150.41	No
2004	30	18,600,000	4.2	4,428,571.43	2,056,411.02	No
2005	31	19,600,000	3.8	5,157,894.74	2,174,491.07	No
2006	32	20,600,000	5.5	3,745,454.55	2,309,959.05	No
2007	33	21,600,000	3.9	5,538,461.54	2,457,137.55	No
2008	34	21,600,000	3.0	7,200,000.00	2,667,201.04	No
2009	35	21,600,000	6.5	3,323,076.92	2,647,126.58	No
2010	36	22,600,000	1.7	13,294,117.65	2,784,008.92	No

Total	189,000,000.00	41.00	53,513,742.55	23,166,821.00	
Avg.	18,900,000.00	4.10	4,609,756.10	2,316,682.10	N/A

Years Successful	0/10
% Successful	0.00%

Was the contract successful?	No

Table D33

Jones, Andruw

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2002	25	10,000,000	6.6	1,515,151.52	2,008,608.63	Yes
2003	26	12,000,000	4.9	2,448,979.59	2,112,150.41	No
2004	27	12,500,000	3.2	3,906,250.00	2,056,411.02	No
2005	28	13,000,000	6.7	1,940,298.51	2,174,491.07	Yes
2006	29	13,500,000	5.6	2,410,714.29	2,309,959.05	No
2007	30	14,000,000	3.0	4,666,666.67	2,457,137.55	No

Total	75,000,000.00	30.00	16,888,060.57	13,118,757.73	
Avg.	12,500,000.00	5.00	2,500,000.00	2,186,459.62	N/A

Years Successful	2/6
% Successful	33.33%

Was the contract successful?	No

Table D34

Kinsler, Ian

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	26	700,000	4.7	148,936.17	2,667,201.04	Yes
2009	27	3,200,000	6.0	533,333.33	2,647,126.58	Yes
2010	28	4,200,000	4.0	1,050,000.00	2,784,008.92	Yes
2011	29	6,200,000	7.1	873,239.44	2,851,724.16	Yes
2012	30	7,000,000	2.4	2,916,666.67	2,982,852.15	Yes

Total	21,300,000.00	24.20	5,522,175.61	13,932,912.86	
Avg.	4,260,000.00	4.84	880,165.29	2,786,582.57	N/A

Years Successful	5/5
% Successful	100%

Was the contract successful?	Yes

Table D35

Konerko, Paul

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2006	30	12,000,000	2.9	4,137,931.03	2,309,959.05	No
2007	31	12,000,000	2.0	6,000,000.00	2,457,137.55	No
2008	32	12,000,000	0.9	13,333,333.33	2,667,201.04	No
2009	33	12,000,000	2.1	5,714,285.71	2,647,126.58	No
2010	34	12,000,000	4.7	2,553,191.49	2,784,008.92	Yes

Total	60,000,000.00	12.60	31,738,741.57	12,865,433.14	
Avg.	12,000,000.00	2.52	4,761,904.76	2,573,086.63	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D36

Lackey, John

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	31	18,700,000	1.8	10,388,888.89	2,784,008.92	No
2011	32	15,950,000	0.0	0.00	2,851,724.16	No
2012	33	15,250,000	0.0*	0.00	2,982,852.15	No
2013	34	15,250,000	2.8	5,446,428.57	3,153,612.93	No
2014	35	15,250,000	1.1	13,863,636.36	3,415,530.25	No

Total	80,400,000.00	5.70	29,698,953.82	15,187,728.41	
Avg.	16,080,000.00	1.14	14,105,263.16	3,037,545.68	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

*Lackey missed the entire 2012 season due to injury.

Table D37

Lee, Carlos

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	31	11,500,000	2.3	5,000,000.00	2,457,137.55	No
2008	32	12,500,000	2.8	4,464,285.71	2,667,201.04	No
2009	33	19,000,000	1.8	10,555,555.56	2,647,126.58	No
2010	34	19,000,000	0.0	0.00	2,784,008.92	No
2011	35	19,000,000	4.0	4,750,000.00	2,851,724.16	No
2012	36	18,500,000	0.0	0.00	2,982,852.15	No

Total	99,500,000.00	10.90	24,769,841.27	16,390,050.41	
Avg.	16,583,333.33	1.82	9,128,440.37	2,731,675.07	N/A

Years Successful	0/6
% Successful	0.00%

Was the contract successful?	No

Table D38

Lee, Derrek

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2006	30	9,416,667	0.8	11,770,833.75	2,309,959.05	No
2007	31	13,250,000	3.5	3,785,714.29	2,457,137.55	No
2008	32	13,250,000	1.9	6,973,684.21	2,667,201.04	No
2009	33	13,250,000	5.4	2,453,703.70	2,647,126.58	Yes
2010	34	13,250,000	1.5	8,833,333.33	2,784,008.92	No

Total	62,416,667.00	13.10	33,817,269.28	12,865,433.14	
Avg.	12,483,333.40	2.62	4,764,631.07	2,573,086.63	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D39

Lester, Jon

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	25	1,000,000	6.3	158,730.16	2,647,126.58	Yes
2010	26	3,750,000	5.2	721,153.85	2,784,008.92	Yes
2011	27	5,750,000	4.4	1,306,818.18	2,851,724.16	Yes
2012	28	7,625,000	0.7	10,892,857.14	2,982,852.15	No
2013	29	11,625,000	3.0	3,875,000.00	3,153,612.93	No

Total	29,750,000.00	19.60	16,954,559.33	14,419,324.75	
Avg.	5,950,000.00	3.92	1,517,857.14	2,883,864.95	N/A

Years Successful	3/5
% Successful	60.00%

Was the contract successful?	Yes

Table D40

Longoria, Evan

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	22	500,000	4.8	104,166.67	2,667,201.04	Yes
2009	23	550,000	7.0	78,571.43	2,647,126.58	Yes
2010	24	950,000	8.1	117,283.95	2,784,008.92	Yes
2011	25	2,000,000	7.4	270,270.27	2,851,724.16	Yes
2012	26	4,500,000	2.5	1,800,000.00	2,982,852.15	Yes
2013	27	6,000,000	6.2	967,741.94	3,153,612.93	Yes

Total	14,500,000.00	36.00	3,338,034.25	17,086,525.79	
Avg.	2,416,666.67	6.00	402,777.78	2,847,754.30	N/A

Years Successful	6/6
% Successful	100%

Was the contract successful?	Yes

Table D41

Markakis, Nick

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	25	3,350,000	2.9	1,155,172.41	2,647,126.58	Yes
2010	26	7,100,000	2.3	3,086,956.52	2,784,008.92	No
2011	27	10,600,000	2.5	4,240,000.00	2,851,724.16	No
2012	28	12,000,000	1.7	7,058,823.53	2,982,852.15	No
2013	29	15,000,000	0.1	150,000,000.00	3,153,612.93	No
2014	30	15,000,000	2.0	7,500,000.00	3,415,530.25	No

Total	63,050,000.00	11.50	173,040,952.46	17,834,855.00	
Avg.	10,508,333.33	1.92	5,482,608.70	2,972,475.83	N/A

Years Successful	1/6
% Successful	16.67%

Was the contract successful?	No

Table D42

Martinez, Victor

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	26	372,100	5.2	71,557.69	2,174,491.07	Yes
2006	27	1,000,000	2.8	357,142.86	2,309,959.05	Yes
2007	28	3,200,000	4.3	744,186.05	2,457,137.55	Yes
2008	29	4,450,000	0.6	7,416,666.67	2,667,201.04	No
2009	30	5,900,000	3.5	1,685,714.29	2,647,126.58	Yes

Total	14,922,100.00	16.40	10,275,267.55	12,255,915.29	
Avg.	2,984,420.00	3.28	909,884.15	2,451,183.06	N/A

Years Successful	4/5
% Successful	80.00%

Was the contract successful?	Yes

Table D43

Matsuzaka, Daisuke

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	26	6,333,333	4.1	1,544,715.37	2,457,137.55	Yes
2008	27	8,333,333	5.3	1,572,326.98	2,667,201.04	Yes
2009	28	8,333,333	0.4	20,833,332.50	2,647,126.58	No
2010	29	8,333,333	1.0	8,333,333.00	2,784,008.92	No
2011	30	10,333,333	0.0	0.00	2,851,724.16	No
2012	31	10,000,000	0.0	0.00	2,982,852.15	No

Total	51,666,665.00	10.80	32,283,707.85	16,390,050.41	
Avg.	8,611,110.83	1.80	4,783,950.46	2,731,675.07	N/A

Years Successful	2/6
% Successful	33.33%

Was the contract successful?	No

Table D44

Matthews Jr., Gary

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	32	6,400,000	1.0	6,400,000.00	2,457,137.55	No
2008	33	9,400,000	0.0	0.00	2,667,201.04	No
2009	34	10,400,000	0.0	0.00	2,647,126.58	No
2010	35	11,400,000	0.0	0.00	2,784,008.92	No
2011	36	12,000,000	0.0*	0.00	2,851,724.16	No

Total	49,600,000.00	1.00	6,400,000.00	13,407,198.26	
Avg.	9,920,000.00	0.20	49,600,000.00	2,681,439.65	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

*Matthews was released in 2010 and did not play baseball in 2011.

Table D45

McCann, Brian

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	23	440,000	1.0	440,000.00	2,457,137.55	Yes
2008	24	966,666	5.5	175,757.45	2,667,201.04	Yes
2009	25	3,700,000	3.2	1,156,250.00	2,647,126.58	Yes
2010	26	5,700,000	3.6	1,583,333.33	2,784,008.92	Yes
2011	27	6,700,000	2.5	2,680,000.00	2,851,724.16	Yes
2012	28	11,500,000	0.8	14,375,000.00	2,982,852.15	No

Total	29,006,666.00	16.60	20,410,340.79	16,390,050.41	
Avg.	4,834,444.33	2.77	1,747,389.52	2,731,675.07	N/A

Years Successful	5/6
% Successful	83.33%

Was the contract successful?	Yes

Table D46

Meche, Gil

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	28	7,400,000	4.2	1,761,904.76	2,457,137.55	Yes
2008	29	11,400,000	5.0	2,280,000.00	2,667,201.04	Yes
2009	30	11,400,000	1.1	10,363,636.36	2,647,126.58	No
2010	31	12,400,000	0.0	0.00	2,784,008.92	No
2011	32	0*	0.0*	0.00*	2,851,724.16	No

Total	42,600,000.00	10.30	14,405,541.13	13,407,198.26	
Avg.	10,650,000.00	2.58	4,135,922.33	2,681,439.65	N/A

Years Successful	2/5
% Successful	40.00%

Was the contract successful?	No

*Meche retired from baseball before the start of the 2011 MLB season.

Table D47

Millwood, Kevin

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2006	31	7,868,893	2.7	2,914,404.81	2,309,959.05	No
2007	32	9,836,116	0.2	49,180,580.00	2,457,137.55	No
2008	33	10,368,892	0.7	14,812,702.86	2,667,201.04	No
2009	34	12,868,892	4.7	2,738,062.13	2,647,126.58	No
2010	35	12,000,000	0.5	24,000,000.00	2,784,008.92	No

Total	52,942,793.00	8.80	93,645,749.80	12,865,433.14	
Avg.	10,588,558.60	1.76	6,016,226.48	2,573,086.63	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

Table D48

Morales, Kendrys

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	22	300,000	0.0*	0.00*	2,174,491.07	No
2006	23	400,000	0.1	4,000,000.00	2,309,959.05	No
2007	24	400,000	0.1	4,000,000.00	2,457,137.55	No
2008	25	500,000	0.0	0.00	2,667,201.04	No
2009	26	1,100,000	4.3	255,813.95	2,647,126.58	Yes
2010	27	1,200,000	1.7	705,882.35	2,784,008.92	Yes

Total	3,900,000.00	6.20	8,961,696.31	15,039,924.21	
Avg.	650,000.00	1.03	629,032.26	2,506,654.04	N/A

Years Successful	2/6
% Successful	33.33%

Was the contract successful?	No

*Morales played in the Minor Leagues in 2005.

Table D49

Morneau, Justin

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	27	8,400,000	4.2	2,000,000.00	2,667,201.04	Yes
2009	28	11,600,000	3.5	3,314,285.71	2,647,126.58	No
2010	29	15,000,000	4.7	3,191,489.36	2,784,008.92	No
2011	30	15,000,000	0.0	0.00	2,851,724.16	No
2012	31	14,000,000	1.2	11,666,666.67	2,982,852.15	No
2013	32	14,000,000	1.9	7,368,421.05	3,153,612.93	No

Total	78,000,000.00	15.50	27,540,862.80	17,086,525.79	
Avg.	13,000,000.00	2.58	5,032,258.06	2,847,754.30	N/A

Years Successful	1/6
% Successful	16.67%

Was the contract successful?	No

Table D50

Niemann, Jeff

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	22	977,500	0.0*	0.00*	2,174,491.07	No
2006	23	977,500	0.0*	0.00*	2,309,959.05	No
2007	24	977,500	0.0*	0.00*	2,457,137.55	No
2008	25	977,500	0.0	0.00	2,667,201.04	No
2009	26	1,290,000	2.4	537,500.00	2,647,126.58	Yes

Total	5,200,000.00	2.40	537,500.00	12,255,915.29	
Avg.	1,040,000.00	0.48	2,166,666.67	2,451,183.06	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

*Niemann played in the Minor Leagues in 2005, 2006, and 2007.

Table D51

Ordonez, Magglio

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2005	31	7,200,000	1.6	4,500,000.00	2,174,491.07	No
2006	32	16,200,000	1.8	9,000,000.00	2,309,959.05	No
2007	33	13,200,000	7.3	1,808,219.18	2,457,137.55	Yes
2008	34	15,768,174	2.1	7,508,654.29	2,667,201.04	No
2009	35	18,971,596	0.8	23,714,495.00	2,647,126.58	No

Total	71,339,770.00	13.60	46,531,368.46	12,255,915.29	
Avg.	14,267,954.00	2.72	5,245,571.32	2,451,183.06	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D52

Oswalt, Roy

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	29	13,000,000	6.7	1,940,298.51	2,457,137.55	Yes
2008	30	13,000,000	3.8	3,421,052.63	2,667,201.04	No
2009	31	14,000,000	2.4	5,833,333.33	2,647,126.58	No
2010	32	15,000,000	5.6	2,678,571.43	2,784,008.92	Yes
2011	33	16,000,000	2.2	7,272,727.27	2,851,724.16	No

Total	71,000,000.00	20.70	21,145,983.17	13,407,198.26	
Avg.	14,200,000.00	4.14	3,429,951.69	2,681,439.65	N/A

Years Successful	2/5
% Successful	40.00%

Was the contract successful?	No

Table D53

Peavy, Jake

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	27	6,500,000	3.9	1,666,666.67	2,667,201.04	Yes
2009	28	11,000,000	1.7	6,470,588.24	2,647,126.58	No
2010	29	15,000,000	1.6	9,375,000.00	2,784,008.92	No
2011	30	16,000,000	1.0	16,000,000.00	2,851,724.16	No
2012	31	17,000,000	5.2	3,269,230.77	2,982,852.15	No

Total	65,500,000.00	13.40	36,781,485.67	13,932,912.86	
Avg.	13,100,000.00	2.68	4,888,059.70	2,786,582.57	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D54

Pedroia, Dustin

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	25	1,750,000	5.6	312,500.00	2,647,126.58	Yes
2010	26	3,750,000	3.2	1,171,875.00	2,784,008.92	Yes
2011	27	5,750,000	7.9	727,848.10	2,851,724.16	Yes
2012	28	8,000,000	5.1	1,568,627.45	2,982,852.15	Yes
2013	29	10,000,000	6.3	1,587,301.59	3,153,612.93	Yes
2014	30	12,500,000	4.9	2,551,020.41	3,415,530.25	Yes

Total	41,750,000.00	33.00	7,919,172.55	17,834,855.00	
Avg.	6,958,333.33	5.50	1,265,151.52	2,972,475.83	N/A

Years Successful	6/6
% Successful	100%

Was the contract successful?	Yes

Table D55

Peralta, Jhonny

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2006	24	377,300	0.9	419,222.22	2,309,959.05	Yes
2007	25	1,000,000	2.7	370,370.37	2,457,137.55	Yes
2008	26	2,500,000	3.6	694,444.44	2,667,201.04	Yes
2009	27	3,650,000	1.0	3,650,000.00	2,647,126.58	No
2010	28	4,850,000	2.6	1,865,384.62	2,784,008.92	Yes

Total	12,377,300.00	10.80	6,999,421.65	12,865,433.14	
Avg.	2,475,460.00	2.16	1,146,046.30	2,573,086.63	N/A

Years Successful	4/5
% Successful	80.00%

Was the contract successful?	Yes

Table D56

Pierre, Juan

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	29	7,500,000	0.9	8,333,333.33	2,457,137.55	No
2008	30	8,000,000	0.0	0.00	2,667,201.04	No
2009	31	10,000,000	1.2	8,333,333.33	2,647,126.58	No
2010	32	7,000,000	0.2	35,000,000.00	2,784,008.92	No
2011	33	8,500,000	0.0	0.00	2,851,724.16	No

Total	41,000,000.00	2.30	51,666,666.67	13,407,198.26	
Avg.	8,200,000.00	0.46	17,826,086.96	2,681,439.65	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

Table D57

Posada, Jorge

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2002	30	7,000,000	4.0	1,750,000.00	2,008,608.63	Yes
2003	31	8,000,000	5.9	1,355,932.20	2,112,150.41	Yes
2004	32	9,000,000	3.5	2,571,428.57	2,056,411.02	No
2005	33	11,000,000	4.3	2,558,139.53	2,174,491.07	No
2006	34	12,000,000	4.0	3,000,000.00	2,309,959.05	No

Total	47,000,000.00	21.70	11,235,500.31	10,661,620.18	
Avg.	9,400,000.00	4.34	2,165,898.62	2,132,324.04	N/A

Years Successful	2/5
% Successful	40.00%

Was the contract successful?	No

Table D58

Price, David

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	21	500,000	0.0*	0.00*	2,457,137.55	No
2008	22	650,000	0.4	1,625,000.00	2,667,201.04	Yes
2009	23	750,000	0.9	833,333.33	2,647,126.58	Yes
2010	24	1,834,671	4.8	382,223.13	2,784,008.92	Yes
2011	25	2,084,671	2.8	744,525.36	2,851,724.16	Yes
2012	26	4,350,000	6.9	630,434.78	2,982,852.15	Yes

Total	10,169,342.00	15.80	4,215,516.60	16,390,050.41	
Avg.	1,694,890.33	2.63	643,629.24	2,731,675.07	N/A

Years Successful	5/6
% Successful	83.33%

Was the contract successful?	Yes

*Price signed his contract on 08/15/07 and did not play in MLB that year.

Table D59

Pujols, Albert

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2004	24	7,000,000	8.5	823,529.41	2,056,411.02	Yes
2005	25	11,000,000	8.4	1,309,523.81	2,174,491.07	Yes
2006	26	14,000,000	8.4	1,666,666.67	2,309,959.05	Yes
2007	27	12,937,813	8.7	1,487,104.94	2,457,137.55	Yes
2008	28	13,870,949	9.2	1,507,711.85	2,667,201.04	Yes
2009	29	14,427,326	9.7	1,487,353.20	2,647,126.58	Yes
2010	30	14,595,953	7.5	1,946,127.07	2,784,008.92	Yes

Total	87,832,041.00	60.40	10,228,016.94	17,096,335.23	
Avg.	12,547,434.43	8.63	1,454,172.86	2,442,333.60	N/A

Years Successful	7/7
% Successful	100%

Was the contract successful?	Yes

Table D60

Ramirez, Aramis

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	29	9,000,000	5.2	1,730,769.23	2,457,137.55	Yes
2008	30	15,000,000	3.0	5,000,000.00	2,667,201.04	No
2009	31	16,650,000	1.7	9,794,117.65	2,647,126.58	No
2010	32	16,750,000	0.0	0.00	2,784,008.92	No
2011	33	14,600,000	2.7	5,407,407.41	2,851,724.16	No

Total	72,000,000.00	12.60	21,932,294.29	13,407,198.26	
Avg.	14,400,000.00	2.52	5,714,285.71	2,681,439.65	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D61

Ramirez, Hanley

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	25	5,500,000	7.3	753,424.66	2,647,126.58	Yes
2010	26	7,000,000	2.8	2,500,000.00	2,784,008.92	Yes
2011	27	11,000,000	0.2	55,000,000.00	2,851,724.16	No
2012	28	15,000,000	1.3	11,538,461.54	2,982,852.15	No
2013	29	15,500,000	5.4	2,870,370.37	3,153,612.93	Yes
2014	30	16,000,000	3.5	4,571,428.57	3,415,530.25	No

Total	70,000,000.00	20.50	77,233,685.14	17,834,855.00	
Avg.	11,666,666.67	3.42	3,414,634.15	2,972,475.83	No

Years Successful	3/6
% Successful	50.00%

Was the contract successful?	No

Table D62

Ramirez, Manny

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2001	29	13,050,000	5.2	2,509,615.38	1,949,726.73	No
2002	30	15,462,727	6.0	2,577,121.17	2,008,608.63	No
2003	31	20,000,000	5.4	3,703,703.70	2,112,150.41	No
2004	32	22,500,000	4.1	5,487,804.88	2,056,411.02	No
2005	33	22,000,000	4.4	5,000,000.00	2,174,491.07	No
2006	34	18,279,238	4.5	4,062,052.89	2,309,959.05	No
2007	35	17,016,381	1.1	15,469,437.27	2,457,137.55	No
2008	36	18,929,923	6.0	3,154,987.17	2,667,201.04	No

Total	147,238,269.00	36.70	41,964,722.46	17,735,685.50	
Avg.	18,404,783.63	4.59	4,011,941.93	2,216,960.69	N/A

Years Successful	0/8
% Successful	0.00%

Was the contract successful?	No

Table D63

Rios, Alex

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	27	4,835,000	5.9	819,491.53	2,667,201.04	Yes
2009	28	6,400,000	0.8	8,000,000.00	2,647,126.58	No
2010	29	10,200,000	3.3	3,090,909.09	2,784,008.92	No
2011	30	12,500,000	0.0	0.00	2,851,724.16	No
2012	31	12,000,000	4.8	2,500,000.00	2,982,852.15	Yes
2013	32	12,500,000	2.2	5,681,818.18	3,153,612.93	No
2014	33	12,500,000	0.6	20,833,333.33	3,415,530.25	No

Total	70,935,000.00	17.60	40,925,552.13	20,502,056.04	
Avg.	10,133,571.43	2.51	4,030,397.73	2,928,865.15	N/A

Years Successful	2/7
% Successful	28.57%

Was the contract successful?	No

Table D64

Rodriguez, Alex

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2001	25	22,000,000	8.3	2,650,602.41	1,949,726.73	No
2002	26	22,000,000	8.8	2,500,000.00	2,008,608.63	No
2003	27	22,000,000	8.4	2,619,047.62	2,112,150.41	No
2004	28	22,000,000	7.6	2,894,736.84	2,056,411.02	No
2005	29	26,000,000	9.4	2,765,957.45	2,174,491.07	No
2006	30	21,680,727	4.5	4,817,939.33	2,309,959.05	No
2007	31	22,708,525	9.4	2,415,800.53	2,457,137.55	Yes
2008	32	28,000,000	6.8	4,117,647.06	2,667,201.04	No
2009	33	33,000,000	4.1	8,048,780.49	2,647,126.58	No
2010	34	33,000,000	4.1	8,048,780.49	2,784,008.92	No

Total	252,389,252.00	71.40	40,879,292.22	23,166,821.00	
Avg.	25,238,925.20	7.14	3,534,863.47	2,316,682.10	N/A

Years Successful	1/10
% Successful	10.00%

Was the contract successful?	No

Table D65

Rolen, Scott

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2003	28	7,625,000	4.7	1,622,340.43	2,112,150.41	Yes
2004	29	8,625,000	9.1	947,802.20	2,056,411.02	Yes
2005	30	11,625,000	1.6	7,265,625.00	2,174,491.07	No
2006	31	12,456,336	5.8	2,147,644.14	2,309,959.05	Yes
2007	32	12,311,637	1.8	6,839,798.33	2,457,137.55	No
2008	33	11,625,000	3.4	3,419,117.65	2,667,201.04	No
2009	34	11,625,000	5.2	2,235,576.92	2,647,126.58	Yes
2010	35	7,666,666	4.1	1,869,918.54	2,784,008.92	Yes

Total	83,559,639.00	35.70	26,347,823.20	19,208,485.64	
Avg.	10,444,954.88	4.46	2,340,606.13	2,401,060.71	N/A

Years Successful	5/8
% Successful	62.50%

Was the contract successful?	Yes

Table D66

Rollins, Jimmy

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2006	27	5,000,000	4.6	1,086,956.52	2,309,959.05	Yes
2007	28	8,000,000	6.1	1,311,475.41	2,457,137.55	Yes
2008	29	8,000,000	5.4	1,481,481.48	2,667,201.04	Yes
2009	30	8,500,000	1.7	5,000,000.00	2,647,126.58	No
2010	31	8,500,000	2.0	4,250,000.00	2,784,008.92	No

Total	38,000,000.00	19.80	13,129,913.41	12,865,433.14	
Avg.	7,600,000.00	3.96	1,919,191.92	2,573,086.63	N/A

Years Successful	3/5
% Successful	60.00%

Was the contract successful?	Yes

Table D67

Rowand, Aaron

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	30	9,600,000	0.6	16,000,000.00	2,667,201.04	No
2009	31	9,600,000	0.9	10,666,666.67	2,647,126.58	No
2010	32	13,600,000	0.4	34,000,000.00	2,784,008.92	No
2011	33	13,600,000	0.5	27,200,000.00	2,851,724.16	No
2012	34	12,000,000	0.0*	0.00*	2,982,852.15	No

Total	58,400,000.00	2.40	87,866,666.67	13,932,912.86	
Avg.	11,680,000.00	0.48	24,333,333.33	2,786,582.57	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

*Rowand was released by the Giants at the end of the 2011 season and did not play in MLB in 2012.

Table D68

Ryan, B.J.

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2006	30	4,000,000	3.5	1,142,857.14	2,309,959.05	Yes
2007	31	7,000,000	0.0	0.00	2,457,137.55	No
2008	32	12,000,000	1.1	10,909,090.91	2,667,201.04	No
2009	33	12,000,000	0.0	0.00	2,647,126.58	No
2010	34	12,000,000	0.0*	0.00*	2,784,008.92	No

Total	47,000,000.00	4.60	12,051,948.05	12,865,433.14	
Avg.	9,400,000.00	0.92	10,217,391.30	2,573,086.63	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

*Ryan was released by the Blue Jays during the 2009 season and did not play MLB in 2010.

Table D69

Sabathia, C.C.

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	28	15,285,714	6.2	2,465,437.74	2,647,126.58	Yes
2010	29	24,285,714	4.6	5,279,503.04	2,784,008.92	No
2011	30	24,285,714	7.5	3,238,095.20	2,851,724.16	No
2012	31	23,000,000	3.5	6,571,428.57	2,982,852.15	No
2013	32	23,000,000	0.3	76,666,666.67	3,153,612.93	No
2014	33	23,000,000	0.0	0.00	3,415,530.25	No
2015	34	23,000,000	1.0	23,000,000.00	3,741,935.77	No

Total	155,857,142.00	23.10	117,221,131.22	21,576,790.77	
Avg.	22,265,306.00	3.30	6,747,062.42	3,082,398.68	N/A

Years Successful	1/7
% Successful	14.29%

Was the contract successful?	No

Table D70

Samardzija, Jeff

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	22	2,000,000	0.0*	0.00*	2,457,137.55	No
2008	23	2,000,000	0.6	3,333,333.33	2,667,201.04	No
2009	24	2,000,000	0.0	0.00	2,647,126.58	No
2010	25	3,000,000	0.0	0.00	2,784,008.92	No
2011	26	3,300,000	1.1	3,000,000.00	2,851,724.16	No

Total	12,300,000.00	1.70	6,333,333.33	13,407,198.26	
Avg.	2,460,000.00	0.34	7,235,294.12	2,681,439.65	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

*Samardzija played in the Minor Leagues in 2007.

Table D71

Santana, Johan

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	29	16,984,216	7.1	2,392,143.10	2,667,201.04	Yes
2009	30	18,876,139	3.3	5,720,042.12	2,647,126.58	No
2010	31	20,144,707	4.6	4,379,284.13	2,784,008.92	No
2011	32	21,644,707	0.0*	0.00*	2,851,724.16	No
2012	33	24,000,000	0.2	120,000,000.00	2,982,852.15	No
2013	34	25,500,000	0.00**	0.00**	3,153,612.93	No

Total	127,149,769.00	15.20	132,491,469.35	17,086,525.79	
Avg.	21,191,628.17	2.53	8,365,116.38	2,847,754.30	N/A

Years Successful	1/6
% Successful	16.67%

Was the contract successful?	No

*Santana missed the entire 2011 season due to injury.

**Santana missed the entire 2013 season due to injury.

Table D72

Sizemore, Grady

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2006	23	500,000	6.6	75,757.58	2,309,959.05	Yes
2007	24	916,667	5.5	166,666.73	2,457,137.55	Yes
2008	25	3,166,666	5.9	536,723.05	2,667,201.04	Yes
2009	26	4,766,666	2.2	2,166,666.36	2,647,126.58	Yes
2010	27	5,766,666	0.0	0.00	2,784,008.92	No
2011	28	7,666,666	0.1	76,666,660.00	2,851,724.16	No

Total	22,783,331.00	20.30	79,612,473.72	15,717,157.30	
Avg.	3,797,221.83	3.38	1,122,331.58	2,619,526.22	N/A

Years Successful	4/6
% Successful	66.67%

Was the contract successful?	Yes

Table D73

Soriano, Alfonso

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	31	10,000,000	4.3	2,325,581.40	2,457,137.55	Yes
2008	32	14,000,000	2.0	7,000,000.00	2,667,201.04	No
2009	33	17,000,000	0.0	0.00	2,647,126.58	No
2010	34	19,000,000	0.8	23,750,000.00	2,784,008.92	No
2011	35	19,000,000	0.0	0.00	2,851,724.16	No
2012	36	18,000,000	1.8	10,000,000.00	2,982,852.15	No
2013	37	18,000,000	2.5	7,200,000.00	3,153,612.93	No
2014	38	18,000,000	0.0	0.00	3,415,530.25	No

Total	133,000,000.00	11.40	50,275,581.40	22,959,193.58	
Avg.	16,625,000.00	1.43	11,666,666.67	2,869,899.20	N/A

Years Successful	1/8
% Successful	12.50%

Was the contract successful?	No

Table D74

Span, Denard

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	26	750,000	1.7	441,176.47	2,784,008.92	Yes
2011	27	1,000,000	2.4	416,666.67	2,851,724.16	Yes
2012	28	3,000,000	5.0	600,000.00	2,982,852.15	Yes
2013	29	4,750,000	2.3	2,065,217.39	3,153,612.93	Yes
2014	30	6,500,000	3.7	1,756,756.76	3,415,530.25	Yes

Total	16,000,000.00	15.10	5,279,817.29	15,187,728.41	
Avg.	3,200,000.00	3.02	1,059,602.65	3,037,545.68	N/A

Years Successful	5/5
% Successful	100%

Was the contract successful?	Yes

Table D75

Suzuki, Ichiro

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	34	17,102,149	5.3	3,226,820.57	2,667,201.04	No
2009	35	18,000,000	4.7	3,829,787.23	2,647,126.58	No
2010	36	18,000,000	3.7	4,864,864.86	2,784,008.92	No
2011	37	18,000,000	0.6	30,000,000.00	2,851,724.16	No
2012	38	17,000,000	1.8	9,444,444.44	2,982,852.15	No

Total	88,102,149.00	16.10	51,365,917.11	13,932,912.86	
Avg.	17,620,429.80	3.22	5,472,183.17	2,786,582.57	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

Table D76

Swisher, Nick

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	26	400,000	4.3	93,023.26	2,457,137.55	Yes
2008	27	3,600,000	0.0	0.00	2,667,201.04	No
2009	28	5,400,000	2.0	2,700,000.00	2,647,126.58	No
2010	29	6,850,000	3.7	1,851,351.35	2,784,008.92	Yes
2011	30	9,100,000	2.0	4,550,000.00	2,851,724.16	No

Total	25,350,000.00	12.00	9,194,374.61	13,407,198.26	
Avg.	5,070,000.00	2.40	2,112,500.00	2,681,439.65	N/A

Years Successful	2/5
% Successful	40.00%

Was the contract successful?	No

Table D77

Teixeira, Mark

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	29	20,625,000	5.3	3,891,509.43	2,647,126.58	No
2010	30	20,625,000	4.1	5,030,487.80	2,784,008.92	No
2011	31	23,125,000	3.4	6,801,470.59	2,851,724.16	No
2012	32	22,500,000	3.8	5,921,052.63	2,982,852.15	No
2013	33	22,500,000	0.0	0.00	3,153,612.93	No
2014	34	22,500,000	1.0	22,500,000.00	3,415,530.25	No
2015	35	23,125,000	3.8	6,085,526.32	3,741,935.77	No
2016	36	23,125,000	0.0	0.00	3,887,230.02	No

Total	178,125,000.00	21.40	50,230,046.77	25,464,020.79	
Avg.	22,265,625.00	2.68	8,323,598.13	3,183,002.60	N/A

Years Successful	0/8
% Successful	0.00%

Was the contract successful?	No

Table D78

Tejada, Miguel

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2004	30	5,000,000	7.3	684,931.51	2,056,411.02	Yes
2005	31	11,000,000	5.9	1,864,406.78	2,174,491.07	Yes
2006	32	11,811,415	4.5	2,624,758.89	2,309,959.05	No
2007	33	13,811,415	2.3	6,004,963.04	2,457,137.55	No
2008	34	14,811,414	1.9	7,795,481.05	2,667,201.04	No
2009	35	14,811,414	1.9	7,795,481.05	2,647,126.58	No

Total	71,245,658.00	23.80	26,770,022.32	14,312,326.31	
Avg.	11,874,276.33	3.97	2,993,515.04	2,385,387.72	N/A

Years Successful	2/6
% Successful	33.33%

Was the contract successful?	No

Table D79

Thome, Jim

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2003	32	11,166,667	4.7	2,375,886.60	2,112,150.41	No
2004	33	12,166,667	3.2	3,802,083.44	2,056,411.02	No
2005	34	13,166,667	0.2	65,833,335.00	2,174,491.07	No
2006	35	14,166,667	4.9	2,891,156.53	2,309,959.05	No
2007	36	14,833,333	3.6	4,120,370.28	2,457,137.55	No
2008	37	15,666,666	2.1	7,460,317.14	2,667,201.04	No

Total	81,166,667.00	18.70	86,483,148.98	13,777,350.14	
Avg.	13,527,777.83	3.12	4,340,463.48	2,296,225.02	N/A

Years Successful	0/6
% Successful	0.00%

Was the contract successful?	No

Table D80

Tulowitzki, Troy

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	23	750,000	0.8	937,500.00	2,667,201.04	Yes
2009	24	1,000,000	6.5	153,846.15	2,647,126.58	Yes
2010	25	3,500,000	6.7	522,388.06	2,784,008.92	Yes
2011	26	5,500,000	6.1	901,639.34	2,851,724.16	Yes
2012	27	8,250,000	0.4	20,625,000.00	2,982,852.15	No
2013	28	10,000,000	5.3	1,886,792.45	3,153,612.93	Yes

Total	29,000,000.00	25.80	25,027,166.01	17,086,525.79	
Avg.	4,833,333.33	4.30	1,124,031.01	2,847,754.30	N/A

Years Successful	5/6
% Successful	83.33%

Was the contract successful?	Yes

Table D81

Upton, Justin

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	22	708,333	1.5	472,222.00	2,784,008.92	Yes
2011	23	4,458,333	6.1	730,874.26	2,851,724.16	Yes
2012	24	6,750,000	2.5	2,700,000.00	2,982,852.15	Yes
2013	25	9,750,000	2.9	3,362,068.97	3,153,612.93	No
2014	26	14,250,000	3.2	4,453,125.00	3,415,530.25	No
2015	27	14,500,000	4.4	3,295,454.55	3,741,935.77	Yes

Total	50,416,666.00	20.60	15,013,744.77	18,929,664.18	
Avg.	8,402,777.67	3.43	2,447,410.97	3,154,944.03	N/A

Years Successful	4/6
% Successful	66.67%

Was the contract successful?	Yes

Table D82

Utley, Chase

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	28	4,785,714	7.8	613,553.08	2,457,137.55	Yes
2008	29	7,785,714	9.0	865,079.33	2,667,201.04	Yes
2009	30	11,285,714	8.2	1,376,306.59	2,647,126.58	Yes
2010	31	15,285,714	5.8	2,635,467.93	2,784,008.92	Yes
2011	32	15,285,714	3.8	4,022,556.32	2,851,724.16	No
2012	33	15,000,000	3.0	5,000,000.00	2,982,852.15	No
2013	34	15,000,000	3.6	4,166,666.67	3,153,612.93	No

Total	84,428,570.00	41.20	18,679,629.91	19,543,663.34	
Avg.	12,061,224.29	5.89	2,049,237.14	2,791,951.91	N/A

Years Successful	4/7
% Successful	57.14%

Was the contract successful?	Yes

Table D83

Verlander, Justin

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2010	27	6,850,000	4.3	1,593,023.26	2,784,008.92	Yes
2011	28	12,850,000	8.4	1,529,761.90	2,851,724.16	Yes
2012	29	20,000,000	7.8	2,564,102.56	2,982,852.15	Yes
2013	30	20,000,000	4.6	4,347,826.09	3,153,612.93	No
2014	31	20,000,000	1.1	18,181,818.18	3,415,530.25	No

Total	79,700,000.00	26.20	28,216,531.99	15,187,728.41	
Avg.	15,940,000.00	5.24	3,041,984.73	3,037,545.68	N/A

Years Successful	3/5
% Successful	60.00%

Was the contract successful?	Yes

Table D84

Wells, Vernon

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	29	3,687,500	2.0	1,843,750.00	2,667,201.04	Yes
2009	30	4,687,500	0.9	5,208,333.33	2,647,126.58	No
2010	31	15,687,500	4.0	3,921,875.00	2,784,008.92	No
2011	32	26,187,500	0.0	0.00	2,851,724.16	No
2012	33	21,000,000	0.6	35,000,000.00	2,982,852.15	No
2013	34	21,000,000	0.0	0.00	3,153,612.93	No
2014	35	21,000,000	0.0*	0.00*	3,415,530.25	No

Total	113,250,000.00	7.50	45,973,958.33	20,502,056.04	
Avg.	16,178,571.43	1.07	15,100,000.00	2,928,865.15	N/A

Years Successful	1/7
% Successful	14.29%

Was the contract successful?	No

*Wells was released by the Yankees before the start of the 2014 season.

Table D85

Wilson, Preston

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2001	26	1,000,000	2.8	357,142.86	1,949,726.73	Yes
2002	27	3,500,000	1.3	2,692,307.69	2,008,608.63	No
2003	28	6,500,000	2.6	2,500,000.00	2,112,150.41	No
2004	29	9,000,000	0.0	0.00	2,056,411.02	No
2005	30	12,500,000	0.0	0.00	2,174,491.07	No

Total	32,500,000.00	6.70	5,549,450.55	10,301,387.86	
Avg.	6,500,000.00	1.34	4,850,746.27	2,060,277.57	N/A

Years Successful	1/5
% Successful	20.00%

Was the contract successful?	No

Table D86

Wright, David

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	24	1,250,000	8.3	150,602.41	2,457,137.55	Yes
2008	25	5,250,000	6.8	772,058.82	2,667,201.04	Yes
2009	26	7,750,000	3.2	2,421,875.00	2,647,126.58	Yes
2010	27	10,250,000	2.8	3,660,714.29	2,784,008.92	No
2011	28	14,250,000	2.0	7,125,000.00	2,851,724.16	No
2012	29	15,000,000	7.0	2,142,857.14	2,982,852.15	Yes

Total	53,750,000.00	30.10	16,273,107.66	16,390,050.41	
Avg.	8,958,333.33	5.02	1,785,714.29	2,731,675.07	N/A

Years Successful	4/6
% Successful	66.67%

Was the contract successful?	Yes

Table D87

Young, Chris

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	25	1,950,000	0.0	0.00	2,647,126.58	No
2010	26	3,450,000	5.4	638,888.89	2,784,008.92	Yes
2011	27	5,200,000	5.0	1,040,000.00	2,851,724.16	Yes
2012	28	7,000,000	2.0	3,500,000.00	2,982,852.15	No
2013	29	8,500,000	0.0	0.00	3,153,612.93	No

Total	26,100,000.00	12.40	5,178,888.89	14,419,324.75	
Avg.	5,220,000.00	2.48	2,104,838.71	2,883,864.95	N/A

Years Successful	2/5
% Successful	40.00%

Was the contract successful?	No

Table D88

Young, Michael

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	32	13,054,526	2.8	4,662,330.71	2,647,126.58	No
2010	33	13,174,974	1.8	7,319,430.00	2,784,008.92	No
2011	34	16,174,974	2.4	6,739,572.50	2,851,724.16	No
2012	35	16,000,000	0.0	0.00	2,982,852.15	No
2013	36	16,000,000	0.0	0.00	3,153,612.93	No

Total	74,404,474.00	7.00	18,721,333.21	14,419,324.75	
Avg.	14,880,894.80	1.40	10,629,210.57	2,883,864.95	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

Table D89

Zambrano, Carlos

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2008	27	16,000,000	4.3	3,720,930.23	2,667,201.04	No
2009	28	18,750,000	3.0	6,250,000.00	2,647,126.58	No
2010	29	18,875,000	2.8	6,741,071.43	2,784,008.92	No
2011	30	18,875,000	0.8	23,593,750.00	2,851,724.16	No
2012	31	18,000,000	0.3	60,000,000.00	2,982,852.15	No

Total	90,500,000.00	11.20	100,305,751.66	13,932,912.86	
Avg.	18,100,000.00	2.24	8,080,357.14	2,786,582.57	N/A

Years Successful	0/5
% Successful	0.00%

Was the contract successful?	No

Table D90

Zimmerman, Ryan

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2009	24	3,325,000	7.3	455,479.45	2,647,126.58	Yes
2010	25	6,350,000	6.2	1,024,193.55	2,784,008.92	Yes
2011	26	9,025,000	1.9	4,750,000.00	2,851,724.16	No
2012	27	12,000,000	3.9	3,076,923.08	2,982,852.15	No
2013	28	14,000,000	3.7	3,783,783.78	3,153,612.93	No

Total	44,700,000.00	23.00	13,090,379.86	14,419,324.75	
Avg.	8,940,000.00	4.60	1,943,478.26	2,883,864.95	N/A

Years Successful	2/5
% Successful	40.00%

Was the contract successful?	No

Table D91

Zito, Barry

Year	Age	Salary	WAR	$/WAR	MLB $/WAR	Success
2007	29	10,000,000	2.0	5,000,000.00	2,457,137.55	No
2008	30	14,500,000	0.0	0.00	2,667,201.04	No
2009	31	18,500,000	2.6	7,115,384.62	2,647,126.58	No
2010	32	18,500,000	1.5	12,333,333.33	2,784,008.92	No
2011	33	18,500,000	0.0	0.00	2,851,724.16	No
2012	34	19,000,000	0.2	95,000,000.00	2,982,852.15	No
2013	35	20,000,000	0.0	0.00	3,153,612.93	No

Total	119,000,000.00	6.30	119,448,717.95	19,543,663.34	
Avg.	17,000,000.00	0.90	18,888,888.89	2,791,951.91	N/A

Years Successful	0/7
% Successful	0.00%

Was the contract successful?	No

APPENDIX E

Contract Success By Age

Table E1

Success of Total Contract by Age Data

Last	First	Success?	Avg. WAR	Avg. $/WAR	Success Years	% Success	Age
Abreu	Bobby	Yes	5.00	2,109,333.32	3	60.00%	28
Ackley	Dustin	Yes	1.88	702,127.66	4	80.00%	21
Alonso	Yonder	No	0.34	1,500,000.00	1	20.00%	21
Arguelles	Noel	No	0.00	0.00	0	0.00%	20
Beltran	Carlos	No	4.61	3,569,900.37	1	14.29%	28
Beltre	Adrian	No	4.26	3,004,694.84	1	20.00%	26
Berkman	Lance	No	3.85	3,593,073.59	1	16.67%	29
Blalock	Hank	No	1.46	2,089,041.10	1	20.00%	23
Bonds	Barry	Yes	7.24	2,481,532.32	3	60.00%	37
Braun	Ryan	Yes	4.75	1,172,697.37	6	75.00%	24
Burnett	A.J.	No	1.82	9,065,934.07	0	0.00%	32
Burrell	Pat	No	1.77	4,716,981.13	2	33.33%	26
Cabrera	Miguel	No	5.80	3,269,031.23	3	37.50%	25
Carpenter	Chris	No	2.72	4,588,452.72	1	20.00%	32
Chapman	Aroldis	Yes	1.83	1,989,615.64	5	83.33%	22
Chavez	Eric	No	1.65	6,363,636.36	1	16.67%	27
Crosby	Bobby	No	1.04	2,413,461.54	1	20.00%	25
DeJesus	David	Yes	2.38	1,117,647.06	5	100.00%	26
Drew	J.D.	No	2.44	5,737,704.92	0	0.00%	31
Drew	Stephen	Yes	1.52	671,052.63	3	60.00%	22
Gallardo	Yovani	Yes	1.98	2,873,737.37	3	60.00%	24
Giambi	Jason	No	3.16	5,203,619.77	1	14.29%	31
Granderson	Curtis	Yes	4.26	1,326,291.08	4	80.00%	27
Guerrero	Vladimir	No	4.42	3,031,674.21	1	20.00%	29
Hampton	Mike	No	0.61	22,113,728.57	0	0.00%	28
Helton	Todd	No	4.25	3,188,034.19	4	36.36%	27
Hernandez	Felix	No	5.50	2,913,236.36	2	40.00%	24
Holliday	Matt	No	2.96	5,683,628.07	1	14.29%	30
Humber	Philip	No	0.04	21,000,000.00	0	0.00%	22
Hunter	Torii	No	4.24	4,221,698.11	0	0.00%	32
Igawa	Kei	No	0.00	0.00	0	0.00%	27
Jeter	Derek	No	4.10	4,609,756.10	0	0.00%	27

Last	First	Success?	Avg. WAR	Avg. $/WAR	Success Years	% Success	Age
Jones	Andruw	No	5.00	2,500,000.00	2	33.33%	25
Kinsler	Ian	Yes	4.84	880,165.29	5	100.00%	26
Konerko	Paul	No	2.52	4,761,904.76	1	20.00%	30
Lackey	John	No	1.14	14,105,263.16	0	0.00%	31
Lee	Carlos	No	1.82	9,128,440.37	0	0.00%	31
Lee	Derrek	No	2.62	4,764,631.07	1	20.00%	30
Lester	Jon	Yes	3.92	1,517,857.14	3	60.00%	25
Longoria	Evan	Yes	6.00	402,777.78	6	100.00%	22
Markakis	Nick	No	1.92	5,482,608.70	1	16.67%	25
Martinez	Victor	Yes	3.28	909,884.15	4	80.00%	26
Matsuzaka	Daisuke	No	1.80	4,783,950.46	2	33.33%	26
Matthews Jr.	Gary	No	0.20	49,600,000.00	0	0.00%	32
McCann	Brian	Yes	2.77	1,747,389.52	5	83.33%	23
Meche	Gil	No	2.58	4,135,922.33	2	40.00%	28
Millwood	Kevin	No	1.76	6,016,226.48	0	0.00%	31
Morales	Kendrys	No	1.03	629,032.26	2	33.33%	22
Morneau	Justin	No	2.58	5,032,258.06	1	16.67%	27
Niemann	Jeff	No	0.48	2,166,666.67	1	20.00%	22
Ordonez	Magglio	No	2.72	5,245,571.32	1	20.00%	31
Oswalt	Roy	No	4.14	3,429,951.69	2	40.00%	29
Peavy	Jake	No	2.68	4,888,059.70	1	20.00%	27
Pedroia	Dustin	Yes	5.50	1,265,151.52	6	100.00%	25
Peralta	Jhonny	Yes	2.16	1,146,046.30	4	80.00%	24
Pierre	Juan	No	0.46	17,826,086.96	0	0.00%	29
Posada	Jorge	No	4.34	2,165,898.62	2	40.00%	30
Price	David	Yes	2.63	643,629.24	5	83.33%	21
Pujols	Albert	Yes	8.63	1,454,172.86	7	100.00%	24
Ramirez	Aramis	No	2.52	5,714,285.71	1	20.00%	29
Ramirez	Hanley	No	3.42	3,414,634.15	3	50.00%	25
Ramirez	Manny	No	4.59	4,011,941.93	0	0.00%	29
Rios	Alex	No	2.51	4,030,397.73	2	28.57%	27
Rodriguez	Alex	No	7.14	3,534,863.47	1	10.00%	25
Rolen	Scott	Yes	4.46	2,340,606.13	5	62.50%	28
Rollins	Jimmy	Yes	3.96	1,919,191.92	3	60.00%	27
Rowand	Aaron	No	0.48	24,333,333.33	0	0.00%	30
Ryan	B.J.	No	0.92	10,217,391.30	1	20.00%	30
Sabathia	C.C.	No	3.30	6,747,062.42	1	14.29%	28
Samardzija	Jeff	No	0.34	7,235,294.12	0	0.00%	22
Santana	Johan	No	2.53	8,365,116.38	1	16.67%	29
Sizemore	Grady	Yes	3.38	1,122,331.58	4	66.67%	23

Last	First	Success?	Avg. WAR	Avg. $/WAR	Success Years	% Success	Age
Soriano	Alfonso	No	1.43	11,666,666.67	1	12.50%	31
Span	Denard	Yes	3.02	1,059,602.65	5	100.00%	26
Suzuki	Ichiro	No	3.22	5,472,183.17	0	0.00%	34
Swisher	Nick	No	2.40	2,112,500.00	2	40.00%	26
Teixeira	Mark	No	2.68	8,323,598.13	0	0.00%	29
Tejada	Miguel	No	3.97	2,993,515.04	2	33.33%	30
Thome	Jim	No	3.12	4,340,463.48	0	0.00%	32
Tulowitzki	Troy	Yes	4.30	1,124,031.01	5	83.33%	23
Upton	Justin	Yes	3.43	2,447,410.97	4	66.67%	22
Utley	Chase	Yes	5.89	2,049,237.14	4	57.14%	28
Verlander	Justin	Yes	5.24	3,041,984.73	3	60.00%	27
Wells	Vernon	No	1.07	15,100,000.00	1	14.29%	29
Wilson	Preston	No	1.34	4,850,746.27	1	20.00%	26
Wright	David	Yes	5.02	1,785,714.29	4	66.67%	24
Young	Chris	No	2.48	2,104,838.71	2	40.00%	25
Young	Michael	No	1.40	10,629,210.57	0	0.00%	32
Zambrano	Carlos	No	2.24	8,080,357.14	0	0.00%	27
Zimmerman	Ryan	No	4.60	1,943,478.26	2	40.00%	24
Zito	Barry	No	0.90	18,888,888.89	0	0.00%	29

Note. Age is the player's age during the first year of the contract.

Table E2

Yearly Success of Contract by Age Data

Year	Age	Salary	WAR	$/WAR	Success
2002	28	$6,333,333.00	5.80	$1,091,953.97	Yes
2003	29	$9,100,000.00	5.30	$1,716,981.13	Yes
2004	30	$10,600,000.00	6.50	$1,630,769.23	Yes
2005	31	$13,100,000.00	3.50	$3,742,857.14	No
2006	32	$13,600,000.00	3.90	$3,487,179.49	No
2010	22	$400,000.00	0.00	$0.00	No
2011	23	$1,500,000.00	3.80	$394,736.84	Yes
2012	24	$1,500,000.00	2.60	$576,923.08	Yes
2013	25	$1,500,000.00	1.10	$1,363,636.36	Yes
2014	26	$1,700,000.00	1.90	$894,736.84	Yes
2008	21	$50,000.00	0.00	$0.00	No
2009	22	$400,000.00	0.00	$0.00	No
2010	23	$500,000.00	0.00	$0.00	No
2011	24	$600,000.00	0.20	$3,000,000.00	No
2012	25	$1,000,000.00	1.50	$666,666.67	Yes
2010	20	$1,380,000.00	0.00	$0.00	No
2011	21	$1,380,000.00	0.00	$0.00	No
2012	22	$1,380,000.00	0.00	$0.00	No
2013	23	$1,380,000.00	0.00	$0.00	No
2014	24	$1,380,000.00	0.00	$0.00	No
2005	28	$11,571,429.00	2.90	$3,990,147.93	No
2006	29	$13,571,428.00	8.20	$1,655,052.20	Yes
2007	30	$13,571,429.00	5.40	$2,513,227.59	No
2008	31	$18,622,809.00	6.90	$2,698,957.83	No
2009	32	$19,243,682.00	3.60	$5,345,467.22	No
2010	33	$19,401,569.00	0.70	$27,716,527.14	No
2011	34	$19,325,436.00	4.60	$4,201,181.74	No
2007	29	$10,000,000.00	2.00	$5,000,000.00	No
2008	30	$14,500,000.00	0.00	$0.00	No
2009	31	$18,500,000.00	2.60	$7,115,384.62	No
2010	32	$18,500,000.00	1.50	$12,333,333.33	No
2011	33	$18,500,000.00	0.00	$0.00	No
2012	34	$19,000,000.00	0.20	$95,000,000.00	No
2013	35	$20,000,000.00	0.00	$0.00	No
2009	24	$3,325,000.00	7.30	$455,479.45	Yes
2010	25	$6,350,000.00	6.20	$1,024,193.55	Yes
2011	26	$9,025,000.00	1.90	$4,750,000.00	No

Year	Age	Salary	WAR	$/WAR	Success
2012	27	$12,000,000.00	3.90	$3,076,923.08	No
2013	28	$14,000,000.00	3.70	$3,783,783.78	No
2008	27	$16,000,000.00	4.30	$3,720,930.23	No
2009	28	$18,750,000.00	3.00	$6,250,000.00	No
2010	29	$18,875,000.00	2.80	$6,741,071.43	No
2011	30	$18,875,000.00	0.80	$23,593,750.00	No
2012	31	$18,000,000.00	0.30	$60,000,000.00	No
2009	32	$13,054,526.00	2.80	$4,662,330.71	No
2010	33	$13,174,974.00	1.80	$7,319,430.00	No
2011	34	$16,174,974.00	2.40	$6,739,572.50	No
2012	35	$16,000,000.00	0.00	$0.00	No
2013	36	$16,000,000.00	0.00	$0.00	No
2009	25	$1,950,000.00	0.00	$0.00	No
2010	26	$3,450,000.00	5.40	$638,888.89	Yes
2011	27	$5,200,000.00	5.00	$1,040,000.00	Yes
2012	28	$7,000,000.00	2.00	$3,500,000.00	No
2013	29	$8,500,000.00	0.00	$0.00	No
2007	24	$1,250,000.00	8.30	$150,602.41	Yes
2008	25	$5,250,000.00	6.80	$772,058.82	Yes
2009	26	$7,750,000.00	3.20	$2,421,875.00	Yes
2010	27	$10,250,000.00	2.80	$3,660,714.29	No
2011	28	$14,250,000.00	2.00	$7,125,000.00	No
2012	29	$15,000,000.00	7.00	$2,142,857.14	Yes
2001	26	$1,000,000.00	2.80	$357,142.86	Yes
2002	27	$3,500,000.00	1.30	$2,692,307.69	No
2003	28	$6,500,000.00	2.60	$2,500,000.00	No
2004	29	$9,000,000.00	0.00	$0.00	No
2005	30	$12,500,000.00	0.00	$0.00	No
2008	29	$3,687,500.00	2.00	$1,843,750.00	Yes
2009	30	$4,687,500.00	0.90	$5,208,333.33	No
2010	31	$15,687,500.00	4.00	$3,921,875.00	No
2011	32	$26,187,500.00	0.00	$0.00	No
2012	33	$21,000,000.00	0.60	$35,000,000.00	No
2013	34	$21,000,000.00	0.00	$0.00	No
2014	35	$21,000,000.00	0.00	$0.00	No
2010	27	$6,850,000.00	4.30	$1,593,023.26	Yes
2011	28	$12,850,000.00	8.40	$1,529,761.90	Yes
2012	29	$20,000,000.00	7.80	$2,564,102.56	Yes
2013	30	$20,000,000.00	4.60	$4,347,826.09	No
2014	31	$20,000,000.00	1.10	$18,181,818.18	No

Year	Age	Salary	WAR	$/WAR	Success
2007	28	$4,785,714.00	7.80	$613,553.08	Yes
2008	29	$7,785,714.00	9.00	$865,079.33	Yes
2009	30	$11,285,714.00	8.20	$1,376,306.59	Yes
2010	31	$15,285,714.00	5.80	$2,635,467.93	Yes
2011	32	$15,285,714.00	3.80	$4,022,556.32	No
2012	33	$15,000,000.00	3.00	$5,000,000.00	No
2013	34	$15,000,000.00	3.60	$4,166,666.67	No
2010	22	$708,333.00	1.50	$472,222.00	Yes
2011	23	$4,458,333.00	6.10	$730,874.26	Yes
2012	24	$6,750,000.00	2.50	$2,700,000.00	Yes
2013	25	$9,750,000.00	2.90	$3,362,068.97	No
2014	26	$14,250,000.00	3.20	$4,453,125.00	No
2015	27	$14,500,000.00	4.40	$3,295,454.55	Yes
2008	23	$750,000.00	0.80	$937,500.00	Yes
2009	24	$1,000,000.00	6.50	$153,846.15	Yes
2010	25	$3,500,000.00	6.70	$522,388.06	Yes
2011	26	$5,500,000.00	6.10	$901,639.34	Yes
2012	27	$8,250,000.00	0.40	$20,625,000.00	No
2013	28	$10,000,000.00	5.30	$1,886,792.45	Yes
2003	32	$11,166,667.00	4.70	$2,375,886.60	No
2004	33	$12,166,667.00	3.20	$3,802,083.44	No
2005	34	$13,166,667.00	0.20	$65,833,335.00	No
2006	35	$14,166,667.00	4.90	$2,891,156.53	No
2007	36	$14,833,333.00	3.60	$4,120,370.28	No
2008	37	$15,666,666.00	2.10	$7,460,317.14	No
2004	30	$5,000,000.00	7.30	$684,931.51	Yes
2005	31	$11,000,000.00	5.90	$1,864,406.78	Yes
2006	32	$11,811,415.00	4.50	$2,624,758.89	No
2007	33	$13,811,415.00	2.30	$6,004,963.04	No
2008	34	$14,811,414.00	1.90	$7,795,481.05	No
2009	35	$14,811,414.00	1.90	$7,795,481.05	No
2009	29	$20,625,000.00	5.30	$3,891,509.43	No
2010	30	$20,625,000.00	4.10	$5,030,487.80	No
2011	31	$23,125,000.00	3.40	$6,801,470.59	No
2012	32	$22,500,000.00	3.80	$5,921,052.63	No
2013	33	$22,500,000.00	0.00	$0.00	No
2014	34	$22,500,000.00	1.00	$22,500,000.00	No
2015	35	$23,125,000.00	3.80	$6,085,526.32	No
2016	36	$23,125,000.00	0.00	$0.00	No
2007	26	$400,000.00	4.30	$93,023.26	Yes

Year	Age	Salary	WAR	$/WAR	Success
2008	27	$3,600,000.00	0.00	$0.00	No
2009	28	$5,400,000.00	2.00	$2,700,000.00	No
2010	29	$6,850,000.00	3.70	$1,851,351.35	Yes
2011	30	$9,100,000.00	2.00	$4,550,000.00	No
2008	34	$17,102,149.00	5.30	$3,226,820.57	No
2009	35	$18,000,000.00	4.70	$3,829,787.23	No
2010	36	$18,000,000.00	3.70	$4,864,864.86	No
2011	37	$18,000,000.00	0.60	$30,000,000.00	No
2012	38	$17,000,000.00	1.80	$9,444,444.44	No
2010	26	$750,000.00	1.70	$441,176.47	Yes
2011	27	$1,000,000.00	2.40	$416,666.67	Yes
2012	28	$3,000,000.00	5.00	$600,000.00	Yes
2013	29	$4,750,000.00	2.30	$2,065,217.39	Yes
2014	30	$6,500,000.00	3.70	$1,756,756.76	Yes
2007	31	$10,000,000.00	4.30	$2,325,581.40	Yes
2008	32	$14,000,000.00	2.00	$7,000,000.00	No
2009	33	$17,000,000.00	0.00	$0.00	No
2010	34	$19,000,000.00	0.80	$23,750,000.00	No
2011	35	$19,000,000.00	0.00	$0.00	No
2012	36	$18,000,000.00	1.80	$10,000,000.00	No
2013	37	$18,000,000.00	2.50	$7,200,000.00	No
2014	38	$18,000,000.00	0.00	$0.00	No
2006	23	$500,000.00	6.60	$75,757.58	Yes
2007	24	$916,667.00	5.50	$166,666.73	Yes
2008	25	$3,166,666.00	5.90	$536,723.05	Yes
2009	26	$4,766,666.00	2.20	$2,166,666.36	Yes
2010	27	$5,766,666.00	0.00	$0.00	No
2011	28	$7,666,666.00	0.10	$76,666,660.00	No
2008	29	$16,984,216.00	7.10	$2,392,143.10	Yes
2009	30	$18,876,139.00	3.30	$5,720,042.12	No
2010	31	$20,144,707.00	4.60	$4,379,284.13	No
2011	32	$21,644,707.00	0.00	$0.00	No
2012	33	$24,000,000.00	0.20	$120,000,000.00	No
2013	34	$25,500,000.00	0.00	$0.00	No
2007	22	$2,000,000.00	0.00	$0.00	No
2008	23	$2,000,000.00	0.60	$3,333,333.33	No
2009	24	$2,000,000.00	0.00	$0.00	No
2010	25	$3,000,000.00	0.00	$0.00	No
2011	26	$3,300,000.00	1.10	$3,000,000.00	No
2009	28	$15,285,714.00	6.20	$2,465,437.74	Yes

Year	Age	Salary	WAR	$/WAR	Success
2010	29	$24,285,714.00	4.60	$5,279,503.04	No
2011	30	$24,285,714.00	7.50	$3,238,095.20	No
2012	31	$23,000,000.00	3.50	$6,571,428.57	No
2013	32	$23,000,000.00	0.30	$76,666,666.67	No
2014	33	$23,000,000.00	0.00	$0.00	No
2015	34	$23,000,000.00	1.00	$23,000,000.00	No
2006	30	$4,000,000.00	3.50	$1,142,857.14	Yes
2007	31	$7,000,000.00	0.00	$0.00	No
2008	32	$12,000,000.00	1.10	$10,909,090.91	No
2009	33	$12,000,000.00	0.00	$0.00	No
2010	34	$12,000,000.00	0.00	$0.00	No
2008	30	$9,600,000.00	0.60	$16,000,000.00	No
2009	31	$9,600,000.00	0.90	$10,666,666.67	No
2010	32	$13,600,000.00	0.40	$34,000,000.00	No
2011	33	$13,600,000.00	0.50	$27,200,000.00	No
2012	34	$12,000,000.00	0.00	$0.00	No
2006	27	$5,000,000.00	4.60	$1,086,956.52	Yes
2007	28	$8,000,000.00	6.10	$1,311,475.41	Yes
2008	29	$8,000,000.00	5.40	$1,481,481.48	Yes
2009	30	$8,500,000.00	1.70	$5,000,000.00	No
2010	31	$8,500,000.00	2.00	$4,250,000.00	No
2003	28	$7,625,000.00	4.70	$1,622,340.43	Yes
2004	29	$8,625,000.00	9.10	$947,802.20	Yes
2005	30	$11,625,000.00	1.60	$7,265,625.00	No
2006	31	$12,456,336.00	5.80	$2,147,644.14	Yes
2007	32	$12,311,637.00	1.80	$6,839,798.33	No
2008	33	$11,625,000.00	3.40	$3,419,117.65	No
2009	34	$11,625,000.00	5.20	$2,235,576.92	Yes
2010	35	$7,666,666.00	4.10	$1,869,918.54	Yes
2001	25	$22,000,000.00	8.30	$2,650,602.41	No
2002	26	$22,000,000.00	8.80	$2,500,000.00	No
2003	27	$22,000,000.00	8.40	$2,619,047.62	No
2004	28	$22,000,000.00	7.60	$2,894,736.84	No
2005	29	$26,000,000.00	9.40	$2,765,957.45	No
2006	30	$21,680,727.00	4.50	$4,817,939.33	No
2007	31	$22,708,525.00	9.40	$2,415,800.53	Yes
2008	32	$28,000,000.00	6.80	$4,117,647.06	No
2009	33	$33,000,000.00	4.10	$8,048,780.49	No
2010	34	$33,000,000.00	4.10	$8,048,780.49	No
2008	27	$4,835,000.00	5.90	$819,491.53	Yes

Year	Age	Salary	WAR	$/WAR	Success
2009	28	$6,400,000.00	0.80	$8,000,000.00	No
2010	29	$10,200,000.00	3.30	$3,090,909.09	No
2011	30	$12,500,000.00	0.00	$0.00	No
2012	31	$12,000,000.00	4.80	$2,500,000.00	Yes
2013	32	$12,500,000.00	2.20	$5,681,818.18	No
2014	33	$12,500,000.00	0.60	$20,833,333.33	No
2001	29	$13,050,000.00	5.20	$2,509,615.38	No
2002	30	$15,462,727.00	6.00	$2,577,121.17	No
2003	31	$20,000,000.00	5.40	$3,703,703.70	No
2004	32	$22,500,000.00	4.10	$5,487,804.88	No
2005	33	$22,000,000.00	4.40	$5,000,000.00	No
2006	34	$18,279,238.00	4.50	$4,062,052.89	No
2007	35	$17,016,381.00	1.10	$15,469,437.27	No
2008	36	$18,929,923.00	6.00	$3,154,987.17	No
2009	25	$5,500,000.00	7.30	$753,424.66	Yes
2010	26	$7,000,000.00	2.80	$2,500,000.00	Yes
2011	27	$11,000,000.00	0.20	$55,000,000.00	No
2012	28	$15,000,000.00	1.30	$11,538,461.54	No
2013	29	$15,500,000.00	5.40	$2,870,370.37	Yes
2014	30	$16,000,000.00	3.50	$4,571,428.57	No
2007	29	$9,000,000.00	5.20	$1,730,769.23	Yes
2008	30	$15,000,000.00	3.00	$5,000,000.00	No
2009	31	$16,650,000.00	1.70	$9,794,117.65	No
2010	32	$16,750,000.00	0.00	$0.00	No
2011	33	$14,600,000.00	2.70	$5,407,407.41	No
2004	24	$7,000,000.00	8.50	$823,529.41	Yes
2005	25	$11,000,000.00	8.40	$1,309,523.81	Yes
2006	26	$14,000,000.00	8.40	$1,666,666.67	Yes
2007	27	$12,937,813.00	8.70	$1,487,104.94	Yes
2008	28	$13,870,949.00	9.20	$1,507,711.85	Yes
2009	29	$14,427,326.00	9.70	$1,487,353.20	Yes
2010	30	$14,595,953.00	7.50	$1,946,127.07	Yes
2007	21	$500,000.00	0.00	$0.00	No
2008	22	$650,000.00	0.40	$1,625,000.00	Yes
2009	23	$750,000.00	0.90	$833,333.33	Yes
2010	24	$1,834,671.00	4.80	$382,223.13	Yes
2011	25	$2,084,671.00	2.80	$744,525.36	Yes
2012	26	$4,350,000.00	6.90	$630,434.78	Yes
2002	30	$7,000,000.00	4.00	$1,750,000.00	Yes
2003	31	$8,000,000.00	5.90	$1,355,932.20	Yes

Year	Age	Salary	WAR	$/WAR	Success
2004	32	$9,000,000.00	3.50	$2,571,428.57	No
2005	33	$11,000,000.00	4.30	$2,558,139.53	No
2006	34	$12,000,000.00	4.00	$3,000,000.00	No
2007	29	$7,500,000.00	0.90	$8,333,333.33	No
2008	30	$8,000,000.00	0.00	$0.00	No
2009	31	$10,000,000.00	1.20	$8,333,333.33	No
2010	32	$7,000,000.00	0.20	$35,000,000.00	No
2011	33	$8,500,000.00	0.00	$0.00	No
2006	24	$377,300.00	0.90	$419,222.22	Yes
2007	25	$1,000,000.00	2.70	$370,370.37	Yes
2008	26	$2,500,000.00	3.60	$694,444.44	Yes
2009	27	$3,650,000.00	1.00	$3,650,000.00	No
2010	28	$4,850,000.00	2.60	$1,865,384.62	Yes
2009	25	$1,750,000.00	5.60	$312,500.00	Yes
2010	26	$3,750,000.00	3.20	$1,171,875.00	Yes
2011	27	$5,750,000.00	7.90	$727,848.10	Yes
2012	28	$8,000,000.00	5.10	$1,568,627.45	Yes
2013	29	$10,000,000.00	6.30	$1,587,301.59	Yes
2014	30	$12,500,000.00	4.90	$2,551,020.41	Yes
2008	27	$6,500,000.00	3.90	$1,666,666.67	Yes
2009	28	$11,000,000.00	1.70	$6,470,588.24	No
2010	29	$15,000,000.00	1.60	$9,375,000.00	No
2011	30	$16,000,000.00	1.00	$16,000,000.00	No
2012	31	$17,000,000.00	5.20	$3,269,230.77	No
2007	29	$13,000,000.00	6.70	$1,940,298.51	Yes
2008	30	$13,000,000.00	3.80	$3,421,052.63	No
2009	31	$14,000,000.00	2.40	$5,833,333.33	No
2010	32	$15,000,000.00	5.60	$2,678,571.43	Yes
2011	33	$16,000,000.00	2.20	$7,272,727.27	No
2005	31	$7,200,000.00	1.60	$4,500,000.00	No
2006	32	$16,200,000.00	1.80	$9,000,000.00	No
2007	33	$13,200,000.00	7.30	$1,808,219.18	Yes
2008	34	$15,768,174.00	2.10	$7,508,654.29	No
2009	35	$18,971,596.00	0.80	$23,714,495.00	No
2005	22	$977,500.00	0.00	$0.00	No
2006	23	$977,500.00	0.00	$0.00	No
2007	24	$977,500.00	0.00	$0.00	No
2008	25	$977,500.00	0.00	$0.00	No
2009	26	$1,290,000.00	2.40	$537,500.00	Yes
2008	27	$8,400,000.00	4.20	$2,000,000.00	Yes

Year	Age	Salary	WAR	$/WAR	Success
2009	28	$11,600,000.00	3.50	$3,314,285.71	No
2010	29	$15,000,000.00	4.70	$3,191,489.36	No
2011	30	$15,000,000.00	0.00	$0.00	No
2012	31	$14,000,000.00	1.20	$11,666,666.67	No
2013	32	$14,000,000.00	1.90	$7,368,421.05	No
2005	22	$300,000.00	0.00	$0.00	No
2006	23	$400,000.00	0.10	$4,000,000.00	No
2007	24	$400,000.00	0.10	$4,000,000.00	No
2008	25	$500,000.00	0.00	$0.00	No
2009	26	$1,100,000.00	4.30	$255,813.95	Yes
2010	27	$1,200,000.00	1.70	$705,882.35	Yes
2006	31	$7,868,893.00	2.70	$2,914,404.81	No
2007	32	$9,836,116.00	0.20	$49,180,580.00	No
2008	33	$10,368,892.00	0.70	$14,812,702.86	No
2009	34	$12,868,892.00	4.70	$2,738,062.13	No
2010	35	$12,000,000.00	0.50	$24,000,000.00	No
2007	28	$7,400,000.00	4.20	$1,761,904.76	Yes
2008	29	$11,400,000.00	5.00	$2,280,000.00	Yes
2009	30	$11,400,000.00	1.10	$10,363,636.36	No
2010	31	$12,400,000.00	0.00	$0.00	No
2011	32	$0.00	0.00	$0.00	No
2007	23	$440,000.00	1.00	$440,000.00	Yes
2008	24	$966,666.00	5.50	$175,757.45	Yes
2009	25	$3,700,000.00	3.20	$1,156,250.00	Yes
2010	26	$5,700,000.00	3.60	$1,583,333.33	Yes
2011	27	$6,700,000.00	2.50	$2,680,000.00	Yes
2012	28	$11,500,000.00	0.80	$14,375,000.00	No
2007	32	$6,400,000.00	1.00	$6,400,000.00	No
2008	33	$9,400,000.00	0.00	$0.00	No
2009	34	$10,400,000.00	0.00	$0.00	No
2010	35	$11,400,000.00	0.00	$0.00	No
2011	36	$12,000,000.00	0.00	$0.00	No
2007	26	$6,333,333.00	4.10	$1,544,715.37	Yes
2008	27	$8,333,333.00	5.30	$1,572,326.98	Yes
2009	28	$8,333,333.00	0.40	$20,833,332.50	No
2010	29	$8,333,333.00	1.00	$8,333,333.00	No
2011	30	$10,333,333.00	0.00	$0.00	No
2012	31	$10,000,000.00	0.00	$0.00	No
2005	26	$372,100.00	5.20	$71,557.69	Yes
2006	27	$1,000,000.00	2.80	$357,142.86	Yes

Year	Age	Salary	WAR	$/WAR	Success
2007	28	$3,200,000.00	4.30	$744,186.05	Yes
2008	29	$4,450,000.00	0.60	$7,416,666.67	No
2009	30	$5,900,000.00	3.50	$1,685,714.29	Yes
2009	25	$3,350,000.00	2.90	$1,155,172.41	Yes
2010	26	$7,100,000.00	2.30	$3,086,956.52	No
2011	27	$10,600,000.00	2.50	$4,240,000.00	No
2012	28	$12,000,000.00	1.70	$7,058,823.53	No
2013	29	$15,000,000.00	0.10	$150,000,000.00	No
2014	30	$15,000,000.00	2.00	$7,500,000.00	No
2008	22	$500,000.00	4.80	$104,166.67	Yes
2009	23	$550,000.00	7.00	$78,571.43	Yes
2010	24	$950,000.00	8.10	$117,283.95	Yes
2011	25	$2,000,000.00	7.40	$270,270.27	Yes
2012	26	$4,500,000.00	2.50	$1,800,000.00	Yes
2013	27	$6,000,000.00	6.20	$967,741.94	Yes
2009	25	$1,000,000.00	6.30	$158,730.16	Yes
2010	26	$3,750,000.00	5.20	$721,153.85	Yes
2011	27	$5,750,000.00	4.40	$1,306,818.18	Yes
2012	28	$7,625,000.00	0.70	$10,892,857.14	No
2013	29	$11,625,000.00	3.00	$3,875,000.00	No
2006	30	$9,416,667.00	0.80	$11,770,833.75	No
2007	31	$13,250,000.00	3.50	$3,785,714.29	No
2008	32	$13,250,000.00	1.90	$6,973,684.21	No
2009	33	$13,250,000.00	5.40	$2,453,703.70	Yes
2010	34	$13,250,000.00	1.50	$8,833,333.33	No
2007	31	$11,500,000.00	2.30	$5,000,000.00	No
2008	32	$12,500,000.00	2.80	$4,464,285.71	No
2009	33	$19,000,000.00	1.80	$10,555,555.56	No
2010	34	$19,000,000.00	0.00	$0.00	No
2011	35	$19,000,000.00	4.00	$4,750,000.00	No
2012	36	$18,500,000.00	0.00	$0.00	No
2010	31	$18,700,000.00	1.80	$10,388,888.89	No
2011	32	$15,950,000.00	0.00	$0.00	No
2012	33	$15,250,000.00	0.00	$0.00	No
2013	34	$15,250,000.00	2.80	$5,446,428.57	No
2014	35	$15,250,000.00	1.10	$13,863,636.36	No
2006	30	$12,000,000.00	2.90	$4,137,931.03	No
2007	31	$12,000,000.00	2.00	$6,000,000.00	No
2008	32	$12,000,000.00	0.90	$13,333,333.33	No
2009	33	$12,000,000.00	2.10	$5,714,285.71	No

Year	Age	Salary	WAR	$/WAR	Success
2010	34	$12,000,000.00	4.70	$2,553,191.49	Yes
2008	26	$700,000.00	4.70	$148,936.17	Yes
2009	27	$3,200,000.00	6.00	$533,333.33	Yes
2010	28	$4,200,000.00	4.00	$1,050,000.00	Yes
2011	29	$6,200,000.00	7.10	$873,239.44	Yes
2012	30	$7,000,000.00	2.40	$2,916,666.67	Yes
2002	25	$10,000,000.00	6.60	$1,515,151.52	Yes
2003	26	$12,000,000.00	4.90	$2,448,979.59	No
2004	27	$12,500,000.00	3.20	$3,906,250.00	No
2005	28	$13,000,000.00	6.70	$1,940,298.51	Yes
2006	29	$13,500,000.00	5.60	$2,410,714.29	No
2007	30	$14,000,000.00	3.00	$4,666,666.67	No
2001	27	$12,600,000.00	5.20	$2,423,076.92	No
2002	28	$14,600,000.00	3.70	$3,945,945.95	No
2003	29	$15,600,000.00	3.50	$4,457,142.86	No
2004	30	$18,600,000.00	4.20	$4,428,571.43	No
2005	31	$19,600,000.00	3.80	$5,157,894.74	No
2006	32	$20,600,000.00	5.50	$3,745,454.55	No
2007	33	$21,600,000.00	3.90	$5,538,461.54	No
2008	34	$21,600,000.00	3.00	$7,200,000.00	No
2009	35	$21,600,000.00	6.50	$3,323,076.92	No
2010	36	$22,600,000.00	1.70	$13,294,117.65	No
2007	27	$4,000,000.00	0.00	$0.00	No
2008	28	$4,000,000.00	0.00	$0.00	No
2009	29	$4,000,000.00	0.00	$0.00	No
2010	30	$4,000,000.00	0.00	$0.00	No
2011	31	$4,000,000.00	0.00	$0.00	No
2008	32	$16,500,000.00	3.50	$4,714,285.71	No
2009	33	$18,000,000.00	5.20	$3,461,538.46	No
2010	34	$18,500,000.00	3.00	$6,166,666.67	No
2011	35	$18,500,000.00	3.80	$4,868,421.05	No
2012	36	$18,000,000.00	5.70	$3,157,894.74	No
2005	22	$762,500.00	0.00	$0.00	No
2006	23	$762,500.00	0.10	$7,625,000.00	No
2007	24	$762,500.00	0.00	$0.00	No
2008	25	$762,500.00	0.10	$7,625,000.00	No
2009	26	$1,150,000.00	0.00	$0.00	No
2010	30	$16,333,327.00	5.90	$2,768,360.51	Yes
2011	31	$16,317,774.00	3.90	$4,184,044.62	No
2012	32	$17,000,000.00	4.00	$4,250,000.00	No

Year	Age	Salary	WAR	$/WAR	Success
2013	33	$17,000,000.00	2.50	$6,800,000.00	No
2014	34	$17,000,000.00	3.30	$5,151,515.15	No
2015	35	$17,000,000.00	0.80	$21,250,000.00	No
2016	36	$17,000,000.00	0.30	$56,666,666.67	No
2010	24	$7,200,000.00	7.10	$1,014,084.51	Yes
2011	25	$11,700,000.00	3.70	$3,162,162.16	No
2012	26	$18,500,000.00	4.70	$3,936,170.21	No
2013	27	$19,857,000.00	5.20	$3,818,653.85	No
2014	28	$22,857,000.00	6.80	$3,361,323.53	Yes
2001	27	$4,950,000.00	7.80	$634,615.38	Yes
2002	28	$5,000,000.00	6.30	$793,650.79	Yes
2003	29	$10,600,000.00	6.20	$1,709,677.42	Yes
2004	30	$11,600,000.00	8.30	$1,397,590.36	Yes
2005	31	$12,600,000.00	4.60	$2,739,130.43	No
2006	32	$16,600,000.00	2.20	$7,545,454.55	No
2007	33	$16,600,000.00	4.40	$3,772,727.27	No
2008	34	$16,600,000.00	1.00	$16,600,000.00	No
2009	35	$16,600,000.00	3.30	$5,030,303.03	No
2010	36	$17,775,000.00	0.20	$88,875,000.00	No
2011	37	$20,275,000.00	2.50	$8,110,000.00	No
2001	28	$10,500,000.00	0.30	$35,000,000.00	No
2002	29	$9,503,543.00	0.00	$0.00	No
2003	30	$13,625,000.00	1.90	$7,171,052.63	No
2004	31	$14,625,000.00	1.50	$9,750,000.00	No
2005	32	$15,125,000.00	1.10	$13,750,000.00	No
2006	33	$14,503,543.00	0.00	$0.00	No
2007	34	$14,500,000.00	0.00	$0.00	No
2008	35	$15,975,184.00	0.10	$159,751,840.00	No
2004	29	$11,000,000.00	5.60	$1,964,285.71	Yes
2005	30	$12,500,000.00	5.70	$2,192,982.46	No
2006	31	$13,500,000.00	3.70	$3,648,648.65	No
2007	32	$14,500,000.00	4.60	$3,152,173.91	No
2008	33	$15,500,000.00	2.50	$6,200,000.00	No
2008	27	$1,000,000.00	3.90	$256,410.26	Yes
2009	28	$3,500,000.00	4.30	$813,953.49	Yes
2010	29	$5,500,000.00	4.40	$1,250,000.00	Yes
2011	30	$8,250,000.00	5.70	$1,447,368.42	Yes
2012	31	$10,000,000.00	3.00	$3,333,333.33	No
2002	31	$10,428,571.00	7.10	$1,468,812.82	Yes
2003	32	$11,428,571.00	4.80	$2,380,952.29	No

Year	Age	Salary	WAR	$/WAR	Success
2004	33	$12,428,571.00	0.00	$0.00	No
2005	34	$13,428,571.00	4.60	$2,919,254.57	No
2006	35	$20,428,571.00	2.80	$7,295,918.21	No
2007	36	$23,428,571.00	0.90	$26,031,745.56	No
2008	37	$23,428,571.00	1.90	$12,330,826.84	No
2010	24	$450,000.00	1.70	$264,705.88	Yes
2011	25	$3,500,000.00	2.30	$1,521,739.13	Yes
2012	26	$5,500,000.00	2.90	$1,896,551.72	Yes
2013	27	$7,750,000.00	0.50	$15,500,000.00	No
2014	28	$11,250,000.00	2.50	$4,500,000.00	No
2005	22	$300,000.00	0.00	$0.00	No
2006	23	$300,000.00	1.70	$176,470.59	Yes
2007	24	$1,500,000.00	0.00	$0.00	No
2008	25	$1,500,000.00	3.00	$500,000.00	Yes
2009	26	$1,500,000.00	2.90	$517,241.38	Yes
2007	31	$14,000,000.00	2.10	$6,666,666.67	No
2008	32	$14,000,000.00	2.60	$5,384,615.38	No
2009	33	$14,000,000.00	4.40	$3,181,818.18	No
2010	34	$14,000,000.00	3.10	$4,516,129.03	No
2011	35	$14,000,000.00	0.00	$0.00	No
2006	26	$500,000.00	3.00	$166,666.67	Yes
2007	27	$2,000,000.00	2.60	$769,230.77	Yes
2008	28	$2,500,000.00	2.20	$1,136,363.64	Yes
2009	29	$3,600,000.00	2.20	$1,636,363.64	Yes
2010	30	$4,700,000.00	1.90	$2,473,684.21	Yes
2005	25	$350,000.00	3.70	$94,594.59	Yes
2006	26	$800,000.00	0.10	$8,000,000.00	No
2007	27	$2,550,000.00	0.40	$6,375,000.00	No
2008	28	$3,550,000.00	1.00	$3,550,000.00	No
2009	29	$5,300,000.00	0.00	$0.00	No
2005	27	$8,500,000.00	4.80	$1,770,833.33	Yes
2006	28	$9,500,000.00	2.80	$3,392,857.14	No
2007	29	$9,500,000.00	2.10	$4,523,809.52	No
2008	30	$11,500,000.00	0.20	$57,500,000.00	No
2009	31	$11,500,000.00	0.00	$0.00	No
2010	32	$12,500,000.00	0.00	$0.00	No
2010	22	$1,000,000.00	0.40	$2,500,000.00	Yes
2011	23	$3,835,772.00	0.40	$9,589,430.00	No
2012	24	$2,000,000.00	3.60	$555,555.56	Yes
2013	25	$2,000,000.00	2.00	$1,000,000.00	Yes

Year	Age	Salary	WAR	$/WAR	Success
2014	26	$5,000,000.00	1.90	$2,631,578.95	Yes
2015	27	$8,050,000.00	2.70	$2,981,481.48	Yes
2007	32	$8,500,000.00	0.00	$0.00	No
2008	33	$10,500,000.00	0.40	$26,250,000.00	No
2009	34	$13,302,583.00	6.50	$2,046,551.23	Yes
2010	35	$15,840,971.00	3.20	$4,950,303.44	No
2011	36	$14,259,403.00	3.50	$4,074,115.14	No
2008	25	$11,300,000.00	2.70	$4,185,185.19	No
2009	26	$14,383,049.00	5.10	$2,820,205.69	No
2010	27	$20,000,000.00	6.40	$3,125,000.00	No
2011	28	$20,000,000.00	7.50	$2,666,666.67	Yes
2012	29	$21,000,000.00	7.20	$2,916,666.67	Yes
2013	30	$21,000,000.00	7.30	$2,876,712.33	Yes
2014	31	$22,000,000.00	5.00	$4,400,000.00	No
2015	32	$22,000,000.00	5.20	$4,230,769.23	No
2003	26	$1,250,000.00	0.60	$2,083,333.33	Yes
2004	27	$4,250,000.00	1.50	$2,833,333.33	No
2005	28	$7,250,000.00	3.60	$2,013,888.89	Yes
2006	29	$9,750,000.00	1.10	$8,863,636.36	No
2007	30	$13,250,000.00	1.50	$8,833,333.33	No
2008	31	$14,250,000.00	2.30	$6,195,652.17	No
2009	32	$16,500,000.00	4.40	$3,750,000.00	No
2010	33	$16,500,000.00	0.00	$0.00	No
2011	34	$16,500,000.00	0.80	$20,625,000.00	No
2012	35	$16,500,000.00	2.20	$7,500,000.00	No
2013	36	$16,500,000.00	1.70	$9,705,882.35	No
2008	24	$455,000.00	4.50	$101,111.11	Yes
2009	25	$1,032,500.00	6.20	$166,532.26	Yes
2010	26	$1,287,500.00	5.70	$225,877.19	Yes
2011	27	$4,287,500.00	7.80	$549,679.49	Yes
2012	28	$6,000,000.00	6.90	$869,565.22	Yes
2013	29	$8,500,000.00	2.10	$4,047,619.05	No
2014	30	$10,000,000.00	1.00	$10,000,000.00	No
2015	31	$13,000,000.00	3.80	$3,421,052.63	Yes
2002	37	$15,000,000.00	11.80	$1,271,186.44	Yes
2003	38	$15,500,000.00	9.20	$1,684,782.61	Yes
2004	39	$18,000,000.00	10.60	$1,698,113.21	Yes
2005	40	$22,000,000.00	0.60	$36,666,666.67	No
2006	41	$19,331,470.00	4.00	$4,832,867.50	No
2004	23	$550,000.00	4.60	$119,565.22	Yes

Year	Age	Salary	WAR	$/WAR	Success
2005	24	$850,000.00	0.30	$2,833,333.33	No
2006	25	$3,050,000.00	0.20	$15,250,000.00	No
2007	26	$4,800,000.00	1.30	$3,692,307.69	No
2008	27	$6,000,000.00	0.90	$6,666,666.67	No
2005	29	$10,500,000.00	3.20	$3,281,250.00	No
2006	30	$14,500,000.00	6.00	$2,416,666.67	No
2007	31	$14,500,000.00	2.20	$6,590,909.09	No
2008	32	$14,500,000.00	6.80	$2,132,352.94	Yes
2009	33	$14,500,000.00	3.50	$4,142,857.14	No
2010	34	$14,500,000.00	1.40	$10,357,142.86	No
2005	26	$11,400,000.00	3.20	$3,562,500.00	No
2006	27	$12,900,000.00	5.40	$2,388,888.89	No
2007	28	$12,900,000.00	3.80	$3,394,736.84	No
2008	29	$13,400,000.00	5.60	$2,392,857.14	Yes
2009	30	$13,400,000.00	3.30	$4,060,606.06	No

APPENDIX F

Nominal Variable/Characteristic Categories For Research Question Four

Table F1

Ratio to Nominal Variable/Characteristic Categories

Variable	Categories
LNG	
	5
	6
	7
	8
	9
	10
	11
Variable	**Categories**
SAL	
	0 - 9,999,999
	10,000,000 - 19,999,999
	20,000,000 - 29,999,999
	30,000,000 - 39,999,999
	40,000,000 - 49,999,999
	50,000,000 - 59,999,999
	60,000,000 - 69,999,999
	70,000,000 - 79,999,999
	80,000,000 - 89,999,999
	90,000,000 - 99,999,999
	100,000,000 - 109,999,999
	110,000,000 - 119,999,999
	120,000,000 - 129,999,999
	130,000,000 - 139,999,999
	140,000,000 - 149,999,999
	150,000,000 - 159,999,999
	160,000,000 - 169,999,999
	170,000,000 - 179,999,999
	180,000,000 - 189,999,999
	190,000,000 - 199,999,999
	200,000,000 - 209,999,999
	210,000,000 - 219,999,999
	220,000,000 - 229,999,999
	230,000,000 - 239,999,999
	240,000,000 - 249,999,999
	250,000,000 - 259,999,999

Variable	Categories
AVG	
	0 - 999,999
	1,000,000 - 1,999,999
	2,000,000 - 2,999,999
	3,000,000 - 3,999,999
	4,000,000 - 4,999,999
	5,000,000 - 5,999,999
	6,000,000 - 6,999,999
	7,000,000 - 7,999,999
	8,000,000 - 8,999,999
	9,000,000 - 9,999,999
	10,000,000 - 10,999,999
	11,000,000 - 11,999,999
	12,000,000 - 12,999,999
	13,000,000 - 13,999,999
	14,000,000 - 14,999,999
	15,000,000 - 15,999,999
	16,000,000 - 16,999,999
	17,000,000 - 17,999,999
	18,000,000 - 18,999,999
	19,000,000 - 19,999,999
	20,000,000 - 20,999,999
	21,000,000 - 21,999,999
	22,000,000 - 22,999,999
	23,000,000 - 23,999,999
	24,000,000 - 24,999,999
	25,000,000 - 25,999,999
Variable	**Categories**
MVP	
	0
	1
	2
	3
	4

Variable	Categories
PAY	
	20,000,000 - 29,999,999
	30,000,000 - 39,999,999
	40,000,000 - 49,999,999
	50,000,000 - 59,999,999
	60,000,000 - 69,999,999
	70,000,000 - 79,999,999
	80,000,000 - 89,999,999
	90,000,000 - 99,999,999
	100,000,000 - 109,999,999
	110,000,000 - 119,999,999
	120,000,000 - 129,999,999
	130,000,000 - 139,999,999
	140,000,000 - 149,999,999
	150,000,000 - 159,999,999
	160,000,000 - 169,999,999
	170,000,000 - 179,999,999
	180,000,000 - 189,999,999
	190,000,000 - 199,999,999
	200,000,000 - 209,999,999
Variable	**Categories**
EXP	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
	16

Variable	Categories
AGE	
	20
	21
	22
	23
	24
	25
	26
	27
	28
	29
	30
	31
	32
	33
	34
	35
	36
	37
Variable	**Categories**
DEB	
	18
	19
	20
	21
	22
	23
	24
	25
	26
	27

Variable	Categories
POP	
	1,000,000 - 1,999,999
	2,000,000 - 2,999,999
	3,000,000 - 3,999,999
	4,000,000 - 4,999,999
	5,000,000 - 5,999,999
	6,000,000 - 6,999,999
	7,000,000 - 7,999,999
	8,000,000 - 8,999,999
	9,000,000 - 9,999,999
	10,000,000 - 10,999,999
	11,000,000 - 11,999,999
	12,000,000 - 12,999,999
	13,000,000 - 13,999,999
	14,000,000 - 14,999,999
	15,000,000 - 15,999,999
	16,000,000 - 16,999,999
	17,000,000 - 17,999,999
	18,000,000 - 18,999,999
	19,000,000 - 19,999,999

Variable	Categories
AS	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10

Variable	Categories
HT	
	67
	68
	69
	70
	71
	72
	73
	74
	75
	76
	77
	78
	79
	80
	81
Variable	**Categories**
CWAR	
	0 - 0.999
	1 - 1.999
	2 - 2.999
	3 - 3.999
	4 - 4.999
	5 - 5.999
	6 - 6.999
	7 - 7.999

Variable	Categories
$/WAR	
	0 - 999,999
	1,000,000 - 1,999,999
	2,000,000 - 2,999,999
	3,000,000 - 3,999,999
	4,000,000 - 4,999,999
	5,000,000 - 5,999,999
	6,000,000 - 6,999,999
	7,000,000 - 7,999,999
	8,000,000 - 8,999,999
	9,000,000 - 9,999,999
	10,000,000 - 10,999,999
	11,000,000 - 11,999,999
	12,000,000 - 12,999,999
	13,000,000 - 13,999,999
	14,000,000 - 14,999,999
	15,000,000 - 15,999,999
	16,000,000 - 16,999,999
	17,000,000 - 17,999,999
	18,000,000 - 18,999,999
	19,000,000 - 19,999,999
	20,000,000+

APPENDIX G

Contracts Excluded From Research Question Five

Table G1

MLB Contracts Excluded from Research Question Five

Last	First	Length	Start	End	Amount ($)	Position	Team
Ackley	Dustin	5	2010	2014	6,600,000	2B	Mariners
Alonso	Yonder	5	2008	2012	2,550,000	1B	Reds
Arguelles	Noel	5	2010	2014	6,900,000	P	Royals
Blalock	Hank	5	2004	2008	15,250,000	3B	Rangers
Braun	Ryan	8	2008	2015	44,562,500	3B	Brewers
Chapman	Aroldis	6	2010	2015	21,885,772	P	Reds
Crosby	Bobby	5	2005	2009	12,550,000	SS	Athletics
Drew	Stephen	5	2005	2009	5,100,000	SS	Diamondbacks
Humber	Philip	5	2005	2009	4,200,000	P	Mets
Igawa	Kei	5	2007	2011	20,000,000	P	Yankees
Kinsler	Ian	5	2008	2012	21,300,000	2B	Rangers
Longoria	Evan	6	2008	2013	14,500,000	3B	Rays
Matsuzaka	Daisuke	6	2007	2012	51,666,665	P	Red Sox
McCann	Brian	6	2007	2012	29,006,666	C	Braves
Morales	Kendrys	6	2005	2010	3,900,000	1B	Angels
Niemann	Jeff	5	2005	2009	5,200,000	P	Rays
Price	David	6	2007	2012	10,169,342	P	Rays
Samardzija	Jeff	5	2007	2011	12,300,000	P	Cubs
Sizemore	Grady	6	2006	2011	22,783,331	OF	Indians
Span	Denard	5	2010	2014	16,000,000	OF	Twins
Tulowitzki	Troy	6	2008	2013	29,000,000	SS	Rockies

Note. Contracts are excluded because players did not have three years of experience before signing their long-term contracts in which to calculate a baseline WAR.

APPENDIX H

Individual Player Data For Contract Shirking

Table H1

Abreu, Bobby

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2002	28	5.8	5.8	No	0.087	5.746	No
2003	29	5.3	5.8	Yes	0.086	5.659	Yes
2004	30	6.5	5.8	No	0.085	5.574	No
2005	31	3.5	5.8	Yes	0.084	5.491	Yes
2006	32	2.0	5.8	Yes	0.082	5.408	Yes

Total	23				27.879	
Avg.	4.62	5.8	Yes		5.576	Yes

Years Shirked	3/5		3/5
% Shirked	60.00%		60.00%

Did shirking occur in a majority of the contract?	Yes
Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H2

Beltran, Carlos

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2005	28	2.9	5.6	Yes	0.084	5.546	Yes
2006	29	8.2	5.6	No	0.083	5.462	No
2007	30	5.4	5.6	Yes	0.082	5.380	No
2008	31	6.9	5.6	No	0.081	5.300	No
2009	32	3.6	5.6	Yes	0.079	5.220	Yes
2010	33	0.7	5.6	Yes	0.078	5.142	Yes
2011	34	4.6	5.6	Yes	0.077	5.065	Yes

Total	32.30				37.115	
Avg.	4.61	5.6	Yes		5.302	Yes

Years Shirked	5/7		4/7
% Shirked	71.43%		57.14%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H3

Beltre, Adrian

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2005	26	3.2	5.0	Yes	-	5.000	Yes
2006	27	5.4	5.0	No	-	5.000	No
2007	28	3.8	5.0	Yes	0.075	4.925	Yes
2008	29	5.6	5.0	No	0.074	4.851	No
2009	30	3.3	5.0	Yes	0.073	4.778	Yes
	Total	21.30				24.554	
	Avg.	4.26	5.0	Yes		4.911	Yes
			Years Shirked	3/5			3/5
			% Shirked	60.00%			60.00%

Did shirking occur in a majority of the contract?	Yes
Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H4

Berkman, Lance

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2005	29	3.2	5.4	Yes	0.081	5.289	Yes
2006	30	6.0	5.4	No	0.079	5.210	No
2007	31	2.2	5.4	Yes	0.078	5.132	Yes
2008	32	6.8	5.4	No	0.077	5.055	No
2009	33	3.5	5.4	Yes	0.076	4.979	Yes
2010	34	1.4	5.4	Yes	0.075	4.904	Yes

Total	23.10				30.570	
Avg.	3.85	5.4	Yes		5.095	Yes

Years Shirked	4/6		4/6
% Shirked	66.67%		66.67%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H5

Bonds, Barry

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2002	37	11.8	7.8	No	0.117	7.683	No
2003	38	9.2	7.8	No	0.115	7.568	No
2004	39	10.6	7.8	No	0.114	7.454	No
2005	40	0.6	7.8	Yes	0.112	7.342	Yes
2006	41	4.0	7.8	Yes	0.110	7.232	Yes

Total	36.20			37.280	
Avg.	7.24	7.8	Yes	7.456	Yes

Years Shirked	2/5	2/5
% Shirked	40.00%	40.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H6

Burnett, A.J.

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	32	4.4	2.2	No	0.033	2.197	No
2010	33	0.0	2.2	Yes	0.033	2.164	Yes
2011	34	0.8	2.2	Yes	0.032	2.131	Yes
2012	35	2.2	2.2	No	0.032	2.099	No
2013	36	1.7	2.2	Yes	0.031	2.068	Yes

Total	9.10			10.658	
Avg.	1.82	2.2	Yes	2.132	Yes

Years Shirked	3/5	3/5
% Shirked	60.00%	60.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H7

Burrell, Pat

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2003	26	0.6	2.0	Yes	-	2.000	Yes
2004	27	1.5	2.0	Yes	-	2.000	Yes
2005	28	3.6	2.0	No	0.030	1.970	No
2006	29	1.1	2.0	Yes	0.030	1.940	Yes
2007	30	1.5	2.0	Yes	0.029	1.911	Yes
2008	31	2.3	2.0	No	0.029	1.883	No

Total	10.60			11.704	
Avg.	1.77	2.0	Yes	1.951	Yes

Years Shirked	4/6	4/6
% Shirked	66.67%	66.67%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H8

Cabrera, Miguel

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	25	2.7	4.7	Yes	-	4.700	Yes
2009	26	5.1	4.7	No	-	4.700	No
2010	27	6.4	4.7	No	-	4.700	No
2011	28	7.5	4.7	No	0.071	4.630	No
2012	29	7.2	4.7	No	0.069	4.560	No
2013	30	7.3	4.7	No	0.068	4.492	No
2014	31	5.0	4.7	No	0.067	4.424	No
2015	32	5.2	4.7	No	0.066	4.358	No

Total	46.40				36.563	
Avg.	5.80	4.7	No		4.570	No

Years Shirked	1/8		1/8
% Shirked	12.50%		12.50%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H9

Carpenter, Chris

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	32	0.0	4.7	Yes	0.071	4.659	Yes
2008	33	0.4	4.7	Yes	0.070	4.589	Yes
2009	34	6.5	4.7	No	0.069	4.520	No
2010	35	3.2	4.7	Yes	0.068	4.453	Yes
2011	36	3.5	4.7	Yes	0.067	4.386	Yes

Total	13.60			22.607	
Avg.	2.72	4.7	Yes	4.521	Yes

Years Shirked	4/5	4/5
% Shirked	80.00%	80.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H10

Chavez, Eric

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2005	27	4.8	5.0	Yes	-	5.000	Yes
2006	28	2.8	5.0	Yes	0.075	4.925	Yes
2007	29	2.1	5.0	Yes	0.074	4.851	Yes
2008	30	0.2	5.0	Yes	0.073	4.778	Yes
2009	31	0.0	5.0	Yes	0.072	4.707	Yes
2010	32	0.0	5.0	Yes	0.071	4.636	Yes

Total	9.90			28.897	
Avg.	1.65	5.0	Yes	4.816	Yes

Years Shirked	6/6	6/6
% Shirked	100.00%	100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H11

DeJesus, David

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2006	26	3.0	2.1	No	-	2.100	No
2007	27	2.6	2.1	No	-	2.100	No
2008	28	2.2	2.1	No	0.032	2.069	No
2009	29	2.2	2.1	No	0.031	2.037	No
2010	30	1.9	2.1	Yes	0.031	2.007	Yes

Total	11.90				10.313	
Avg.	2.38	2.1	No		2.063	No

Years Shirked	1/5	1/5
% Shirked	20.00%	20.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H12

Drew, J.D.

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	31	2.1	5.2	Yes	0.078	5.092	Yes
2008	32	2.6	5.2	Yes	0.076	5.016	Yes
2009	33	4.4	5.2	Yes	0.075	4.941	Yes
2010	34	3.1	5.2	Yes	0.074	4.867	Yes
2011	35	0.0	5.2	Yes	0.073	4.794	Yes

Total	12.20			24.710	
Avg.	2.44	5.2	Yes	4.942	Yes

Years Shirked	5/5	5/5
% Shirked	100.00%	100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H13

Gallardo, Yovani

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2010	24	1.7	2.0	Yes	-	2.000	Yes
2011	25	2.3	2.0	No	-	2.000	No
2012	26	2.9	2.0	No	-	2.000	No
2013	27	0.5	2.0	Yes	-	2.000	Yes
2014	28	2.5	2.0	No	0.030	1.970	No

Total	9.90			9.970	
Avg.	1.98	2.0	Yes	1.994	Yes

Years Shirked	2/5	2/5
% Shirked	40.00%	40.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H14

Giambi, Jason

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2002	31	7.1	7.6	Yes	0.114	7.456	Yes
2003	32	4.8	7.6	Yes	0.112	7.345	Yes
2004	33	0.0	7.6	Yes	0.110	7.234	Yes
2005	34	4.6	7.6	Yes	0.109	7.126	Yes
2006	35	2.8	7.6	Yes	0.107	7.019	Yes
2007	36	0.9	7.6	Yes	0.105	6.914	Yes
2008	37	1.9	7.6	Yes	0.104	6.810	Yes

Total	22.10				49.904	
Avg.	3.16	7.6	Yes		7.129	Yes

Years Shirked	7/7		7/7
% Shirked	100.00%		100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H15

Granderson, Curtis

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	27	3.9	4.4	Yes	-	4.400	Yes
2009	28	4.3	4.4	Yes	0.066	4.334	Yes
2010	29	4.4	4.4	No	0.065	4.269	No
2011	30	5.7	4.4	No	0.064	4.205	No
2012	31	3.0	4.4	Yes	0.063	4.142	Yes

Total	21.30				21.350	
Avg.	4.26	4.4	Yes		4.270	Yes

Years Shirked	3/5		3/5
% Shirked	60.00%		60.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H16

Guerrero, Vladimir

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2004	29	5.6	5.0	No	0.075	4.955	No
2005	30	5.7	5.0	No	0.074	4.880	No
2006	31	3.7	5.0	Yes	0.073	4.807	Yes
2007	32	4.6	5.0	Yes	0.072	4.735	Yes
2008	33	2.5	5.0	Yes	0.071	4.664	Yes
	Total	22.10				24.041	
	Avg.	4.42	5.0	Yes		4.808	Yes
			Years Shirked	3/5			3/5
			% Shirked	60.00%			60.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H17

Hampton, Mike

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2001	28	0.3	4.9	Yes	0.074	4.856	Yes
2002	29	0.0	4.9	Yes	0.073	4.783	Yes
2003	30	1.9	4.9	Yes	0.072	4.711	Yes
2004	31	1.5	4.9	Yes	0.071	4.641	Yes
2005	32	1.1	4.9	Yes	0.070	4.571	Yes
2006	33	0.0*	4.9	Yes	0.069	4.503	Yes
2007	34	0.0*	4.9	Yes	0.068	4.435	Yes
2008	35	0.1	4.9	Yes	0.067	4.369	Yes

Total	4.90				36.869	
Avg.	0.61	4.9	Yes		4.609	Yes

Years Shirked	8/8		8/8
% Shirked	100.00%		100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H18

Helton, Todd

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2001	27	7.8	5.0	No	-	5.000	No
2002	28	6.3	5.0	No	0.075	4.925	No
2003	29	6.2	5.0	No	0.074	4.851	No
2004	30	8.3	5.0	No	0.073	4.778	No
2005	31	4.6	5.0	Yes	0.072	4.707	Yes
2006	32	2.2	5.0	Yes	0.071	4.636	Yes
2007	33	4.4	5.0	Yes	0.070	4.567	Yes
2008	34	1.0	5.0	Yes	0.068	4.498	Yes
2009	35	3.3	5.0	Yes	0.067	4.431	Yes
2010	36	0.2	5.0	Yes	0.066	4.364	Yes
2011	37	2.5	5.0	Yes	0.065	4.299	Yes

Total	46.80				51.055	
Avg.	4.25	5.0	Yes		4.641	Yes

Years Shirked	7/11		7/11
% Shirked	63.64%		63.64%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H19

Hernandez, Felix

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2010	24	7.1	4.6	No	-	4.600	No
2011	25	3.7	4.6	Yes	-	4.600	Yes
2012	26	4.7	4.6	No	-	4.600	No
2013	27	5.2	4.6	No	-	4.600	No
2014	28	6.8	4.6	No	0.069	4.531	No

Total	27.50			22.931	
Avg.	5.50	4.6	No	4.586	No

Years Shirked	1/5		1/5
% Shirked	20.00%		20.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H20

Holliday, Matt

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2010	30	5.9	5.7	No	0.086	5.615	No
2011	31	3.9	5.7	Yes	0.084	5.530	Yes
2012	32	4.0	5.7	Yes	0.083	5.447	Yes
2013	33	2.5	5.7	Yes	0.082	5.366	Yes
2014	34	3.3	5.7	Yes	0.080	5.285	Yes
2015	35	0.8	5.7	Yes	0.079	5.206	Yes
2016	36	0.3	5.7	Yes	0.078	5.128	Yes

Total	20.70				37.576	
Avg.	2.96	5.7	Yes		5.368	Yes

Years Shirked	6/7		6/7
% Shirked	85.71%		85.71%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H21

Hunter, Torii

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	32	3.5	3.4	No	0.051	3.379	No
2009	33	5.2	3.4	No	0.051	3.328	No
2010	34	3.0	3.4	Yes	0.050	3.278	Yes
2011	35	3.8	3.4	No	0.049	3.229	No
2012	36	5.7	3.4	No	0.048	3.180	No

Total	21.20			16.394	
Avg.	4.24	3.4	No	3.279	No

Years Shirked	1/5	1/5
% Shirked	20.00%	20.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H22

Jeter, Derek

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2001	27	5.2	6.7	Yes	-	6.700	Yes
2002	28	3.7	6.7	Yes	0.101	6.600	Yes
2003	29	3.5	6.7	Yes	0.099	6.501	Yes
2004	30	4.2	6.7	Yes	0.098	6.403	Yes
2005	31	3.8	6.7	Yes	0.096	6.307	Yes
2006	32	5.5	6.7	Yes	0.095	6.212	Yes
2007	33	3.9	6.7	Yes	0.093	6.119	Yes
2008	34	3.0	6.7	Yes	0.092	6.027	Yes
2009	35	6.5	6.7	Yes	0.090	5.937	No
2010	36	1.7	6.7	Yes	0.089	5.848	Yes

Total	41.00				62.654	
Avg.	4.10	6.7	Yes		6.265	Yes

Years Shirked	10/10		9/10
% Shirked	100.00%		90.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H23

Jones, Andruw

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2002	25	6.6	6.7	Yes	-	6.700	Yes
2003	26	4.9	6.7	Yes	-	6.700	Yes
2004	27	3.2	6.7	Yes	-	6.700	Yes
2005	28	6.7	6.7	No	0.101	6.600	No
2006	29	5.6	6.7	Yes	0.099	6.501	Yes
2007	30	3.0	6.7	Yes	0.098	6.403	Yes

Total	30.00			39.603	
Avg.	5.00	6.7	Yes	6.601	Yes

Years Shirked	5/6	5/6
% Shirked	83.33%	83.33%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H24

Konerko, Paul

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2006	30	2.9	2.1	No	0.032	2.069	No
2007	31	2.0	2.1	Yes	0.031	2.037	Yes
2008	32	0.9	2.1	Yes	0.031	2.007	Yes
2009	33	2.1	2.1	No	0.030	1.977	No
2010	34	4.7	2.1	No	0.030	1.947	No
	Total	12.60				10.037	
	Avg.	2.52	2.1	No		2.007	No
		Years Shirked		2/5			2/5
		% Shirked		40.00%			40.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H25

Lackey, John

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2010	31	1.8	3.9	Yes	0.058	3.812	Yes
2011	32	0.0	3.9	Yes	0.057	3.755	Yes
2012	33	0.0*	3.9	Yes	0.056	3.698	Yes
2013	34	2.8	3.9	Yes	0.055	3.643	Yes
2014	35	1.1	3.9	Yes	0.055	3.588	Yes

Total	5.70			18.496	
Avg.	1.14	3.9	Yes	3.699	Yes

Years Shirked	5/5	5/5
% Shirked	100.00%	100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

*Lackey missed the entire 2012 season due to injury.

Table H26

Lee, Carlos

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	31	2.3	3.0	Yes	0.045	2.955	Yes
2008	32	2.8	3.0	Yes	0.044	2.911	Yes
2009	33	1.8	3.0	Yes	0.044	2.867	Yes
2010	34	0.0	3.0	Yes	0.043	2.824	Yes
2011	35	4.0	3.0	No	0.042	2.782	No
2012	36	0.0	3.0	Yes	0.042	2.740	Yes
	Total	10.90				17.078	
	Avg.	1.82	3.0	Yes		2.846	Yes
			Years Shirked	5/6			5/6
			% Shirked	83.33%			83.33%

Did shirking occur in a majority of the contract?	Yes
Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H27

Lee, Derrek

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2006	30	0.8	4.4	Yes	0.066	4.334	Yes
2007	31	3.5	4.4	Yes	0.065	4.269	Yes
2008	32	1.9	4.4	Yes	0.064	4.205	Yes
2009	33	5.4	4.4	No	0.063	4.142	No
2010	34	1.5	4.4	Yes	0.062	4.080	Yes

Total	13.10				21.030	
Avg.	2.62	4.4	Yes		4.206	Yes

Years Shirked	4/5		4/5
% Shirked	80.00%		80.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H28

Lester, Jon

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	25	6.3	2.9	No	-	2.900	No
2010	26	5.2	2.9	No	-	2.900	No
2011	27	4.4	2.9	No	-	2.900	No
2012	28	0.7	2.9	Yes	0.044	2.857	Yes
2013	29	3.0	2.9	No	0.043	2.814	No

Total	19.60			14.370	
Avg.	3.92	2.9	No	2.874	No

Years Shirked	1/5	1/5
% Shirked	20.00%	20.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H29

Markakis, Nick

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	25	2.9	4.7	Yes	-	4.700	Yes
2010	26	2.3	4.7	Yes	-	4.700	Yes
2011	27	2.5	4.7	Yes	-	4.700	Yes
2012	28	1.7	4.7	Yes	0.071	4.630	Yes
2013	29	0.1	4.7	Yes	0.069	4.560	Yes
2014	30	2.0	4.7	Yes	0.068	4.492	Yes

Total	11.50			27.781	
Avg.	1.92	4.7	Yes	4.630	Yes

Years Shirked	6/6	6/6
% Shirked	100.00%	100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H30

Martinez, Victor

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2005	26	5.2	1.4	No	-	1.400	No
2006	27	2.8	1.4	No	-	1.400	No
2007	28	4.3	1.4	No	0.021	1.379	No
2008	29	0.6	1.4	Yes	0.021	1.358	Yes
2009	30	3.5	1.4	No	0.020	1.338	No

Total	16.40			6.875	
Avg.	3.28	1.4	No	1.375	No

Years Shirked	1/5	1/5
% Shirked	20.00%	20.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H31

Matthews Jr., Gary

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	32	1.0	3.4	Yes	0.051	3.349	Yes
2008	33	0.0	3.4	Yes	0.050	3.299	Yes
2009	34	0.0	3.4	Yes	0.049	3.249	Yes
2010	35	0.0	3.4	Yes	0.049	3.201	Yes
2011	36	0.0*	3.4	Yes	0.048	3.153	Yes
	Total	1.00				16.250	
	Avg.	0.20	3.4	Yes		3.250	Yes
		Years Shirked		5/5			5/5
		% Shirked		100.00%			100.00%

Did shirking occur in a majority of the contract?	Yes
Did shirking occur in a majority of the contract when adjusted for age?	Yes

*Matthews was released in 2010 and did not play baseball in 2011.

Table H32

Meche, Gil

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	28	4.2	0.6	No	0.009	0.621	No
2008	29	5.0	0.6	No	0.009	0.611	No
2009	30	1.1	0.6	No	0.009	0.602	No
2010	31	0.0	0.6	Yes	0.009	0.593	Yes
2011	32	0.0*	0.6	Yes	0.009	0.584	Yes

Total	10.30			3.011	
Avg.	2.06	0.6	No	0.602	No

Years Shirked	2/5	2/5
% Shirked	40.00%	40.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

*Meche retired from baseball before the start of the 2011 MLB season.

Table H33

Millwood, Kevin

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2006	31	2.7	2.3	No	0.035	2.266	No
2007	32	0.2	2.3	Yes	0.034	2.232	Yes
2008	33	0.7	2.3	Yes	0.033	2.198	Yes
2009	34	4.7	2.3	No	0.033	2.165	No
2010	35	0.5	2.3	Yes	0.032	2.133	Yes

Total	8.80			10.993	
Avg.	1.76	2.3	Yes	2.199	Yes

Years Shirked	3/5	3/5
% Shirked	60.00%	60.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H34

Morneau, Justin

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	27	4.2	2.8	No	-	2.800	No
2009	28	3.5	2.8	No	0.042	2.758	No
2010	29	4.7	2.8	No	0.041	2.717	No
2011	30	0.0	2.8	Yes	0.041	2.676	Yes
2012	31	1.2	2.8	Yes	0.040	2.636	Yes
2013	32	1.9	2.8	Yes	0.040	2.596	Yes

Total	15.50			16.182	
Avg.	2.58	2.8	Yes	2.697	Yes

Years Shirked	3/6	3/6
% Shirked	50.00%	50.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H35

Ordonez, Magglio

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2005	31	1.6	3.9	Yes	0.058	3.812	Yes
2006	32	1.8	3.9	Yes	0.057	3.755	Yes
2007	33	7.3	3.9	No	0.056	3.698	No
2008	34	2.1	3.9	Yes	0.055	3.643	Yes
2009	35	0.8	3.9	Yes	0.055	3.588	Yes

Total	13.60				18.496	
Avg.	2.72	3.9	Yes		3.699	Yes

Years Shirked	4/5		4/5
% Shirked	80.00%		80.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H36

Oswalt, Roy

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	29	6.7	5.3	No	0.079	5.191	No
2008	30	3.8	5.3	Yes	0.078	5.113	Yes
2009	31	2.4	5.3	Yes	0.077	5.036	Yes
2010	32	5.6	5.3	No	0.076	4.961	No
2011	33	2.2	5.3	Yes	0.074	4.886	Yes
	Total	20.70				25.188	
	Avg.	4.14	5.3	Yes		5.038	Yes
		Years Shirked		3/5			3/5
		% Shirked		60.00%			60.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H37

Peavy, Jake

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	27	3.9	4.3	Yes	-	4.300	Yes
2009	28	1.7	4.3	Yes	0.065	4.236	Yes
2010	29	1.6	4.3	Yes	0.064	4.172	Yes
2011	30	1.0	4.3	Yes	0.063	4.109	Yes
2012	31	5.2	4.3	No	0.062	4.048	No

Total	13.40			20.865	
Avg.	2.68	4.3	Yes	4.173	Yes

Years Shirked	4/5	4/5
% Shirked	80.00%	80.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H38

Pedroia, Dustin

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	25	5.6	3.6	No	-	3.600	No
2010	26	3.2	3.6	Yes	-	3.600	Yes
2011	27	7.9	3.6	No	-	3.600	No
2012	28	5.1	3.6	No	0.054	3.546	No
2013	29	6.3	3.6	No	0.053	3.493	No
2014	30	4.9	3.6	No	0.052	3.440	No

Total	33.00				21.279	
Avg.	5.50	3.6	No		3.547	No

Years Shirked	1/6		1/6
% Shirked	16.67%		16.67%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H39

Peralta, Jhonny

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2006	24	0.9	1.9	Yes	-	1.900	Yes
2007	25	2.7	1.9	No	-	1.900	No
2008	26	3.6	1.9	No	-	1.900	No
2009	27	1.0	1.9	Yes	-	1.900	Yes
2010	28	2.6	1.9	No	0.029	1.872	No

Total	10.80			9.472	
Avg.	2.16	1.9	No	1.894	No

Years Shirked	2/5	2/5
% Shirked	40.00%	40.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H40

Pierre, Juan

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	29	0.9	2.1	Yes	0.031	2.039	Yes
2008	30	0.0	2.1	Yes	0.031	2.008	Yes
2009	31	1.2	2.1	Yes	0.030	1.978	Yes
2010	32	0.2	2.1	Yes	0.030	1.949	Yes
2011	33	0.0	2.1	Yes	0.029	1.919	Yes

Total	2.30			9.893	
Avg.	0.46	2.1	Yes	1.979	Yes

Years Shirked	5/5	5/5
% Shirked	100.00%	100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H41

Posada, Jorge

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2002	30	4.0	3.2	No	0.048	3.152	No
2003	31	5.9	3.2	No	0.047	3.105	No
2004	32	3.5	3.2	No	0.047	3.058	No
2005	33	4.3	3.2	No	0.046	3.012	No
2006	34	4.0	3.2	No	0.045	2.967	No

Total	21.70				15.294	
Avg.	4.34	3.2	No		3.059	No

Years Shirked	0/5		0/5
% Shirked	0.00%		0.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H42

Pujols, Albert

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2004	24	8.5	6.9	No	-	6.900	No
2005	25	8.4	6.9	No	-	6.900	No
2006	26	8.4	6.9	No	-	6.900	No
2007	27	8.7	6.9	No	-	6.900	No
2008	28	9.2	6.9	No	0.104	6.797	No
2009	29	9.7	6.9	No	0.102	6.695	No
2010	30	7.5	6.9	No	0.100	6.594	No

Total	60.40				47.685	
Avg.	8.63	6.9	No		6.812	No

Years Shirked	0/7		0/7
% Shirked	0.00%		0.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H43

Ramirez, Aramis

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	29	5.2	3.8	No	0.057	3.773	No
2008	30	3.0	3.8	Yes	0.057	3.716	Yes
2009	31	1.7	3.8	Yes	0.056	3.660	Yes
2010	32	0.0	3.8	Yes	0.055	3.605	Yes
2011	33	2.7	3.8	Yes	0.054	3.551	Yes

Total	12.60			18.305	
Avg.	2.52	3.8	Yes	3.661	Yes

Years Shirked	4/5	4/5
% Shirked	80.00%	80.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H44

Ramirez, Hanley

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	25	7.3	5.3	No	-	5.300	No
2010	26	2.8	5.3	Yes	-	5.300	Yes
2011	27	0.2	5.3	Yes	-	5.300	Yes
2012	28	1.3	5.3	Yes	0.080	5.221	Yes
2013	29	5.4	5.3	No	0.078	5.142	No
2014	30	3.5	5.3	Yes	0.077	5.065	Yes

Total	20.50				31.328	
Avg.	3.42	5.3	Yes		5.221	Yes

Years Shirked	4/6		4/6
% Shirked	66.67%		66.67%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H45

Ramirez, Manny

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2001	29	5.2	5.8	Yes	0.087	5.683	Yes
2002	30	6.0	5.8	No	0.085	5.598	No
2003	31	5.4	5.8	Yes	0.084	5.514	Yes
2004	32	4.1	5.8	Yes	0.083	5.432	Yes
2005	33	4.4	5.8	Yes	0.081	5.350	Yes
2006	34	4.5	5.8	Yes	0.080	5.270	Yes
2007	35	1.1	5.8	Yes	0.079	5.191	Yes
2008	36	6.0	5.8	No	0.078	5.113	No

Total	36.70				43.151	
Avg.	4.59	5.8	Yes		5.394	Yes

Years Shirked	6/8		6/8
% Shirked	75.00%		75.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H46

Rios, Alex

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	27	5.9	3.8	No	-	3.800	No
2009	28	0.8	3.8	Yes	0.057	3.743	Yes
2010	29	3.3	3.8	Yes	0.056	3.687	Yes
2011	30	0.0	3.8	Yes	0.055	3.632	Yes
2012	31	4.8	3.8	No	0.054	3.577	No
2013	32	2.2	3.8	Yes	0.054	3.523	Yes
2014	33	0.6	3.8	Yes	0.053	3.471	Yes

Total	17.60			25.432	
Avg.	2.51	3.8	Yes	3.633	Yes

Years Shirked	5/7	5/7
% Shirked	71.43%	71.43%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H47

Rodriguez, Alex

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2001	25	8.3	7.9	No	-	7.900	No
2002	26	8.8	7.9	No	-	7.900	No
2003	27	8.4	7.9	No	-	7.900	No
2004	28	7.6	7.9	Yes	0.119	7.782	Yes
2005	29	9.4	7.9	No	0.117	7.665	No
2006	30	4.5	7.9	Yes	0.115	7.550	Yes
2007	31	9.4	7.9	No	0.113	7.437	No
2008	32	6.8	7.9	Yes	0.112	7.325	Yes
2009	33	4.1	7.9	Yes	0.110	7.215	Yes
2010	34	4.1	7.9	Yes	0.108	7.107	Yes

Total	71.40			75.780	
Avg.	7.14	7.9	Yes	7.578	Yes

Years Shirked	5/10	5/10
% Shirked	50.00%	50.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H48

Rolen, Scott

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2003	28	4.7	5.7	Yes	0.085	5.585	Yes
2004	29	9.1	5.7	No	0.084	5.501	No
2005	30	1.6	5.7	Yes	0.083	5.419	Yes
2006	31	5.8	5.7	No	0.081	5.337	No
2007	32	1.8	5.7	Yes	0.080	5.257	Yes
2008	33	3.4	5.7	Yes	0.079	5.178	Yes
2009	34	5.2	5.7	Yes	0.078	5.101	No
2010	35	4.1	5.7	Yes	0.077	5.024	Yes
	Total	35.70				42.403	
	Avg.	4.46	5.7	Yes		5.300	Yes
		Years Shirked		6/8			5/8
		% Shirked		75.00%			62.50%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H49

Rollins, Jimmy

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2006	27	4.6	4.1	No	0.062	4.039	No
2007	28	6.1	4.1	No	0.061	3.978	No
2008	29	5.4	4.1	No	0.060	3.918	No
2009	30	1.7	4.1	Yes	0.059	3.859	Yes
2010	31	2.0	4.1	Yes	0.058	3.802	Yes

Total	19.80				19.596	
Avg.	3.96	4.1	Yes		3.919	No

Years Shirked	2/5		2/5
% Shirked	40.00%		40.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H50

Rowand, Aaron

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	30	0.6	3.1	Yes	0.047	3.054	Yes
2009	31	0.9	3.1	Yes	0.046	3.008	Yes
2010	32	0.4	3.1	Yes	0.045	2.963	Yes
2011	33	0.5	3.1	Yes	0.044	2.918	Yes
2012	34	0.0*	3.1	Yes	0.044	2.874	Yes

Total	2.40			14.816	
Avg.	0.48	3.1	Yes	2.963	Yes

Years Shirked	5/5	5/5
% Shirked	100.00%	100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

*Rowand was released by the Giants at the end of the 2011 season and did not play in MLB in 2012.

Table H51

Ryan, B.J.

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2006	30	3.5	2.5	No	0.037	2.433	No
2007	31	0.0	2.5	Yes	0.036	2.396	Yes
2008	32	1.1	2.5	Yes	0.036	2.361	Yes
2009	33	0.0	2.5	Yes	0.035	2.325	Yes
2010	34	0.0*	2.5	Yes	0.035	2.290	Yes

Total	4.60			11.805	
Avg.	0.92	2.5	Yes	2.361	Yes

Years Shirked	4/5	4/5
% Shirked	80.00%	80.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

*Ryan was released by the Blue Jays during the 2009 season and did not play MLB in 2010.

Table H52

Sabathia, C.C.

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	28	6.2	5.9	No	0.089	5.812	No
2010	29	4.6	5.9	Yes	0.087	5.724	Yes
2011	30	7.5	5.9	No	0.086	5.638	No
2012	31	3.5	5.9	Yes	0.085	5.554	Yes
2013	32	0.3	5.9	Yes	0.083	5.471	Yes
2014	33	0.0	5.9	Yes	0.082	5.389	Yes
2015	34	1.0	5.9	Yes	0.081	5.308	Yes

Total	23.10			38.895	
Avg.	3.30	5.9	Yes	5.556	Yes

Years Shirked	5/7	5/7
% Shirked	71.43%	71.43%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H53

Santana, Johan

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	29	7.1	6.6	No	0.099	6.471	No
2009	30	3.3	6.6	Yes	0.097	6.374	Yes
2010	31	4.6	6.6	Yes	0.096	6.279	Yes
2011	32	0.0*	6.6	Yes	0.094	6.185	Yes
2012	33	0.2	6.6	Yes	0.093	6.092	Yes
2013	34	0.00**	6.6	Yes	0.091	6.000	Yes

Total	15.20			37.401	
Avg.	2.53	6.6	Yes	6.234	Yes

Years Shirked	5/6	5/6
% Shirked	83.33%	83.33%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

*Santana missed the entire 2011 season due to injury.

**Santana missed the entire 2013 season due to injury.

Table H54

Soriano, Alfonso

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	31	4.3	3.2	No	0.048	3.182	No
2008	32	2.0	3.2	Yes	0.048	3.134	Yes
2009	33	0.0	3.2	Yes	0.047	3.087	Yes
2010	34	0.8	3.2	Yes	0.046	3.041	Yes
2011	35	0.0	3.2	Yes	0.046	2.995	Yes
2012	36	1.8	3.2	Yes	0.045	2.950	Yes
2013	37	2.5	3.2	Yes	0.044	2.906	Yes
2014	38	0.0	3.2	Yes	0.044	2.862	Yes

Total	11.40			24.155	
Avg.	1.43	3.2	Yes	3.019	Yes

Years Shirked	7/8	7/8
% Shirked	87.50%	87.50%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H55

Suzuki, Ichiro

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	34	5.3	5.0	No	0.075	4.925	No
2009	35	4.7	5.0	Yes	0.074	4.851	Yes
2010	36	3.7	5.0	Yes	0.073	4.778	Yes
2011	37	0.6	5.0	Yes	0.072	4.707	Yes
2012	38	1.8	5.0	Yes	0.071	4.636	Yes

Total	16.10			23.897	
Avg.	3.22	5.0	Yes	4.779	Yes

Years Shirked	4/5	4/5
% Shirked	80.00%	80.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H56

Swisher, Nick

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	26	4.3	1.7	No	-	1.700	No
2008	27	0.0	1.7	Yes	-	1.700	Yes
2009	28	2.0	1.7	No	0.026	1.675	No
2010	29	3.7	1.7	No	0.025	1.649	No
2011	30	2.0	1.7	No	0.025	1.625	No

Total	12.00			8.349	
Avg.	2.40	1.7	No	1.670	No

Years Shirked	1/5	1/5
% Shirked	20.00%	20.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H57

Teixeira, Mark

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	29	5.3	5.6	Yes	0.084	5.516	Yes
2010	30	4.1	5.6	Yes	0.083	5.433	Yes
2011	31	3.4	5.6	Yes	0.081	5.352	Yes
2012	32	3.8	5.6	Yes	0.080	5.271	Yes
2013	33	0.0	5.6	Yes	0.079	5.192	Yes
2014	34	1.0	5.6	Yes	0.078	5.115	Yes
2015	35	3.8	5.6	Yes	0.077	5.038	Yes
2016	36	0.0	5.6	Yes	0.076	4.962	Yes

Total	21.40				41.879	
Avg.	2.68	5.6	Yes		5.235	Yes

Years Shirked	8/8		8/8
% Shirked	100.00%		100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H58

Tejada, Miguel

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2004	30	7.3	4.9	No	0.074	4.827	No
2005	31	5.9	4.9	No	0.072	4.754	No
2006	32	4.5	4.9	Yes	0.071	4.683	Yes
2007	33	2.3	4.9	Yes	0.070	4.613	Yes
2008	34	1.9	4.9	Yes	0.069	4.543	Yes
2009	35	1.9	4.9	Yes	0.068	4.475	Yes

Total	23.80			27.895	
Avg.	3.97	4.9	Yes	4.649	Yes

Years Shirked	4/6	4/6
% Shirked	66.67%	66.67%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H59

Thome, Jim

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2003	32	4.7	5.9	Yes	0.089	5.812	Yes
2004	33	3.2	5.9	Yes	0.087	5.724	Yes
2005	34	0.2	5.9	Yes	0.086	5.638	Yes
2006	35	4.9	5.9	Yes	0.085	5.554	Yes
2007	36	3.6	5.9	Yes	0.083	5.471	Yes
2008	37	2.1	5.9	Yes	0.082	5.389	Yes

Total	18.70			33.587	
Avg.	3.12	5.9	Yes	5.598	Yes

Years Shirked	6/6	6/6
% Shirked	100.00%	100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H60

Upton, Justin

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2010	22	1.5	1.6	Yes	-	1.600	Yes
2011	23	6.1	1.6	No	-	1.600	No
2012	24	2.5	1.6	No	-	1.600	No
2013	25	2.9	1.6	No	-	1.600	No
2014	26	3.2	1.6	No	-	1.600	No
2015	27	4.4	1.6	No	-	1.600	No

Total	20.60			9.600	
Avg.	3.43	1.6	No	1.600	No

Years Shirked	1/6	1/6
% Shirked	16.67%	16.67%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H61

Utley, Chase

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	28	7.8	5.6	No	0.084	5.516	No
2008	29	9.0	5.6	No	0.083	5.433	No
2009	30	8.2	5.6	No	0.081	5.352	No
2010	31	5.8	5.6	No	0.080	5.271	No
2011	32	3.8	5.6	Yes	0.079	5.192	Yes
2012	33	3.0	5.6	Yes	0.078	5.115	Yes
2013	34	3.6	5.6	Yes	0.077	5.038	Yes

Total	41.20			36.917	
Avg.	5.89	5.6	No	5.274	No

Years Shirked	3/7	3/7
% Shirked	42.86%	42.86%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H62

Verlander, Justin

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2010	27	4.3	3.9	No	-	3.900	No
2011	28	8.4	3.9	No	0.059	3.842	No
2012	29	7.8	3.9	No	0.058	3.784	No
2013	30	4.6	3.9	No	0.057	3.727	No
2014	31	1.1	3.9	Yes	0.056	3.671	Yes

Total	26.20			18.924	
Avg.	5.24	3.9	No	3.785	No

Years Shirked	1/5	1/5
% Shirked	20.00%	20.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H63

Wells, Vernon

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	29	2.0	3.6	Yes	0.054	3.546	Yes
2009	30	0.9	3.6	Yes	0.053	3.493	Yes
2010	31	4.0	3.6	No	0.052	3.440	No
2011	32	0.0	3.6	Yes	0.052	3.389	Yes
2012	33	0.6	3.6	Yes	0.051	3.338	Yes
2013	34	0.0	3.6	Yes	0.050	3.288	Yes
2014	35	0.0*	3.6	Yes	0.049	3.239	Yes

Total	7.50			23.733	
Avg.	1.07	3.6	Yes	3.390	Yes

Years Shirked	6/7	6/7
% Shirked	85.71%	85.71%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

*Wells was released by the Yankees before the start of the 2014 season.

Table H64

Wilson, Preston

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2001	26	2.8	0.9	No	-	0.900	No
2002	27	1.3	0.9	No	-	0.900	No
2003	28	2.6	0.9	No	0.014	0.887	No
2004	29	0.0	0.9	Yes	0.013	0.873	Yes
2005	30	0.0	0.9	Yes	0.013	0.860	Yes

Total	6.70			4.420	
Avg.	1.34	0.9	No	0.884	No

Years Shirked	2/5	2/5
% Shirked	40.00%	40.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H65

Wright, David

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	24	8.3	3.7	No	-	3.700	No
2008	25	6.8	3.7	No	-	3.700	No
2009	26	3.2	3.7	Yes	-	3.700	Yes
2010	27	2.8	3.7	Yes	-	3.700	Yes
2011	28	2.0	3.7	Yes	0.056	3.645	Yes
2012	29	7.0	3.7	No	0.055	3.590	No

Total	30.10			22.034	
Avg.	5.02	3.7	No	3.672	No

Years Shirked	3/6	3/6
% Shirked	50.00%	50.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H66

Young, Chris

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	25	0.0	0.8	Yes	-	0.800	Yes
2010	26	5.4	0.8	No	-	0.800	No
2011	27	5.0	0.8	No	-	0.800	No
2012	28	2.0	0.8	No	0.012	0.788	No
2013	29	0.0	0.8	Yes	0.012	0.776	Yes

Total	12.40			3.964	
Avg.	2.48	0.8	No	0.793	No

Years Shirked	2/5	2/5
% Shirked	40.00%	40.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H67

Young, Michael

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	32	2.8	3.3	Yes	0.050	3.251	Yes
2010	33	1.8	3.3	Yes	0.049	3.202	Yes
2011	34	2.4	3.3	Yes	0.048	3.154	Yes
2012	35	0.0	3.3	Yes	0.047	3.106	Yes
2013	36	0.0	3.3	Yes	0.047	3.060	Yes
	Total	7.00				15.772	
	Avg.	1.40	3.3	Yes		3.154	Yes
		Years Shirked		5/5			5/5
		% Shirked		100.00%			100.00%

Did shirking occur in a majority of the contract?	Yes
Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H68

Zambrano, Carlos

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2008	27	4.3	4.7	Yes	-	4.700	Yes
2009	28	3.0	4.7	Yes	0.071	4.630	Yes
2010	29	2.8	4.7	Yes	0.069	4.560	Yes
2011	30	0.8	4.7	Yes	0.068	4.492	Yes
2012	31	0.3	4.7	Yes	0.067	4.424	Yes

Total	11.20			22.805	
Avg.	2.24	4.7	Yes	4.561	Yes

Years Shirked	5/5	5/5
% Shirked	100.00%	100.00%

Did shirking occur in a majority of the contract?	Yes

Did shirking occur in a majority of the contract when adjusted for age?	Yes

Table H69

Zimmerman, Ryan

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2009	24	7.3	3.4	No	-	3.400	No
2010	25	6.2	3.4	No	-	3.400	No
2011	26	1.9	3.4	Yes	-	3.400	Yes
2012	27	3.9	3.4	No	-	3.400	No
2013	28	3.7	3.4	No	0.051	3.349	No

Total	23.00			16.949	
Avg.	4.60	3.4	No	3.390	No

Years Shirked	1/5	1/5
% Shirked	20.00%	20.00%

Did shirking occur in a majority of the contract?	No

Did shirking occur in a majority of the contract when adjusted for age?	No

Table H70

Zito, Barry

Year	Age	WAR	Baseline	Shirking	1.5% Adj.	Adj. Baseline	Shirking
2007	29	2.0	3.5	Yes	0.053	3.448	Yes
2008	30	0.0	3.5	Yes	0.052	3.396	Yes
2009	31	2.6	3.5	Yes	0.051	3.345	Yes
2010	32	1.5	3.5	Yes	0.050	3.295	Yes
2011	33	0.0	3.5	Yes	0.049	3.245	Yes
2012	34	0.2	3.5	Yes	0.049	3.197	Yes
2013	35	0.0	3.5	Yes	0.048	3.149	Yes
	Total	6.30				23.073	
	Avg.	0.90	3.5	Yes		3.296	Yes
		Years Shirked		7/7			7/7
		% Shirked		100.00%			100.00%

Did shirking occur in a majority of the contract?	Yes
Did shirking occur in a majority of the contract when adjusted for age?	Yes

APPENDIX I

Cumulative Contract Success Data From Research Question Two

Table I1

Cumulative Contract Success Data

Last	First	Successful?	Avg. WAR	Avg. $/WAR	Success Years	% Success
Abreu	Bobby	Yes	5.00	2,109,333.32	3	60.00%
Ackley	Dustin	Yes	1.88	702,127.66	4	80.00%
Alonso	Yonder	No	0.34	1,500,000.00	1	20.00%
Arguelles	Noel	No	0.00	0.00	0	0.00%
Beltran	Carlos	No	4.61	3,569,900.37	1	14.29%
Beltre	Adrian	No	4.26	3,004,694.84	1	20.00%
Berkman	Lance	No	3.85	3,593,073.59	1	16.67%
Blalock	Hank	No	1.46	2,089,041.10	1	20.00%
Bonds	Barry	Yes	7.24	2,481,532.32	3	60.00%
Braun	Ryan	Yes	4.75	1,172,697.37	6	75.00%
Burnett	A.J.	No	1.82	9,065,934.07	0	0.00%
Burrell	Pat	No	1.77	4,716,981.13	2	33.33%
Cabrera	Miguel	No	5.80	3,269,031.23	3	37.50%
Carpenter	Chris	No	2.72	4,588,452.72	1	20.00%
Chapman	Aroldis	Yes	1.83	1,989,615.64	5	83.33%
Chavez	Eric	No	1.65	6,363,636.36	1	16.67%
Crosby	Bobby	No	1.04	2,413,461.54	1	20.00%
DeJesus	David	Yes	2.38	1,117,647.06	5	100%
Drew	J.D.	No	2.44	5,737,704.92	0	0.00%
Drew	Stephen	Yes	1.52	671,052.63	3	60.00%
Gallardo	Yovani	Yes	1.98	2,873,737.37	3	60.00%
Giambi	Jason	No	3.16	5,203,619.77	1	14.29%
Granderson	Curtis	Yes	4.26	1,326,291.08	4	80.00%
Guerrero	Vladimir	No	4.42	3,031,674.21	1	20.00%
Hampton	Mike	No	0.61	22,113,728.57	0	0.00%
Helton	Todd	No	4.25	3,188,034.19	4	36.36%
Hernandez	Felix	No	5.50	2,913,236.36	2	40.00%
Holliday	Matt	No	2.96	5,683,628.07	1	14.29%
Humber	Philip	No	0.04	21,000,000.00	0	0.00%
Hunter	Torii	No	4.24	4,221,698.11	0	0.00%
Igawa	Kei	No	0.00	0.00	0	0.00%
Jeter	Derek	No	4.10	4,609,756.10	0	0.00%

Last	First	Successful?	Avg. WAR	Avg. $/WAR	Success Years	% Success
Jones	Andruw	No	5.00	2,500,000.00	2	33.33%
Kinsler	Ian	Yes	4.84	880,165.29	5	100%
Konerko	Paul	No	2.52	4,761,904.76	1	20.00%
Lackey	John	No	1.14	14,105,263.16	0	0.00%
Lee	Carlos	No	1.82	9,128,440.37	0	0.00%
Lee	Derrek	No	2.62	4,764,631.07	1	20.00%
Lester	Jon	Yes	3.92	1,517,857.14	3	60.00%
Longoria	Evan	Yes	6.00	402,777.78	6	100%
Markakis	Nick	No	1.92	5,482,608.70	1	16.67%
Martinez	Victor	Yes	3.28	909,884.15	4	80.00%
Matsuzaka	Daisuke	No	1.80	4,783,950.46	2	33.33%
Matthews Jr.	Gary	No	0.20	49,600,000.00	0	0.00%
McCann	Brian	Yes	2.77	1,747,389.52	5	83.33%
Meche	Gil	No	2.58	4,135,922.33	2	40.00%
Millwood	Kevin	No	1.76	6,016,226.48	0	0.00%
Morales	Kendrys	No	1.03	629,032.26	2	33.33%
Morneau	Justin	No	2.58	5,032,258.06	1	16.67%
Niemann	Jeff	No	0.48	2,166,666.67	1	20.00%
Ordonez	Magglio	No	2.72	5,245,571.32	1	20.00%
Oswalt	Roy	No	4.14	3,429,951.69	2	40.00%
Peavy	Jake	No	2.68	4,888,059.70	1	20.00%
Pedroia	Dustin	Yes	5.50	1,265,151.52	6	100%
Peralta	Jhonny	Yes	2.16	1,146,046.30	4	80.00%
Pierre	Juan	No	0.46	17,826,086.96	0	0.00%
Posada	Jorge	No	4.34	2,165,898.62	2	40.00%
Price	David	Yes	2.63	643,629.24	5	83.33%
Pujols	Albert	Yes	8.63	1,454,172.86	7	100%
Ramirez	Aramis	No	2.52	5,714,285.71	1	20.00%
Ramirez	Hanley	No	3.42	3,414,634.15	3	50.00%
Ramirez	Manny	No	4.59	4,011,941.93	0	0.00%
Rios	Alex	No	2.51	4,030,397.73	2	28.57%
Rodriguez	Alex	No	7.14	3,534,863.47	1	10.00%
Rolen	Scott	Yes	4.46	2,340,606.13	5	62.50%
Rollins	Jimmy	Yes	3.96	1,919,191.92	3	60.00%
Rowand	Aaron	No	0.48	24,333,333.33	0	0.00%
Ryan	B.J.	No	0.92	10,217,391.30	1	20.00%
Sabathia	C.C.	No	3.30	6,747,062.42	1	14.29%
Samardzija	Jeff	No	0.34	7,235,294.12	0	0.00%
Santana	Johan	No	2.53	8,365,116.38	1	16.67%
Sizemore	Grady	Yes	3.38	1,122,331.58	4	66.67%

Last	First	Successful?	Avg. WAR	Avg. $/WAR	Success Years	% Success
Soriano	Alfonso	No	1.43	11,666,666.67	1	12.50%
Span	Denard	Yes	3.02	1,059,602.65	5	100%
Suzuki	Ichiro	No	3.22	5,472,183.17	0	0.00%
Swisher	Nick	No	2.40	2,112,500.00	2	40.00%
Teixeira	Mark	No	2.68	8,323,598.13	0	0.00%
Tejada	Miguel	No	3.97	2,993,515.04	2	33.33%
Thome	Jim	No	3.12	4,340,463.48	0	0.0D0%
Tulowitzki	Troy	Yes	4.30	1,124,031.01	5	83.33%
Upton	Justin	Yes	3.43	2,447,410.97	4	66.67%
Utley	Chase	Yes	5.89	2,049,237.14	4	57.14%
Verlander	Justin	Yes	5.24	3,041,984.73	3	60.00%
Wells	Vernon	No	1.07	15,100,000.00	1	14.29%
Wilson	Preston	No	1.34	4,850,746.27	1	20.00%
Wright	David	Yes	5.02	1,785,714.29	4	66.67%
Young	Chris	No	2.48	2,104,838.71	2	40.00%
Young	Michael	No	1.40	10,629,210.57	0	0.00%
Zambrano	Carlos	No	2.24	8,080,357.14	0	0.00%
Zimmerman	Ryan	No	4.60	1,943,478.26	2	40.00%
Zito	Barry	No	0.90	18,888,888.89	0	0.00%

APPENDIX J

Scatterplots from Research Question Four

Figure J1

LNG and $/WAR Scatterplot

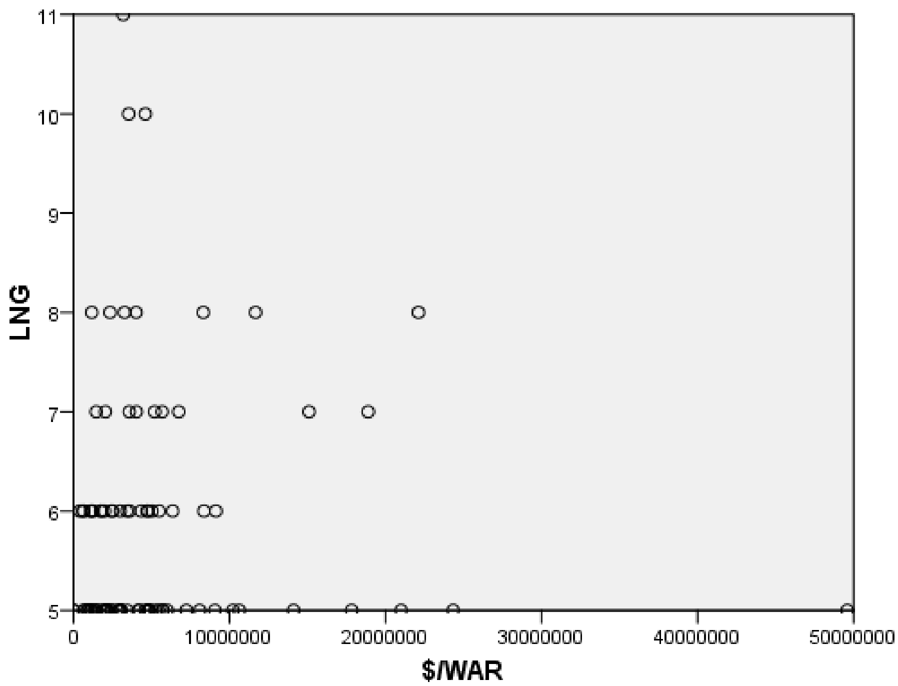


Figure J2

SAL and $/WAR Scatterplot

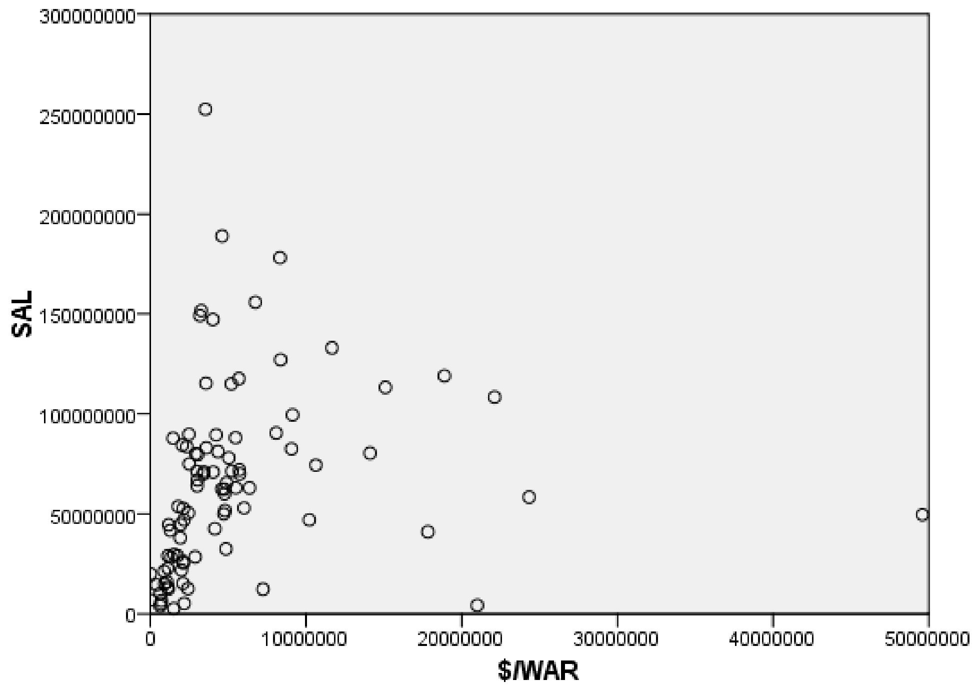


Figure J3

AVG and $/WAR Scatterplot

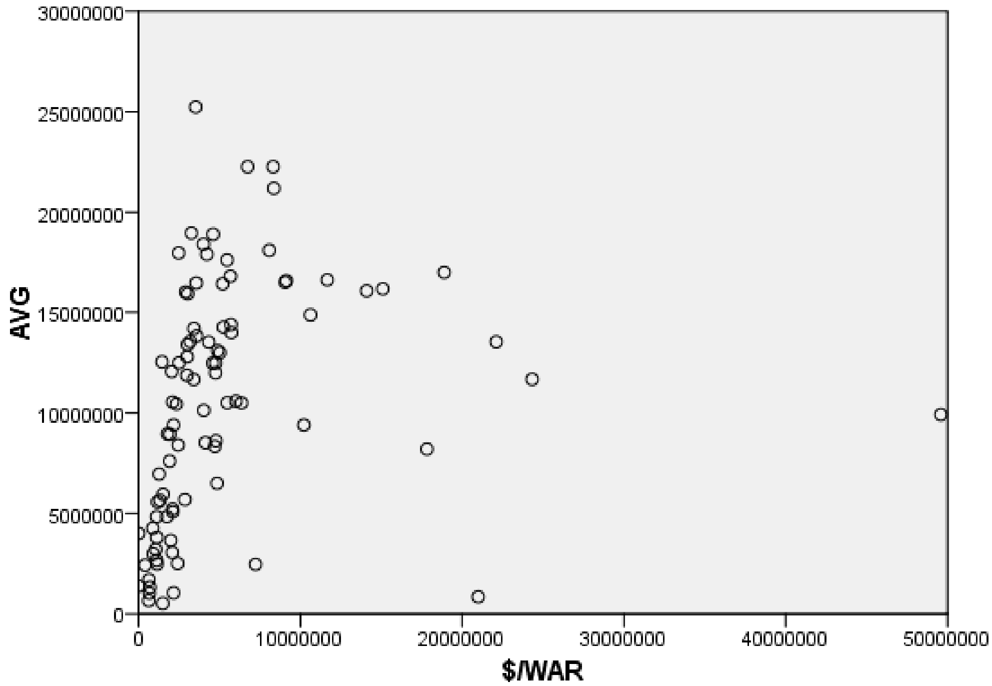


Figure J4

PAY and $/WAR Scatterplot

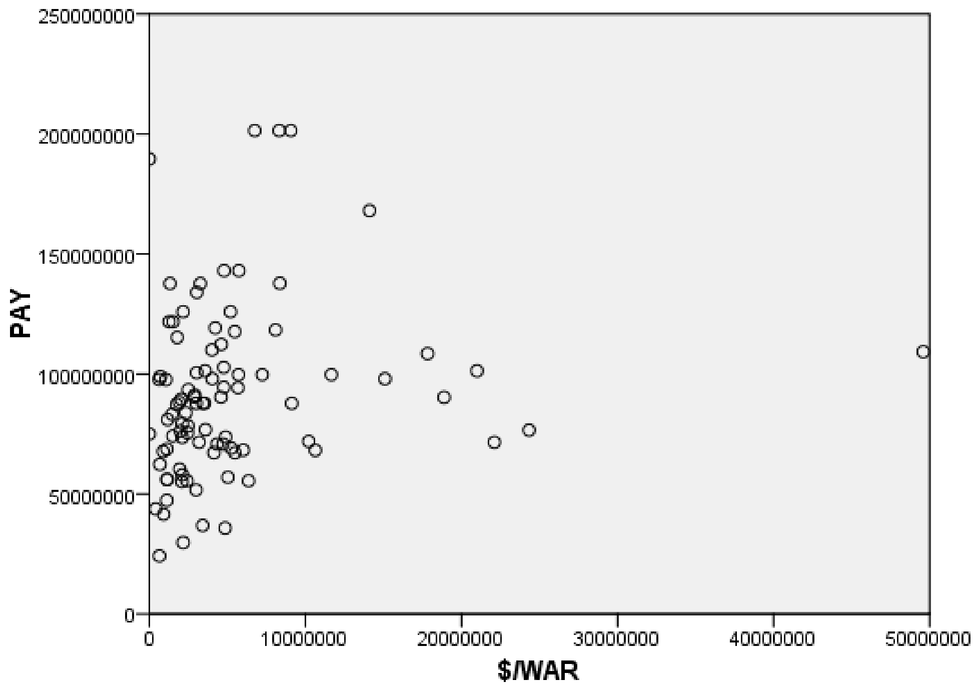


Figure J5

AGE and $/WAR Scatterplot

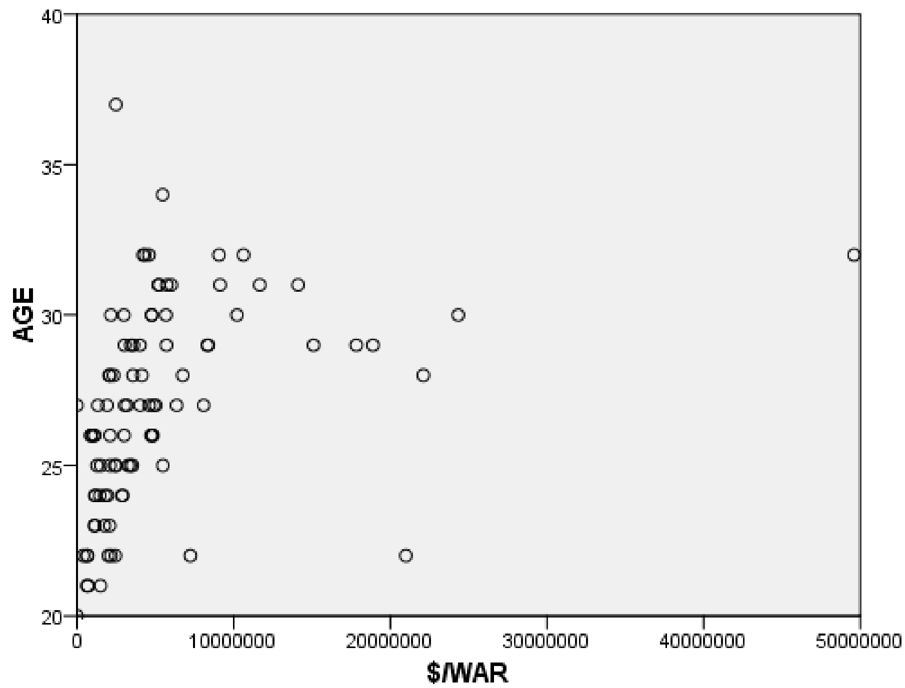


Figure J6

EXP and $/WAR Scatterplot

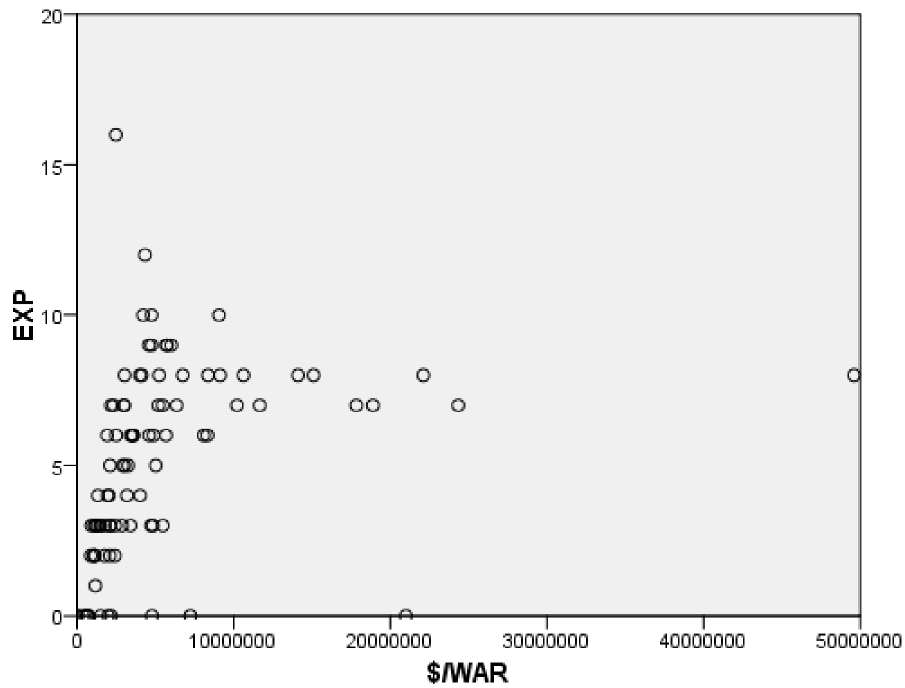


Figure J7

POP and $/WAR Scatterplot

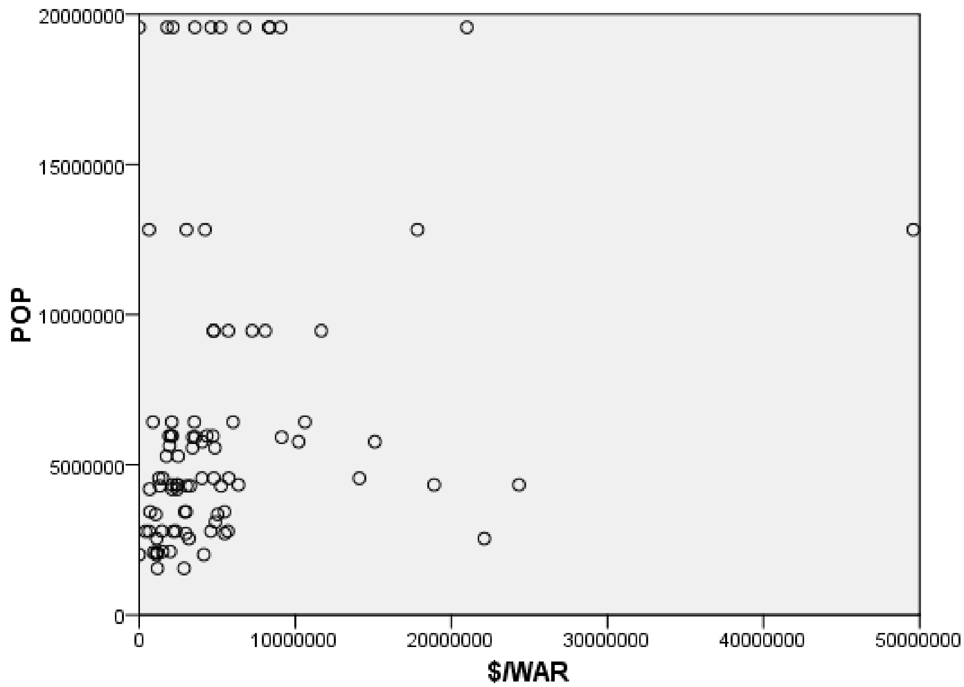


Figure J8

DEB and $/WAR Scatterplot

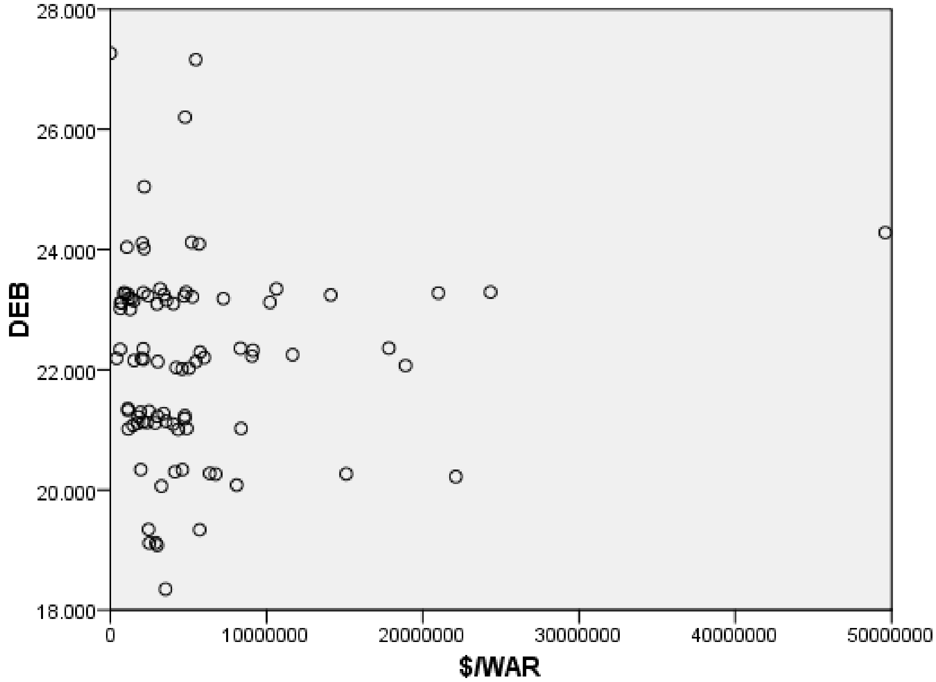


Figure J9

AS and $/WAR Scatterplot

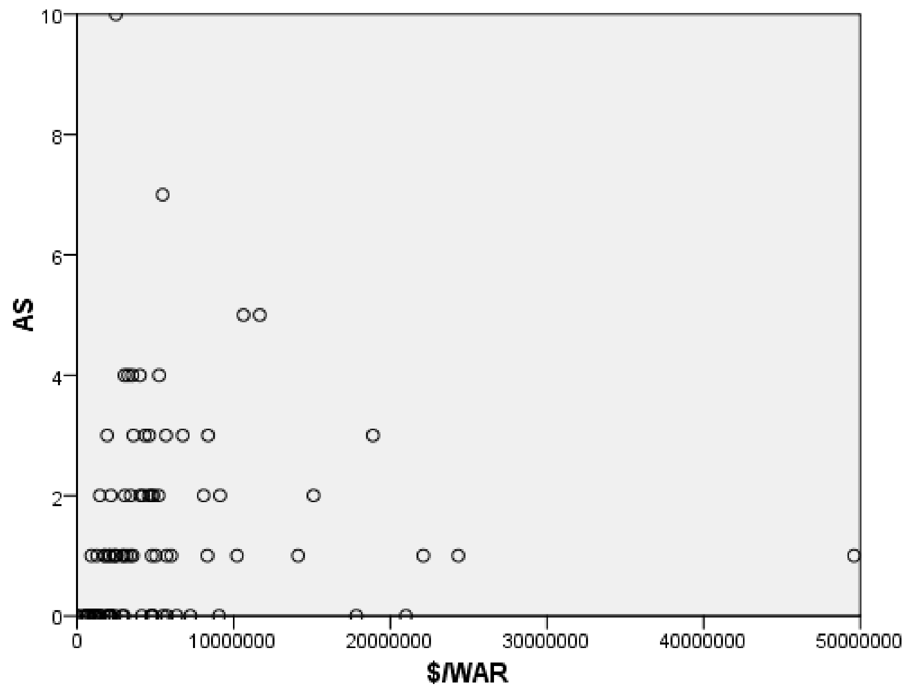


Figure J10

MVP and $/WAR Scatterplot

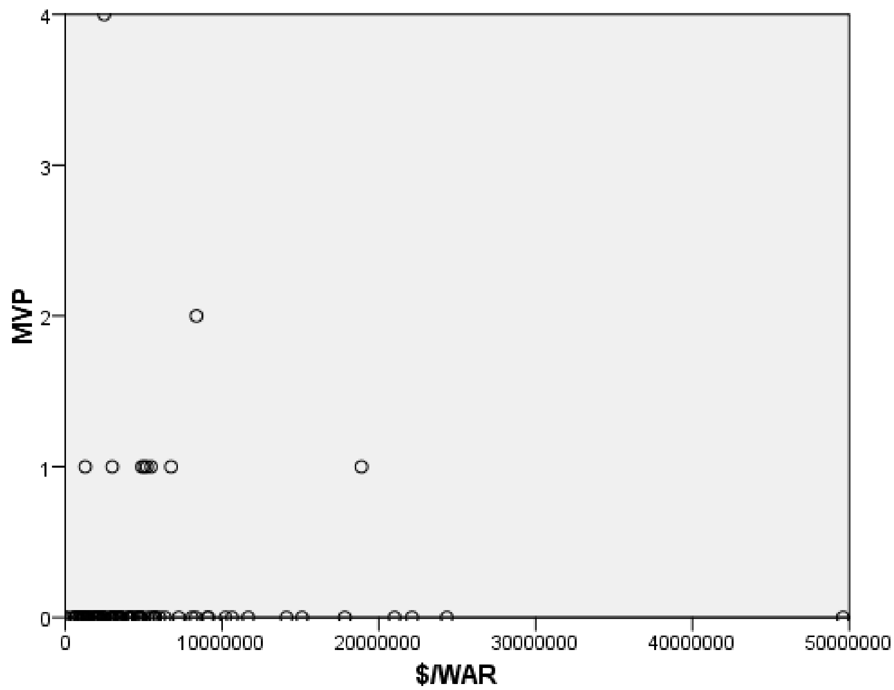


Figure J11

HT and $/WAR Scatterplot

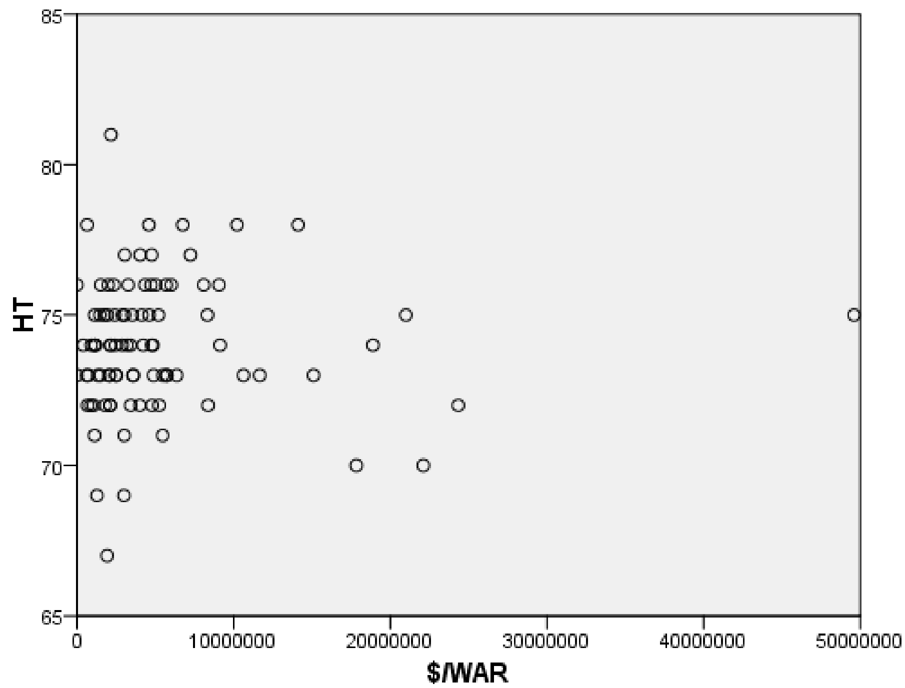
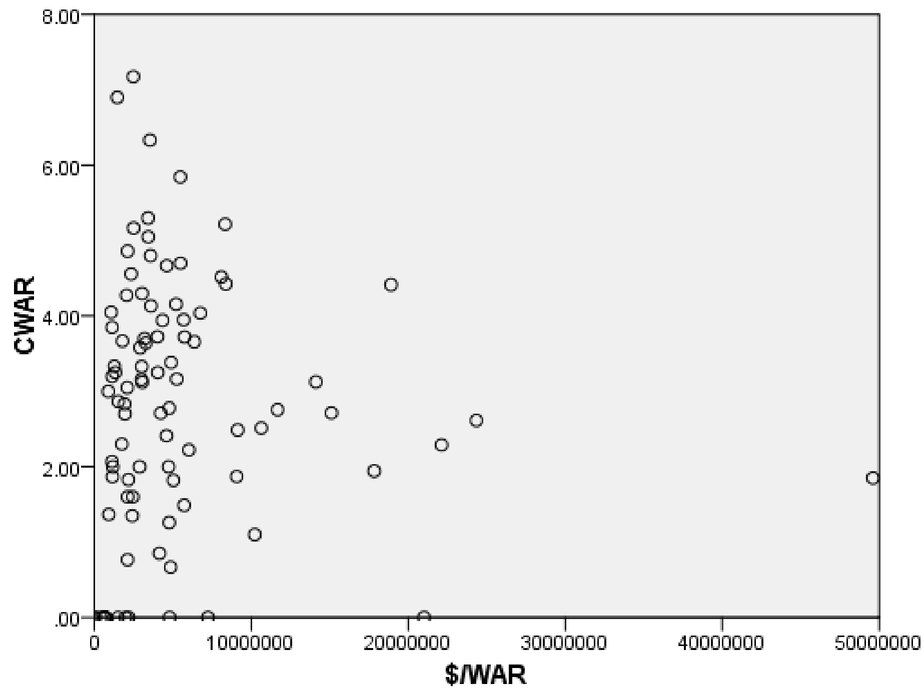


Figure J12

CWAR and $/WAR Scatterplot



APPENDIX K

Converted Nominal Variable Data for Research Question Four

Table K1

Converted Nominal Variable Data

Last	First	LNG	SAL	AVG
Abreu	Bobby	5	50,000,000 - 59,999,999	10,000,000 - 10,999,999
Ackley	Dustin	5	0 - 9,999,999	1,000,000 - 1,999,999
Alonso	Yonder	5	0 - 9,999,999	0 - 999,999
Arguelles	Noel	5	0 - 9,999,999	1,000,000 - 1,999,999
Beltran	Carlos	7	110,000,000 - 119,999,999	16,000,000 - 16,999,999
Beltre	Adrian	5	60,000,000 - 69,999,999	12,000,000 - 12,999,999
Berkman	Lance	6	80,000,000 - 89,999,999	13,000,000 - 13,999,999
Blalock	Hank	5	10,000,000 - 19,999,999	3,000,000 - 3,999,999
Bonds	Barry	5	80,000,000 - 89,999,999	17,000,000 - 17,999,999
Braun	Ryan	8	40,000,000 - 49,999,999	5,000,000 - 5,999,999
Burnett	A.J.	5	80,000,000 - 89,999,999	16,000,000 - 16,999,999
Burrell	Pat	6	50,000,000 - 59,999,999	8,000,000 - 8,999,999
Cabrera	Miguel	8	150,000,000 - 159,999,999	18,000,000 - 18,999,999
Carpenter	Chris	5	60,000,000 - 69,999,999	12,000,000 - 12,999,999
Chapman	Aroldis	6	20,000,000 - 29,999,999	3,000,000 - 3,999,999
Chavez	Eric	6	60,000,000 - 69,999,999	10,000,000 - 10,999,999
Crosby	Bobby	5	10,000,000 - 19,999,999	2,000,000 - 2,999,999
DeJesus	David	5	10,000,000 - 19,999,999	2,000,000 - 2,999,999
Drew	J.D.	5	70,000,000 - 79,999,999	14,000,000 - 14,999,999
Drew	Stephen	5	0 - 9,999,999	1,000,000 - 1,999,999
Gallardo	Yovani	5	20,000,000 - 29,999,999	5,000,000 - 5,999,999
Giambi	Jason	7	110,000,000 - 119,999,999	16,000,000 - 16,999,999
Granderson	Curtis	5	20,000,000 - 29,999,999	5,000,000 - 5,999,999
Guerrero	Vladimir	5	60,000,000 - 69,999,999	13,000,000 - 13,999,999
Hampton	Mike	8	100,000,000 - 109,999,999	13,000,000 - 13,999,999
Helton	Todd	11	140,000,000 - 149,999,999	13,000,000 - 13,999,999
Hernandez	Felix	5	80,000,000 - 89,999,999	16,000,000 - 16,999,999
Holliday	Matt	7	110,000,000 - 119,999,999	16,000,000 - 16,999,999
Humber	Philip	5	0 - 9,999,999	0 - 999,999
Hunter	Torii	5	80,000,000 - 89,999,999	17,000,000 - 17,999,999
Igawa	Kei	5	20,000,000 - 29,999,999	4,000,000 - 4,999,999
Jeter	Derek	10	180,000,000 - 189,999,999	18,000,000 - 18,999,999
Jones	Andruw	6	70,000,000 - 79,999,999	12,000,000 - 12,999,999

Last	First	LNG	SAL	AVG
Kinsler	Ian	5	20,000,000 - 29,999,999	4,000,000 - 4,999,999
Konerko	Paul	5	60,000,000 - 69,999,999	12,000,000 - 12,999,999
Lackey	John	5	80,000,000 - 89,999,999	16,000,000 - 16,999,999
Lee	Carlos	6	90,000,000 - 99,999,999	16,000,000 - 16,999,999
Lee	Derrek	5	60,000,000 - 69,999,999	12,000,000 - 12,999,999
Lester	Jon	5	20,000,000 - 29,999,999	5,000,000 - 5,999,999
Longoria	Evan	6	10,000,000 - 19,999,999	2,000,000 - 2,999,999
Markakis	Nick	6	60,000,000 - 69,999,999	10,000,000 - 10,999,999
Martinez	Victor	5	10,000,000 - 19,999,999	2,000,000 - 2,999,999
Matsuzaka	Daisuke	6	50,000,000 - 59,999,999	8,000,000 - 8,999,999
Matthews Jr.	Gary	5	40,000,000 - 49,999,999	9,000,000 - 9,999,999
McCann	Brian	6	20,000,000 - 29,999,999	4,000,000 - 4,999,999
Meche	Gil	5	40,000,000 - 49,999,999	8,000,000 - 8,999,999
Millwood	Kevin	5	50,000,000 - 59,999,999	10,000,000 - 10,999,999
Morales	Kendrys	6	0 - 9,999,999	0 - 999,999
Morneau	Justin	6	70,000,000 - 79,999,999	13,000,000 - 13,999,999
Niemann	Jeff	5	0 - 9,999,999	1,000,000 - 1,999,999
Ordonez	Magglio	5	70,000,000 - 79,999,999	14,000,000 - 14,999,999
Oswalt	Roy	5	70,000,000 - 79,999,999	14,000,000 - 14,999,999
Peavy	Jake	5	60,000,000 - 69,999,999	13,000,000 - 13,999,999
Pedroia	Dustin	6	40,000,000 - 49,999,999	6,000,000 - 6,999,999
Peralta	Jhonny	5	10,000,000 - 19,999,999	2,000,000 - 2,999,999
Pierre	Juan	5	40,000,000 - 49,999,999	8,000,000 - 8,999,999
Posada	Jorge	5	40,000,000 - 49,999,999	9,000,000 - 9,999,999
Price	David	6	10,000,000 - 19,999,999	1,000,000 - 1,999,999
Pujols	Albert	7	80,000,000 - 89,999,999	12,000,000 - 12,999,999
Ramirez	Aramis	5	70,000,000 - 79,999,999	14,000,000 - 14,999,999
Ramirez	Hanley	6	70,000,000 - 79,999,999	11,000,000 - 11,999,999
Ramirez	Manny	8	140,000,000 - 149,999,999	18,000,000 - 18,999,999
Rios	Alex	7	70,000,000 - 79,999,999	10,000,000 - 10,999,999
Rodriguez	Alex	10	250,000,000 - 259,999,999	25,000,000 - 25,999,999
Rolen	Scott	8	80,000,000 - 89,999,999	10,000,000 - 10,999,999
Rollins	Jimmy	5	30,000,000 - 39,999,999	7,000,000 - 7,999,999
Rowand	Aaron	5	50,000,000 - 59,999,999	11,000,000 - 11,999,999
Ryan	B.J.	5	40,000,000 - 49,999,999	9,000,000 - 9,999,999
Sabathia	C.C.	7	150,000,000 - 159,999,999	22,000,000 - 22,999,999
Samardzija	Jeff	5	10,000,000 - 19,999,999	2,000,000 - 2,999,999
Santana	Johan	6	120,000,000 - 129,999,999	21,000,000 - 21,999,999
Sizemore	Grady	6	20,000,000 - 29,999,999	3,000,000 - 3,999,999
Soriano	Alfonso	8	130,000,000 - 139,999,999	16,000,000 - 16,999,999

Last	First	LNG	SAL	AVG
Span	Denard	5	10,000,000 - 19,999,999	3,000,000 - 3,999,999
Suzuki	Ichiro	5	80,000,000 - 89,999,999	17,000,000 - 17,999,999
Swisher	Nick	5	20,000,000 - 29,999,999	5,000,000 - 5,999,999
Teixeira	Mark	8	170,000,000 - 179,999,999	22,000,000 - 22,999,999
Tejada	Miguel	6	70,000,000 - 79,999,999	11,000,000 - 11,999,999
Thome	Jim	6	80,000,000 - 89,999,999	13,000,000 - 13,999,999
Tulowitzki	Troy	6	20,000,000 - 29,999,999	4,000,000 - 4,999,999
Upton	Justin	6	50,000,000 - 59,999,999	8,000,000 - 8,999,999
Utley	Chase	7	80,000,000 - 89,999,999	12,000,000 - 12,999,999
Verlander	Justin	5	70,000,000 - 79,999,999	15,000,000 - 15,999,999
Wells	Vernon	7	110,000,000 - 119,999,999	16,000,000 - 16,999,999
Wilson	Preston	5	30,000,000 - 39,999,999	6,000,000 - 6,999,999
Wright	David	6	50,000,000 - 59,999,999	8,000,000 - 8,999,999
Young	Chris	5	20,000,000 - 29,999,999	5,000,000 - 5,999,999
Young	Michael	5	70,000,000 - 79,999,999	14,000,000 - 14,999,999
Zambrano	Carlos	5	90,000,000 - 99,999,999	18,000,000 - 18,999,999
Zimmerman	Ryan	5	40,000,000 - 49,999,999	8,000,000 - 8,999,999
Zito	Barry	7	110,000,000 - 119,999,999	17,000,000 - 17,999,999

Last	First	PAY	AGE	EXP
Abreu	Bobby	50,000,000 - 59,999,999	28	5
Ackley	Dustin	90,000,000 - 99,999,999	21	0
Alonso	Yonder	70,000,000 - 79,999,999	21	0
Arguelles	Noel	70,000,000 - 79,999,999	20	0
Beltran	Carlos	100,000,000 - 109,999,999	28	6
Beltre	Adrian	80,000,000 - 89,999,999	26	7
Berkman	Lance	70,000,000 - 79,999,999	29	6
Blalock	Hank	50,000,000 - 59,999,999	23	2
Bonds	Barry	70,000,000 - 79,999,999	37	16
Braun	Ryan	80,000,000 - 89,999,999	24	1
Burnett	A.J.	200,000,000 - 209,999,999	32	10
Burrell	Pat	70,000,000 - 79,999,999	26	3
Cabrera	Miguel	130,000,000 - 139,999,999	25	5
Carpenter	Chris	90,000,000 - 99,999,999	32	9
Chapman	Aroldis	70,000,000 - 79,999,999	22	0
Chavez	Eric	50,000,000 - 59,999,999	27	7
Crosby	Bobby	50,000,000 - 59,999,999	25	2
DeJesus	David	40,000,000 - 49,999,999	26	3
Drew	J.D.	140,000,000 - 149,999,999	31	9
Drew	Stephen	60,000,000 - 69,999,999	22	0
Gallardo	Yovani	90,000,000 - 99,999,999	24	3
Giambi	Jason	120,000,000 - 129,999,999	31	7
Granderson	Curtis	130,000,000 - 139,999,999	27	4
Guerrero	Vladimir	100,000,000 - 109,999,999	29	8
Hampton	Mike	70,000,000 - 79,999,999	28	8
Helton	Todd	70,000,000 - 79,999,999	27	4
Hernandez	Felix	90,000,000 - 99,999,999	24	5
Holliday	Matt	90,000,000 - 99,999,999	30	6
Humber	Philip	100,000,000 - 109,999,999	22	0
Hunter	Torii	110,000,000 - 119,999,999	32	10
Igawa	Kei	180,000,000 - 189,999,999	27	0
Jeter	Derek	110,000,000 - 119,999,999	27	6
Jones	Andruw	90,000,000 - 99,999,999	25	6
Kinsler	Ian	60,000,000 - 69,999,999	26	2
Konerko	Paul	100,000,000 - 109,999,999	30	10
Lackey	John	160,000,000 - 169,999,999	31	8
Lee	Carlos	80,000,000 - 89,999,999	31	8
Lee	Derrek	90,000,000 - 99,999,999	30	9
Lester	Jon	120,000,000 - 129,999,999	25	3
Longoria	Evan	40,000,000 - 49,999,999	22	0

Last	First	PAY	AGE	EXP
Markakis	Nick	60,000,000 - 69,999,999	25	3
Martinez	Victor	40,000,000 - 49,999,999	26	3
Matsuzaka	Daisuke	140,000,000 - 149,999,999	26	0
Matthews Jr.	Gary	100,000,000 - 109,999,999	32	8
McCann	Brian	80,000,000 - 89,999,999	23	2
Meche	Gil	60,000,000 - 69,999,999	28	8
Millwood	Kevin	60,000,000 - 69,999,999	31	9
Morales	Kendrys	90,000,000 - 99,999,999	22	0
Morneau	Justin	50,000,000 - 59,999,999	27	5
Niemann	Jeff	20,000,000 - 29,999,999	22	0
Ordonez	Magglio	60,000,000 - 69,999,999	31	8
Oswalt	Roy	80,000,000 - 89,999,999	29	6
Peavy	Jake	70,000,000 - 79,999,999	27	6
Pedroia	Dustin	120,000,000 - 129,999,999	25	3
Peralta	Jhonny	50,000,000 - 59,999,999	24	3
Pierre	Juan	100,000,000 - 109,999,999	29	7
Posada	Jorge	120,000,000 - 129,999,999	30	7
Price	David	20,000,000 - 29,999,999	21	0
Pujols	Albert	80,000,000 - 89,999,999	24	3
Ramirez	Aramis	90,000,000 - 99,999,999	29	9
Ramirez	Hanley	30,000,000 - 39,999,999	25	3
Ramirez	Manny	110,000,000 - 119,999,999	29	8
Rios	Alex	90,000,000 - 99,999,999	27	4
Rodriguez	Alex	80,000,000 - 89,999,999	25	6
Rolen	Scott	80,000,000 - 89,999,999	28	7
Rollins	Jimmy	80,000,000 - 89,999,999	27	6
Rowand	Aaron	70,000,000 - 79,999,999	30	7
Ryan	B.J.	70,000,000 - 79,999,999	30	7
Sabathia	C.C.	200,000,000 - 209,999,999	28	8
Samardzija	Jeff	90,000,000 - 99,999,999	22	0
Santana	Johan	130,000,000 - 139,999,999	29	8
Sizemore	Grady	50,000,000 - 59,999,999	23	2
Soriano	Alfonso	90,000,000 - 99,999,999	31	7
Span	Denard	90,000,000 - 99,999,999	26	2
Suzuki	Ichiro	110,000,000 - 119,999,999	34	7
Swisher	Nick	70,000,000 - 79,999,999	26	3
Teixeira	Mark	200,000,000 - 209,999,999	29	6
Tejada	Miguel	50,000,000 - 59,999,999	30	7
Thome	Jim	70,000,000 - 79,999,999	32	12
Tulowitzki	Troy	60,000,000 - 69,999,999	23	2

Last	First	PAY	AGE	EXP
Upton	Justin	70,000,000 - 79,999,999	22	3
Utley	Chase	80,000,000 - 89,999,999	28	4
Verlander	Justin	130,000,000 - 139,999,999	27	5
Wells	Vernon	90,000,000 - 99,999,999	29	8
Wilson	Preston	30,000,000 - 39,999,999	26	3
Wright	David	110,000,000 - 119,999,999	24	3
Young	Chris	70,000,000 - 79,999,999	25	3
Young	Michael	60,000,000 - 69,999,999	32	8
Zambrano	Carlos	110,000,000 - 119,999,999	27	6
Zimmerman	Ryan	60,000,000 - 69,999,999	24	4
Zito	Barry	90,000,000 - 99,999,999	29	7

Last	First	POP	DEB	AS	MVP	HT	CWAR	RD
Abreu	Bobby	5,000,000 - 5,999,999	22	0	0	72	4 - 4.999	1
Ackley	Dustin	3,000,000 - 3,999,999	23	0	0	73	0 - 0.999	1
Alonso	Yonder	2,000,000 - 2,999,999	23	0	0	73	0 - 0.999	1
Arguelles	Noel	2,000,000 - 2,999,999	N/A	0	0	76	0 - 0.999	U
Beltran	Carlos	19,000,000 - 19,999,999	21	1	0	73	4 - 4.999	2
Beltre	Adrian	3,000,000 - 3,999,999	19	0	0	71	3 - 3.999	U
Berkman	Lance	5,000,000 - 5,999,999	23	3	0	73	4 - 4.999	1
Blalock	Hank	6,000,000 - 6,999,999	21	1	0	73	3 - 3.999	3
Bonds	Barry	4,000,000 - 4,999,999	21	10	4	73	7 - 7.999	1
Braun	Ryan	1,000,000 - 1,999,999	23	0	0	74	2 - 2.999	1
Burnett	A.J.	19,000,000 - 19,999,999	22	0	0	76	1 - 1.999	8
Burrell	Pat	5,000,000 - 5,999,999	23	0	0	76	2 - 2.999	1
Cabrera	Miguel	4,000,000 - 4,999,999	20	4	0	76	3 - 3.999	U
Carpenter	Chris	2,000,000 - 2,999,999	22	2	0	78	2 - 2.999	1
Chapman	Aroldis	2,000,000 - 2,999,999	22	0	0	76	0 - 0.999	U
Chavez	Eric	4,000,000 - 4,999,999	20	0	0	73	3 - 3.999	1
Crosby	Bobby	4,000,000 - 4,999,999	23	0	0	75	1 - 1.999	1
DeJesus	David	2,000,000 - 2,999,999	23	0	0	71	2 - 2.999	4
Drew	J.D.	4,000,000 - 4,999,999	22	0	0	73	3 - 3.999	1
Drew	Stephen	4,000,000 - 4,999,999	23	0	0	72	0 - 0.999	1
Gallardo	Yovani	1,000,000 - 1,999,999	21	0	0	74	2 - 2.999	2
Giambi	Jason	19,000,000 - 19,999,999	24	2	1	75	4 - 4.999	2
Granderson	Curtis	4,000,000 - 4,999,999	23	0	0	73	3 - 3.999	3
Guerrero	Vladimir	12,000,000 - 12,999,999	21	4	0	75	4 - 4.999	U
Hampton	Mike	2,000,000 - 2,999,999	20	1	0	70	2 - 2.999	6
Helton	Todd	2,000,000 - 2,999,999	23	1	0	74	3 - 3.999	1
Hernandez	Felix	3,000,000 - 3,999,999	19	1	0	75	3 - 3.999	U
Holliday	Matt	2,000,000 - 2,999,999	24	3	0	76	3 - 3.999	7
Humber	Philip	19,000,000 - 19,999,999	23	0	0	75	0 - 0.999	1
Hunter	Torii	12,000,000 - 12,999,999	22	2	0	74	2 - 2.999	1
Igawa	Kei	19,000,000 - 19,999,999	27	0	0	73	0 - 0.999	U
Jeter	Derek	19,000,000 - 19,999,999	20	3	0	75	4 - 4.999	1
Jones	Andruw	5,000,000 - 5,999,999	19	1	0	73	5 - 5.999	U
Kinsler	Ian	6,000,000 - 6,999,999	23	0	0	72	3 - 3.999	17
Konerko	Paul	9,000,000 - 9,999,999	21	2	0	74	1 - 1.999	1
Lackey	John	4,000,000 - 4,999,999	23	1	0	78	3 - 3.999	2
Lee	Carlos	5,000,000 - 5,999,999	22	2	0	74	2 - 2.999	U
Lee	Derrek	9,000,000 - 9,999,999	21	1	0	77	2 - 2.999	1
Lester	Jon	4,000,000 - 4,999,999	22	0	0	76	2 - 2.999	2
Longoria	Evan	2,000,000 - 2,999,999	22	0	0	74	0 - 0.999	1

Last	First	POP	DEB	AS	MVP	HT	CWAR	RD
Markakis	Nick	2,000,000 - 2,999,999	22	0	0	73	4 - 4.999	1
Martinez	Victor	2,000,000 - 2,999,999	23	1	0	74	1 - 1.999	U
Matsuzaka	Daisuke	4,000,000 - 4,999,999	26	0	0	72	0 - 0.999	U
Matthews Jr.	Gary	12,000,000 - 12,999,999	24	1	0	75	1 - 1.999	13
McCann	Brian	5,000,000 - 5,999,999	21	1	0	75	2 - 2.999	2
Meche	Gil	2,000,000 - 2,999,999	20	0	0	75	0 - 0.999	1
Millwood	Kevin	6,000,000 - 6,999,999	22	1	0	76	2 - 2.999	11
Morales	Kendrys	12,000,000 - 12,999,999	22	0	0	73	0 - 0.999	U
Morneau	Justin	3,000,000 - 3,999,999	22	1	1	76	1 - 1.999	3
Niemann	Jeff	2,000,000 - 2,999,999	25	0	0	81	0 - 0.999	1
Ordonez	Magglio	4,000,000 - 4,999,999	23	4	0	72	3 - 3.999	U
Oswalt	Roy	5,000,000 - 5,999,999	23	2	0	72	5 - 5.999	23
Peavy	Jake	3,000,000 - 3,999,999	21	2	1	73	3 - 3.999	15
Pedroia	Dustin	4,000,000 - 4,999,999	23	1	1	69	3 - 3.999	2
Peralta	Jhonny	2,000,000 - 2,999,999	21	0	0	74	1 - 1.999	U
Pierre	Juan	12,000,000 - 12,999,999	22	0	0	70	1 - 1.999	13
Posada	Jorge	19,000,000 - 19,999,999	24	2	0	74	1 - 1.999	24
Price	David	2,000,000 - 2,999,999	23	0	0	78	0 - 0.999	1
Pujols	Albert	2,000,000 - 2,999,999	21	2	0	75	6 - 6.999	13
Ramirez	Aramis	9,000,000 - 9,999,999	19	1	0	73	1 - 1.999	U
Ramirez	Hanley	5,000,000 - 5,999,999	21	1	0	74	5 - 5.999	U
Ramirez	Manny	4,000,000 - 4,999,999	21	4	0	72	3 - 3.999	1
Rios	Alex	5,000,000 - 5,999,999	23	2	0	77	3 - 3.999	1
Rodriguez	Alex	6,000,000 - 6,999,999	18	4	0	75	6 - 6.999	1
Rolen	Scott	2,000,000 - 2,999,999	21	1	0	76	4 - 4.999	2
Rollins	Jimmy	5,000,000 - 5,999,999	21	3	0	67	2 - 2.999	2
Rowand	Aaron	4,000,000 - 4,999,999	23	1	0	72	2 - 2.999	1
Ryan	B.J.	5,000,000 - 5,999,999	23	1	0	78	1 - 1.999	17
Sabathia	C.C.	19,000,000 - 19,999,999	20	3	1	78	4 - 4.999	1
Samardzija	Jeff	9,000,000 - 9,999,999	23	0	0	77	0 - 0.999	5
Santana	Johan	19,000,000 - 19,999,999	21	3	2	72	4 - 4.999	U
Sizemore	Grady	2,000,000 - 2,999,999	21	0	0	74	3 - 3.999	3
Soriano	Alfonso	9,000,000 - 9,999,999	22	5	0	73	2 - 2.999	U
Span	Denard	3,000,000 - 3,999,999	24	0	0	72	4 - 4.999	1
Suzuki	Ichiro	3,000,000 - 3,999,999	27	7	1	71	5 - 5.999	U
Swisher	Nick	4,000,000 - 4,999,999	23	0	0	72	1 - 1.999	1
Teixeira	Mark	19,000,000 - 19,999,999	22	1	0	75	5 - 5.999	1
Tejada	Miguel	2,000,000 - 2,999,999	23	1	1	69	3 - 3.999	U
Thome	Jim	5,000,000 - 5,999,999	21	3	0	76	3 - 3.999	13
Tulowitzki	Troy	2,000,000 - 2,999,999	21	0	0	75	3 - 3.999	1

Last	First	POP	DEB	AS	MVP	HT	CWAR	RD
Upton	Justin	4,000,000 - 4,999,999	19	1	0	74	1 - 1.999	1
Utley	Chase	5,000,000 - 5,999,999	24	1	0	73	4 - 4.999	1
Verlander	Justin	4,000,000 - 4,999,999	22	2	0	77	3 - 3.999	1
Wells	Vernon	5,000,000 - 5,999,999	20	2	0	73	2 - 2.999	1
Wilson	Preston	5,000,000 - 5,999,999	23	0	0	74	0 - 0.999	1
Wright	David	19,000,000 - 19,999,999	21	1	0	72	3 - 3.999	1
Young	Chris	4,000,000 - 4,999,999	22	0	0	74	0 - 0.999	16
Young	Michael	6,000,000 - 6,999,999	23	5	0	73	2 - 2.999	5
Zambrano	Carlos	9,000,000 - 9,999,999	20	2	0	76	4 - 4.999	U
Zimmerman	Ryan	5,000,000 - 5,999,999	20	0	0	75	2 - 2.999	1
Zito	Barry	4,000,000 - 4,999,999	22	3	1	74	4 - 4.999	1

Last	First	FIN	THR	BAT	USA	SAM	CRT	POS	LG
Abreu	Bobby	Yes	R	L	No	Yes	Yes	OF	NL
Ackley	Dustin	Yes	R	L	Yes	Yes	N/A	2B	AL
Alonso	Yonder	Yes	R	L	Yes	No	N/A	1B	NL
Arguelles	Noel	No	L	L	No	Yes	N/A	P	AL
Beltran	Carlos	Yes	R	S	No	No	No	OF	NL
Beltre	Adrian	Yes	R	R	No	Yes	No	3B	AL
Berkman	Lance	Yes	L	S	Yes	No	Yes	1B	NL
Blalock	Hank	Yes	R	L	Yes	Yes	Yes	3B	AL
Bonds	Barry	Yes	L	L	Yes	Yes	Yes	OF	NL
Braun	Ryan	Yes	R	R	Yes	Yes	Yes	3B	NL
Burnett	A.J.	Yes	R	R	Yes	No	No	P	AL
Burrell	Pat	Yes	R	R	Yes	Yes	Yes	OF	NL
Cabrera	Miguel	Yes	R	R	No	Yes	No	1B	AL
Carpenter	Chris	Yes	R	R	Yes	Yes	Yes	P	NL
Chapman	Aroldis	Yes	L	L	No	Yes	N/A	P	NL
Chavez	Eric	Yes	R	L	Yes	Yes	Yes	3B	AL
Crosby	Bobby	Yes	R	R	Yes	Yes	Yes	SS	AL
DeJesus	David	Yes	L	L	Yes	Yes	Yes	OF	AL
Drew	J.D.	Yes	R	L	Yes	Yes	No	OF	AL
Drew	Stephen	Yes	R	L	Yes	Yes	N/A	SS	NL
Gallardo	Yovani	Yes	R	R	Yes	Yes	Yes	P	NL
Giambi	Jason	Yes	R	L	Yes	Yes	No	1B	AL
Granderson	Curtis	Yes	R	L	Yes	No	Yes	OF	AL
Guerrero	Vladimir	Yes	R	R	No	Yes	No	OF	AL
Hampton	Mike	Yes	L	R	Yes	No	No	P	NL
Helton	Todd	Yes	L	L	Yes	Yes	Yes	1B	NL
Hernandez	Felix	Yes	R	R	No	Yes	Yes	P	AL
Holliday	Matt	Yes	R	R	Yes	Yes	No	OF	NL
Humber	Philip	Yes	R	R	Yes	No	N/A	P	NL
Hunter	Torii	Yes	R	R	Yes	Yes	No	OF	AL
Igawa	Kei	No	L	L	No	No	N/A	P	AL
Jeter	Derek	Yes	R	R	Yes	Yes	Yes	SS	AL
Jones	Andruw	Yes	R	R	No	Yes	Yes	OF	NL
Kinsler	Ian	Yes	R	R	Yes	Yes	Yes	2B	AL
Konerko	Paul	Yes	R	R	Yes	Yes	Yes	1B	AL
Lackey	John	Yes	R	R	Yes	No	No	P	AL
Lee	Carlos	Yes	R	R	No	No	No	OF	NL
Lee	Derrek	Yes	R	R	Yes	No	Yes	1B	NL
Lester	Jon	Yes	L	L	Yes	Yes	Yes	P	AL
Longoria	Evan	Yes	R	R	Yes	Yes	N/A	3B	AL

Last	First	FIN	THR	BAT	USA	SAM	CRT	POS	LG
Markakis	Nick	Yes	L	L	Yes	Yes	Yes	OF	AL
Martinez	Victor	Yes	R	S	No	No	Yes	C	AL
Matsuzaka	Daisuke	Yes	R	R	No	Yes	N/A	P	AL
Matthews Jr.	Gary	No	R	S	Yes	No	No	OF	AL
McCann	Brian	Yes	R	L	Yes	Yes	Yes	C	NL
Meche	Gil	No	R	R	Yes	No	No	P	AL
Millwood	Kevin	Yes	R	R	Yes	No	No	P	AL
Morales	Kendrys	Yes	R	S	No	Yes	N/A	1B	AL
Morneau	Justin	Yes	R	L	No	No	Yes	1B	AL
Niemann	Jeff	Yes	R	R	Yes	Yes	N/A	P	AL
Ordonez	Magglio	Yes	R	R	No	Yes	No	OF	AL
Oswalt	Roy	Yes	R	R	Yes	No	Yes	P	NL
Peavy	Jake	Yes	R	R	Yes	No	Yes	P	NL
Pedroia	Dustin	Yes	R	R	Yes	Yes	Yes	2B	AL
Peralta	Jhonny	Yes	R	R	No	No	Yes	SS	AL
Pierre	Juan	Yes	L	L	Yes	No	No	OF	NL
Posada	Jorge	Yes	R	S	No	Yes	Yes	C	AL
Price	David	Yes	L	L	Yes	Yes	N/A	P	AL
Pujols	Albert	Yes	R	R	Yes	Yes	Yes	1B	NL
Ramirez	Aramis	Yes	R	R	No	Yes	Yes	3B	NL
Ramirez	Hanley	Yes	R	R	No	No	Yes	SS	NL
Ramirez	Manny	Yes	R	R	Yes	No	No	OF	AL
Rios	Alex	Yes	R	R	No	No	Yes	OF	AL
Rodriguez	Alex	Yes	R	R	Yes	No	No	3B	AL
Rolen	Scott	Yes	R	R	Yes	No	Yes	3B	NL
Rollins	Jimmy	Yes	R	S	Yes	Yes	Yes	SS	NL
Rowand	Aaron	No	R	R	Yes	No	No	OF	NL
Ryan	B.J.	No	L	L	Yes	No	No	P	AL
Sabathia	C.C.	Yes	L	L	Yes	Yes	No	P	AL
Samardzija	Jeff	Yes	R	R	Yes	Yes	N/A	P	NL
Santana	Johan	No	L	L	No	No	No	P	NL
Sizemore	Grady	Yes	L	L	Yes	Yes	Yes	OF	AL
Soriano	Alfonso	Yes	R	R	No	No	No	OF	NL
Span	Denard	Yes	L	L	Yes	No	Yes	OF	AL
Suzuki	Ichiro	Yes	R	L	No	No	Yes	OF	AL
Swisher	Nick	Yes	L	S	Yes	No	Yes	OF	AL
Teixeira	Mark	Yes	R	S	Yes	Yes	No	1B	AL
Tejada	Miguel	Yes	R	R	No	No	No	SS	AL
Thome	Jim	Yes	R	L	Yes	No	No	1B	NL
Tulowitzki	Troy	Yes	R	R	Yes	Yes	Yes	SS	NL

Last	First	FIN	THR	BAT	USA	SAM	CRT	POS	LG
Upton	Justin	Yes	R	R	Yes	No	Yes	OF	NL
Utley	Chase	Yes	R	L	Yes	Yes	Yes	2B	NL
Verlander	Justin	Yes	R	R	Yes	Yes	Yes	P	AL
Wells	Vernon	No	R	R	Yes	No	Yes	OF	AL
Wilson	Preston	Yes	R	R	Yes	No	Yes	OF	NL
Wright	David	Yes	R	R	Yes	Yes	Yes	3B	NL
Young	Chris	Yes	R	R	Yes	No	Yes	OF	NL
Young	Michael	Yes	R	R	Yes	No	Yes	3B	AL
Zambrano	Carlos	Yes	R	S	No	No	Yes	P	NL
Zimmerman	Ryan	Yes	R	R	Yes	Yes	Yes	3B	NL
Zito	Barry	Yes	L	L	Yes	Yes	No	P	NL

Last	First	TEAM	SUCCESS	$/WAR
Abreu	Bobby	Phillies	Yes	2,000,000 - 2,999,999
Ackley	Dustin	Mariners	Yes	0 - 999,999
Alonso	Yonder	Reds	No	1,000,000 - 1,999,999
Arguelles	Noel	Royals	No	20,000,000+
Beltran	Carlos	Mets	No	3,000,000 - 3,999,999
Beltre	Adrian	Mariners	No	3,000,000 - 3,999,999
Berkman	Lance	Astros	No	3,000,000 - 3,999,999
Blalock	Hank	Rangers	No	2,000,000 - 2,999,999
Bonds	Barry	Giants	Yes	2,000,000 - 2,999,999
Braun	Ryan	Brewers	Yes	1,000,000 - 1,999,999
Burnett	A.J.	Yankees	No	9,000,000 - 9,999,999
Burrell	Pat	Phillies	No	4,000,000 - 4,999,999
Cabrera	Miguel	Tigers	No	3,000,000 - 3,999,999
Carpenter	Chris	Cardinals	No	4,000,000 - 4,999,999
Chapman	Aroldis	Reds	Yes	1,000,000 - 1,999,999
Chavez	Eric	Athletics	No	6,000,000 - 6,999,999
Crosby	Bobby	Athletics	No	2,000,000 - 2,999,999
DeJesus	David	Royals	Yes	1,000,000 - 1,999,999
Drew	J.D.	Red Sox	No	5,000,000 - 5,999,999
Drew	Stephen	Diamondbacks	Yes	0 - 999,999
Gallardo	Yovani	Brewers	Yes	2,000,000 - 2,999,999
Giambi	Jason	Yankees	No	5,000,000 - 5,999,999
Granderson	Curtis	Tigers	Yes	1,000,000 - 1,999,999
Guerrero	Vladimir	Angels	No	3,000,000 - 3,999,999
Hampton	Mike	Rockies	No	20,000,000+
Helton	Todd	Rockies	No	3,000,000 - 3,999,999
Hernandez	Felix	Mariners	No	2,000,000 - 2,999,999
Holliday	Matt	Cardinals	No	5,000,000 - 5,999,999
Humber	Philip	Mets	No	20,000,000+
Hunter	Torii	Angels	No	4,000,000 - 4,999,999
Igawa	Kei	Yankees	No	20,000,000+
Jeter	Derek	Yankees	No	4,000,000 - 4,999,999
Jones	Andruw	Braves	No	2,000,000 - 2,999,999
Kinsler	Ian	Rangers	Yes	0 - 999,999
Konerko	Paul	White Sox	No	4,000,000 - 4,999,999
Lackey	John	Red Sox	No	14,000,000 - 14,999,999
Lee	Carlos	Astros	No	9,000,000 - 9,999,999
Lee	Derrek	Cubs	No	4,000,000 - 4,999,999
Lester	Jon	Red Sox	Yes	1,000,000 - 1,999,999
Longoria	Evan	Rays	Yes	0 - 999,999

Last	First	TEAM	SUCCESS	$/WAR
Markakis	Nick	Orioles	No	5,000,000 - 5,999,999
Martinez	Victor	Indians	Yes	0 - 999,999
Matsuzaka	Daisuke	Red Sox	No	4,000,000 - 4,999,999
Matthews Jr.	Gary	Angels	No	20,000,000+
McCann	Brian	Braves	Yes	1,000,000 - 1,999,999
Meche	Gil	Royals	No	4,000,000 - 4,999,999
Millwood	Kevin	Rangers	No	6,000,000 - 6,999,999
Morales	Kendrys	Angels	No	0 - 999,999
Morneau	Justin	Twins	No	5,000,000 - 5,999,999
Niemann	Jeff	Rays	No	2,000,000 - 2,999,999
Ordonez	Magglio	Tigers	No	5,000,000 - 5,999,999
Oswalt	Roy	Astros	No	3,000,000 - 3,999,999
Peavy	Jake	Padres	No	4,000,000 - 4,999,999
Pedroia	Dustin	Red Sox	Yes	1,000,000 - 1,999,999
Peralta	Jhonny	Indians	Yes	1,000,000 - 1,999,999
Pierre	Juan	Dodgers	No	17,000,000 - 17,999,999
Posada	Jorge	Yankees	No	2,000,000 - 2,999,999
Price	David	Rays	Yes	0 - 999,999
Pujols	Albert	Cardinals	Yes	1,000,000 - 1,999,999
Ramirez	Aramis	Cubs	No	5,000,000 - 5,999,999
Ramirez	Hanley	Marlins	No	3,000,000 - 3,999,999
Ramirez	Manny	Red Sox	No	4,000,000 - 4,999,999
Rios	Alex	Blue Jays	No	4,000,000 - 4,999,999
Rodriguez	Alex	Rangers	No	3,000,000 - 3,999,999
Rolen	Scott	Cardinals	Yes	2,000,000 - 2,999,999
Rollins	Jimmy	Phillies	Yes	1,000,000 - 1,999,999
Rowand	Aaron	Giants	No	20,000,000+
Ryan	B.J.	Blue Jays	No	10,000,000 - 10,999,999
Sabathia	C.C.	Yankees	No	6,000,000 - 6,999,999
Samardzija	Jeff	Cubs	No	7,000,000 - 7,999,999
Santana	Johan	Mets	No	8,000,000 - 8,999,999
Sizemore	Grady	Indians	Yes	1,000,000 - 1,999,999
Soriano	Alfonso	Cubs	No	11,000,000 - 11,999,999
Span	Denard	Twins	Yes	1,000,000 - 1,999,999
Suzuki	Ichiro	Mariners	No	5,000,000 - 5,999,999
Swisher	Nick	Athletics	No	2,000,000 - 2,999,999
Teixeira	Mark	Yankees	No	8,000,000 - 8,999,999
Tejada	Miguel	Orioles	No	2,000,000 - 2,999,999
Thome	Jim	Phillies	No	4,000,000 - 4,999,999
Tulowitzki	Troy	Rockies	Yes	1,000,000 - 1,999,999

Last	First	TEAM	SUCCESS	$/WAR
Upton	Justin	Diamondbacks	Yes	2,000,000 - 2,999,999
Utley	Chase	Phillies	Yes	2,000,000 - 2,999,999
Verlander	Justin	Tigers	Yes	3,000,000 - 3,999,999
Wells	Vernon	Blue Jays	No	15,000,000 - 15,999,999
Wilson	Preston	Marlins	No	4,000,000 - 4,999,999
Wright	David	Mets	Yes	1,000,000 - 1,999,999
Young	Chris	Diamondbacks	No	2,000,000 - 2,999,999
Young	Michael	Rangers	No	10,000,000 - 10,999,999
Zambrano	Carlos	Cubs	No	8,000,000 - 8,999,999
Zimmerman	Ryan	Nationals	No	1,000,000 - 1,999,999
Zito	Barry	Giants	No	18,000,000 - 18,999,999

Note. Players with a 0.0 $/WAR were placed in the 20,000,000+ category.

APPENDIX L

Complete Results from Cross Tabulations and Chi-Square in Research Question Four

Table L1

LNG/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
LNG	11	Count	1	0	1
		% within LNG	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	10	Count	2	0	2
		% within LNG	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	8	Count	5	2	7
		% within LNG	71.4%	28.6%	100.0%
		% within SUCCESS	7.8%	7.4%	7.7%
		% of Total	5.5%	2.2%	7.7%
	7	Count	7	2	9
		% within LNG	77.8%	22.2%	100.0%
		% within SUCCESS	10.9%	7.4%	9.9%
		% of Total	7.7%	2.2%	9.9%
	6	Count	13	9	22
		% within LNG	59.1%	40.9%	100.0%
		% within SUCCESS	20.3%	33.3%	24.2%
		% of Total	14.3%	9.9%	24.2%
	5	Count	36	14	50
		% within LNG	72.0%	28.0%	100.0%
		% within SUCCESS	56.3%	51.9%	54.9%
		% of Total	39.6%	15.4%	54.9%
Total		Count	64	27	91
		% within LNG	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L2

LNG/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.907*	5	0.714
Likelihood Ratio	3.691	5	0.595
N of Valid Cases	91		

* 7 cells (58.3%) have expected count less than 5. The minimum expected count is .30.

Table L3

SAL/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
SAL	90,000,000 - 99,999,999	Count	2	0	2
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	80,000,000 - 89,999,999	Count	7	4	11
		% within SAL	63.6%	36.4%	100.0%
		% within SUCCESS	10.9%	14.8%	12.1%
		% of Total	7.7%	4.4%	12.1%
	70,000,000 - 79,999,999	Count	10	1	11
		% within SAL	90.9%	9.1%	100.0%
		% within SUCCESS	15.6%	3.7%	12.1%
		% of Total	11.0%	1.1%	12.1%
	60,000,000 - 69,999,999	Count	8	0	8
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	12.5%	0.0%	8.8%
		% of Total	8.8%	0.0%	8.8%
	50,000,000 - 59,999,999	Count	4	3	7
		% within SAL	57.1%	42.9%	100.0%
		% within SUCCESS	6.3%	11.1%	7.7%
		% of Total	4.4%	3.3%	7.7%
	40,000,000 - 49,999,999	Count	6	2	8
		% within SAL	75.0%	25.0%	100.0%
		% within SUCCESS	9.4%	7.4%	8.8%
		% of Total	6.6%	2.2%	8.8%
	30,000,000 - 39,999,999	Count	1	1	2
		% within SAL	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%
	250,000,000 - 259,999,999	Count	1	0	1
		% within SAL	100.0%	0.0%	100.0%

		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	20,000,000 - 29,999,999	Count	3	8	11
		% within SAL	27.3%	72.7%	100.0%
		% within SUCCESS	4.7%	29.6%	12.1%
		% of Total	3.3%	8.8%	12.1%
	180,000,000 - 189,999,999	Count	1	0	1
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	170,000,000 - 179,999,999	Count	1	0	1
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	150,000,000 - 159,999,999	Count	2	0	2
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	140,000,000 - 149,999,999	Count	2	0	2
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	130,000,000 - 139,999,999	Count	1	0	1
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	120,000,000 - 129,999,999	Count	1	0	1
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	110,000,000 - 119,999,999	Count	5	0	5
		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	7.8%	0.0%	5.5%
		% of Total	5.5%	0.0%	5.5%
	100,000,000 - 109,999,999	Count	1	0	1

		% within SAL	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	10,000,000 - 19,999,999	Count	3	6	9
		% within SAL	33.3%	66.7%	100.0%
		% within SUCCESS	4.7%	22.2%	9.9%
		% of Total	3.3%	6.6%	9.9%
	0 - 9,999,999	Count	5	2	7
		% within SAL	71.4%	28.6%	100.0%
		% within SUCCESS	7.8%	7.4%	7.7%
		% of Total	5.5%	2.2%	7.7%
Total		Count	64	27	91
		% within SAL	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L4

SAL/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29.759*	18	0.040
Likelihood Ratio	35.487	18	0.008
N of Valid Cases	91		

* 32 cells (84.2%) have expected count less than 5. The minimum expected count is .30.

Table L5

AVG/SUCCESS Cross Tabulation

			SUCCESS		
			No	Yes	Total
AVG	9,000,000 - 9,999,999	Count	3	0	3
		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	4.7%	0.0%	3.3%
		% of Total	3.3%	0.0%	3.3%
	8,000,000 - 8,999,999	Count	5	2	7
		% within AVG	71.4%	28.6%	100.0%
		% within SUCCESS	7.8%	7.4%	7.7%
		% of Total	5.5%	2.2%	7.7%
	7,000,000 - 7,999,999	Count	0	1	1
		% within AVG	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	6,000,000 - 6,999,999	Count	1	1	2
		% within AVG	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%
	5,000,000 - 5,999,999	Count	2	4	6
		% within AVG	33.3%	66.7%	100.0%
		% within SUCCESS	3.1%	14.8%	6.6%
		% of Total	2.2%	4.4%	6.6%
	4,000,000 - 4,999,999	Count	1	3	4
		% within AVG	25.0%	75.0%	100.0%
		% within SUCCESS	1.6%	11.1%	4.4%
		% of Total	1.1%	3.3%	4.4%
	3,000,000 - 3,999,999	Count	1	3	4
		% within AVG	25.0%	75.0%	100.0%
		% within SUCCESS	1.6%	11.1%	4.4%
		% of Total	1.1%	3.3%	4.4%
	25,000,000 - 25,999,999	Count	1	0	1
		% within AVG	100.0%	0.0%	100.0%

		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	22,000,000 - 22,999,999	Count	2	0	2
		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	21,000,000 - 21,999,999	Count	1	0	1
		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	2,000,000 - 2,999,999	Count	2	4	6
		% within AVG	33.3%	66.7%	100.0%
		% within SUCCESS	3.1%	14.8%	6.6%
		% of Total	2.2%	4.4%	6.6%
	18,000,000 - 18,999,999	Count	4	0	4
		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	6.3%	0.0%	4.4%
		% of Total	4.4%	0.0%	4.4%
	17,000,000 - 17,999,999	Count	3	1	4
		% within AVG	75.0%	25.0%	100.0%
		% within SUCCESS	4.7%	3.7%	4.4%
		% of Total	3.3%	1.1%	4.4%
	16,000,000 - 16,999,999	Count	9	0	9
		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	14.1%	0.0%	9.9%
		% of Total	9.9%	0.0%	9.9%
	15,000,000 - 15,999,999	Count	0	1	1
		% within AVG	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	14,000,000 - 14,999,999	Count	5	0	5
		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	7.8%	0.0%	5.5%
		% of Total	5.5%	0.0%	5.5%
	13,000,000 - 13,999,999	Count	7	0	7

		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	10.9%	0.0%	7.7%
		% of Total	7.7%	0.0%	7.7%
	12,000,000 - 12,999,999	Count	5	2	7
		% within AVG	71.4%	28.6%	100.0%
		% within SUCCESS	7.8%	7.4%	7.7%
		% of Total	5.5%	2.2%	7.7%
	11,000,000 - 11,999,999	Count	3	0	3
		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	4.7%	0.0%	3.3%
		% of Total	3.3%	0.0%	3.3%
	10,000,000 - 10,999,999	Count	4	2	6
		% within AVG	66.7%	33.3%	100.0%
		% within SUCCESS	6.3%	7.4%	6.6%
		% of Total	4.4%	2.2%	6.6%
	1,000,000 - 1,999,999	Count	2	3	5
		% within AVG	40.0%	60.0%	100.0%
		% within SUCCESS	3.1%	11.1%	5.5%
		% of Total	2.2%	3.3%	5.5%
	0 - 999,999	Count	3	0	3
		% within AVG	100.0%	0.0%	100.0%
		% within SUCCESS	4.7%	0.0%	3.3%
		% of Total	3.3%	0.0%	3.3%
Total		Count	64	27	91
		% within AVG	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L6

AVG/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	39.210*	21	0.009
Likelihood Ratio	47.999	21	0.001
N of Valid Cases	91		

* 43 cells (97.7%) have expected count less than 5. The minimum expected count is .30.

Table L7

PAY/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
PAY	90,000,000 - 99,999,999	Count	12	3	15
		% within PAY	80.0%	20.0%	100.0%
		% within SUCCESS	18.8%	11.1%	16.5%
		% of Total	13.2%	3.3%	16.5%
	80,000,000 - 89,999,999	Count	4	6	10
		% within PAY	40.0%	60.0%	100.0%
		% within SUCCESS	6.3%	22.2%	11.0%
		% of Total	4.4%	6.6%	11.0%
	70,000,000 - 79,999,999	Count	12	3	15
		% within PAY	80.0%	20.0%	100.0%
		% within SUCCESS	18.8%	11.1%	16.5%
		% of Total	13.2%	3.3%	16.5%
	60,000,000 - 69,999,999	Count	6	3	9
		% within PAY	66.7%	33.3%	100.0%
		% within SUCCESS	9.4%	11.1%	9.9%
		% of Total	6.6%	3.3%	9.9%
	50,000,000 - 59,999,999	Count	5	3	8
		% within PAY	62.5%	37.5%	100.0%
		% within SUCCESS	7.8%	11.1%	8.8%
		% of Total	5.5%	3.3%	8.8%
	40,000,000 - 49,999,999	Count	0	3	3
		% within PAY	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	11.1%	3.3%
		% of Total	0.0%	3.3%	3.3%
	30,000,000 - 39,999,999	Count	2	0	2
		% within PAY	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	200,000,000 - 209,999,999	Count	3	0	3
		% within PAY	100.0%	0.0%	100.0%
		% within SUCCESS	4.7%	0.0%	3.3%
		% of Total	3.3%	0.0%	3.3%
	20,000,000 - 29,999,999	Count	1	1	2
		% within PAY	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%
	180,000,000 - 189,999,999	Count	1	0	1
		% within PAY	100.0%	0.0%	100.0%

		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	160,000,000 - 169,999,999	Count	1	0	1
		% within PAY	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	140,000,000 - 149,999,999	Count	2	0	2
		% within PAY	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	130,000,000 - 139,999,999	Count	2	2	4
		% within PAY	50.0%	50.0%	100.0%
		% within SUCCESS	3.1%	7.4%	4.4%
		% of Total	2.2%	2.2%	4.4%
	120,000,000 - 129,999,999	Count	2	2	4
		% within PAY	50.0%	50.0%	100.0%
		% within SUCCESS	3.1%	7.4%	4.4%
		% of Total	2.2%	2.2%	4.4%
	110,000,000 - 119,999,999	Count	5	1	6
		% within PAY	83.3%	16.7%	100.0%
		% within SUCCESS	7.8%	3.7%	6.6%
		% of Total	5.5%	1.1%	6.6%
	100,000,000 - 109,999,999	Count	6	0	6
		% within PAY	100.0%	0.0%	100.0%
		% within SUCCESS	9.4%	0.0%	6.6%
		% of Total	6.6%	0.0%	6.6%
Total		Count	64	27	91
		% within PAY	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L8

PAY/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.952*	15	0.109
Likelihood Ratio	25.868	15	0.039
N of Valid Cases	91		

* 27 cells (84.4%) have expected count less than 5. The minimum expected count is .30.

Table L9

AGE/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
AGE	37	Count	0	1	1
		% within AGE	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	34	Count	1	0	1
		% within AGE	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	32	Count	6	0	6
		% within AGE	100.0%	0.0%	100.0%
		% within SUCCESS	9.4%	0.0%	6.6%
		% of Total	6.6%	0.0%	6.6%
	31	Count	7	0	7
		% within AGE	100.0%	0.0%	100.0%
		% within SUCCESS	10.9%	0.0%	7.7%
		% of Total	7.7%	0.0%	7.7%
	30	Count	7	0	7
		% within AGE	100.0%	0.0%	100.0%
		% within SUCCESS	10.9%	0.0%	7.7%
		% of Total	7.7%	0.0%	7.7%
	29	Count	10	0	10
		% within AGE	100.0%	0.0%	100.0%
		% within SUCCESS	15.6%	0.0%	11.0%
		% of Total	11.0%	0.0%	11.0%
	28	Count	4	3	7
		% within AGE	57.1%	42.9%	100.0%
		% within SUCCESS	6.3%	11.1%	7.7%
		% of Total	4.4%	3.3%	7.7%
	27	Count	8	3	11
		% within AGE	72.7%	27.3%	100.0%

		% within SUCCESS	12.5%	11.1%	12.1%
		% of Total	8.8%	3.3%	12.1%
	26	Count	5	4	9
		% within AGE	55.6%	44.4%	100.0%
		% within SUCCESS	7.8%	14.8%	9.9%
		% of Total	5.5%	4.4%	9.9%
	25	Count	7	2	9
		% within AGE	77.8%	22.2%	100.0%
		% within SUCCESS	10.9%	7.4%	9.9%
		% of Total	7.7%	2.2%	9.9%
	24	Count	2	5	7
		% within AGE	28.6%	71.4%	100.0%
		% within SUCCESS	3.1%	18.5%	7.7%
		% of Total	2.2%	5.5%	7.7%
	23	Count	1	3	4
		% within AGE	25.0%	75.0%	100.0%
		% within SUCCESS	1.6%	11.1%	4.4%
		% of Total	1.1%	3.3%	4.4%
	22	Count	4	4	8
		% within AGE	50.0%	50.0%	100.0%
		% within SUCCESS	6.3%	14.8%	8.8%
		% of Total	4.4%	4.4%	8.8%
	21	Count	1	2	3
		% within AGE	33.3%	66.7%	100.0%
		% within SUCCESS	1.6%	7.4%	3.3%
		% of Total	1.1%	2.2%	3.3%
	20	Count	1	0	1
		% within AGE	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
Total		Count	64	27	91
		% within AGE	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L10

AGE/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	31.005*	14	0.006
Likelihood Ratio	38.529	14	0.000
N of Valid Cases	91		

* 25 cells (83.3%) have expected count less than 5. The minimum expected count is .30.

Table L11

EXP/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
EXP	16	Count	0	1	1
		% within EXP	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	12	Count	1	0	1
		% within EXP	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	10	Count	3	0	3
		% within EXP	100.0%	0.0%	100.0%
		% within SUCCESS	4.7%	0.0%	3.3%
		% of Total	3.3%	0.0%	3.3%
	9	Count	5	0	5
		% within EXP	100.0%	0.0%	100.0%
		% within SUCCESS	7.8%	0.0%	5.5%
		% of Total	5.5%	0.0%	5.5%
	8	Count	12	0	12
		% within EXP	100.0%	0.0%	100.0%
		% within SUCCESS	18.8%	0.0%	13.2%
		% of Total	13.2%	0.0%	13.2%
	7	Count	11	1	12
		% within EXP	91.7%	8.3%	100.0%
		% within SUCCESS	17.2%	3.7%	13.2%
		% of Total	12.1%	1.1%	13.2%
	6	Count	10	1	11
		% within EXP	90.9%	9.1%	100.0%
		% within SUCCESS	15.6%	3.7%	12.1%
		% of Total	11.0%	1.1%	12.1%
	5	Count	3	2	5
		% within EXP	60.0%	40.0%	100.0%

		% within SUCCESS	4.7%	7.4%	5.5%
		% of Total	3.3%	2.2%	5.5%
	4	Count	3	2	5
		% within EXP	60.0%	40.0%	100.0%
		% within SUCCESS	4.7%	7.4%	5.5%
		% of Total	3.3%	2.2%	5.5%
	3	Count	6	9	15
		% within EXP	40.0%	60.0%	100.0%
		% within SUCCESS	9.4%	33.3%	16.5%
		% of Total	6.6%	9.9%	16.5%
	2	Count	2	5	7
		% within EXP	28.6%	71.4%	100.0%
		% within SUCCESS	3.1%	18.5%	7.7%
		% of Total	2.2%	5.5%	7.7%
	1	Count	0	1	1
		% within EXP	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	0	Count	8	5	13
		% within EXP	61.5%	38.5%	100.0%
		% within SUCCESS	12.5%	18.5%	14.3%
		% of Total	8.8%	5.5%	14.3%
Total		Count	64	27	91
		% within EXP	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L12

EXP/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	31.906*	12	0.001
Likelihood Ratio	37.729	12	0.000
N of Valid Cases	91		

* 21 cells (80.8%) have expected count less than 5. The minimum expected count is .30.

Table L13

POP/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
POP	9,000,000 - 9,999,999	Count	6	0	6
		% within POP	100.0%	0.0%	100.0%
		% within SUCCESS	9.4%	0.0%	6.6%
		% of Total	6.6%	0.0%	6.6%
	6,000,000 - 6,999,999	Count	4	1	5
		% within POP	80.0%	20.0%	100.0%
		% within SUCCESS	6.3%	3.7%	5.5%
		% of Total	4.4%	1.1%	5.5%
	5,000,000 - 5,999,999	Count	12	4	16
		% within POP	75.0%	25.0%	100.0%
		% within SUCCESS	18.8%	14.8%	17.6%
		% of Total	13.2%	4.4%	17.6%
	4,000,000 - 4,999,999	Count	12	7	19
		% within POP	63.2%	36.8%	100.0%
		% within SUCCESS	18.8%	25.9%	20.9%
		% of Total	13.2%	7.7%	20.9%
	3,000,000 - 3,999,999	Count	5	2	7
		% within POP	71.4%	28.6%	100.0%
		% within SUCCESS	7.8%	7.4%	7.7%
		% of Total	5.5%	2.2%	7.7%
	2,000,000 - 2,999,999	Count	10	10	20
		% within POP	50.0%	50.0%	100.0%
		% within SUCCESS	15.6%	37.0%	22.0%
		% of Total	11.0%	11.0%	22.0%
	19,000,000 - 19,999,999	Count	10	1	11
		% within POP	90.9%	9.1%	100.0%
		% within SUCCESS	15.6%	3.7%	12.1%
		% of Total	11.0%	1.1%	12.1%
	12,000,000 - 12,999,999	Count	5	0	5
		% within POP	100.0%	0.0%	100.0%
		% within SUCCESS	7.8%	0.0%	5.5%
		% of Total	5.5%	0.0%	5.5%
	1,000,000 - 1,999,999	Count	0	2	2
		% within POP	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	7.4%	2.2%
		% of Total	0.0%	2.2%	2.2%
Total		Count	64	27	91
		% within POP	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L14

POP/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.439*	8	0.037
Likelihood Ratio	19.854	8	0.011
N of Valid Cases	91		

* 12 cells (66.7%) have expected count less than 5. The minimum expected count is .59.

Table L15

DEB/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
DEB	27	Count	2	0	2
		% within DEB	100.0%	0.0%	100.0%
		% within SUCCESS	3.2%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	26	Count	1	0	1
		% within DEB	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	25	Count	1	0	1
		% within DEB	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	24	Count	4	2	6
		% within DEB	66.7%	33.3%	100.0%
		% within SUCCESS	6.3%	7.4%	6.7%
		% of Total	4.4%	2.2%	6.7%
	23	Count	17	9	26
		% within DEB	65.4%	34.6%	100.0%
		% within SUCCESS	27.0%	33.3%	28.9%
		% of Total	18.9%	10.0%	28.9%
	22	Count	14	5	19
		% within DEB	73.7%	26.3%	100.0%
		% within SUCCESS	22.2%	18.5%	21.1%
		% of Total	15.6%	5.6%	21.1%
	21	Count	10	10	20
		% within DEB	50.0%	50.0%	100.0%
		% within SUCCESS	15.9%	37.0%	22.2%
		% of Total	11.1%	11.1%	22.2%
	20	Count	9	0	9
		% within DEB	100.0%	0.0%	100.0%

		% within SUCCESS	14.3%	0.0%	10.0%
		% of Total	10.0%	0.0%	10.0%
	19	Count	4	1	5
		% within DEB	80.0%	20.0%	100.0%
		% within SUCCESS	6.3%	3.7%	5.6%
		% of Total	4.4%	1.1%	5.6%
	18	Count	1	0	1
		% within DEB	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
Total		Count	63	27	90
		% within DEB	70.0%	30.0%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.0%	30.0%	100.0%

Table L16

DEB/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.466*	9	0.314
Likelihood Ratio	14.145	9	0.117
N of Valid Cases	90		

* 13 cells (65.0%) have expected count less than 5. The minimum expected count is .30.

Table L17

AS/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
AS	10	Count	0	1	1
		% within AS	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	7	Count	1	0	1
		% within AS	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	5	Count	2	0	2
		% within AS	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	4	Count	5	0	5
		% within AS	100.0%	0.0%	100.0%
		% within SUCCESS	7.8%	0.0%	5.5%
		% of Total	5.5%	0.0%	5.5%
	3	Count	7	1	8
		% within AS	87.5%	12.5%	100.0%
		% within SUCCESS	10.9%	3.7%	8.8%
		% of Total	7.7%	1.1%	8.8%
	2	Count	11	2	13
		% within AS	84.6%	15.4%	100.0%
		% within SUCCESS	17.2%	7.4%	14.3%
		% of Total	12.1%	2.2%	14.3%
	1	Count	17	7	24
		% within AS	70.8%	29.2%	100.0%
		% within SUCCESS	26.6%	25.9%	26.4%
		% of Total	18.7%	7.7%	26.4%
	0	Count	21	16	37
		% within AS	56.8%	43.2%	100.0%
		% within SUCCESS	32.8%	59.3%	40.7%
		% of Total	23.1%	17.6%	40.7%
Total		Count	64	27	91
		% within AS	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L18

AS/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.417*	7	0.121
Likelihood Ratio	13.884	7	0.053
N of Valid Cases	91		

* 10 cells (62.5%) have expected count less than 5. The minimum expected count is .30.

Table L19

MVP/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
MVP	4	Count	0	1	1
		% within MVP	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	2	Count	1	0	1
		% within MVP	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	1	Count	7	1	8
		% within MVP	87.5%	12.5%	100.0%
		% within SUCCESS	10.9%	3.7%	8.8%
		% of Total	7.7%	1.1%	8.8%
	0	Count	56	25	81
		% within MVP	69.1%	30.9%	100.0%
		% within SUCCESS	87.5%	92.6%	89.0%
		% of Total	61.5%	27.5%	89.0%
Total		Count	64	27	91
		% within MVP	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L20

MVP/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.978*	3	0.264
Likelihood Ratio	4.518	3	0.211
N of Valid Cases	91		

* 5 cells (62.5%) have expected count less than 5. The minimum expected count is .30.

Table L21

HT/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
HT	81	Count	1	0	1
		% within HT	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	78	Count	4	1	5
		% within HT	80.0%	20.0%	100.0%
		% within SUCCESS	6.3%	3.7%	5.5%
		% of Total	4.4%	1.1%	5.5%
	77	Count	3	1	4
		% within HT	75.0%	25.0%	100.0%
		% within SUCCESS	4.7%	3.7%	4.4%
		% of Total	3.3%	1.1%	4.4%
	76	Count	9	3	12
		% within HT	75.0%	25.0%	100.0%
		% within SUCCESS	14.1%	11.1%	13.2%
		% of Total	9.9%	3.3%	13.2%
	75	Count	11	3	14
		% within HT	78.6%	21.4%	100.0%
		% within SUCCESS	17.2%	11.1%	15.4%
		% of Total	12.1%	3.3%	15.4%
	74	Count	9	7	16
		% within HT	56.3%	43.8%	100.0%
		% within SUCCESS	14.1%	25.9%	17.6%
		% of Total	9.9%	7.7%	17.6%
	73	Count	15	4	19
		% within HT	78.9%	21.1%	100.0%
		% within SUCCESS	23.4%	14.8%	20.9%
		% of Total	16.5%	4.4%	20.9%
	72	Count	7	5	12
		% within HT	58.3%	41.7%	100.0%

		% within SUCCESS	10.9%	18.5%	13.2%
		% of Total	7.7%	5.5%	13.2%
	71	Count	2	1	3
		% within HT	66.7%	33.3%	100.0%
		% within SUCCESS	3.1%	3.7%	3.3%
		% of Total	2.2%	1.1%	3.3%
	70	Count	2	0	2
		% within HT	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	69	Count	1	1	2
		% within HT	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%
	67	Count	0	1	1
		% within HT	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
Total		Count	64	27	91
		% within HT	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L22

HT/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.922*	11	0.720
Likelihood Ratio	8.738	11	0.646
N of Valid Cases	91		

* 18 cells (75.0%) have expected count less than 5. The minimum expected count is .30.

Table L23

CWAR/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
CWAR	7 - 7.999	Count	0	1	1
		% within CWAR	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	6 - 6.999	Count	1	1	2
		% within CWAR	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%
	5 - 5.999	Count	5	0	5
		% within CWAR	100.0%	0.0%	100.0%
		% within SUCCESS	7.8%	0.0%	5.5%
		% of Total	5.5%	0.0%	5.5%
	4 - 4.999	Count	10	4	14
		% within CWAR	71.4%	28.6%	100.0%
		% within SUCCESS	15.6%	14.8%	15.4%
		% of Total	11.0%	4.4%	15.4%
	3 - 3.999	Count	15	7	22
		% within CWAR	68.2%	31.8%	100.0%
		% within SUCCESS	23.4%	25.9%	24.2%
		% of Total	16.5%	7.7%	24.2%
	2 - 2.999	Count	12	6	18
		% within CWAR	66.7%	33.3%	100.0%
		% within SUCCESS	18.8%	22.2%	19.8%
		% of Total	13.2%	6.6%	19.8%
	1 - 1.999	Count	10	3	13
		% within CWAR	76.9%	23.1%	100.0%
		% within SUCCESS	15.6%	11.1%	14.3%
		% of Total	11.0%	3.3%	14.3%
	0 - 0.999	Count	11	5	16
		% within CWAR	68.8%	31.3%	100.0%
		% within SUCCESS	17.2%	18.5%	17.6%
		% of Total	12.1%	5.5%	17.6%
Total		Count	64	27	91
		% within CWAR	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L24

CWAR/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.338*	7	0.619
Likelihood Ratio	6.784	7	0.452
N of Valid Cases	91		

* 9 cells (56.3%) have expected count less than 5. The minimum expected count is .30.

Table L25

RD/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
RD	U	Count	18	3	21
		% within RD	85.7%	14.3%	100.0%
		% within SUCCESS	28.1%	11.1%	23.1%
		% of Total	19.8%	3.3%	23.1%
	8	Count	1	0	1
		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	7	Count	1	0	1
		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	6	Count	1	0	1
		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	5	Count	2	0	2
		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	4	Count	0	1	1
		% within RD	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	3.7%	1.1%
		% of Total	0.0%	1.1%	1.1%
	3	Count	2	2	4
		% within RD	50.0%	50.0%	100.0%
		% within SUCCESS	3.1%	7.4%	4.4%
		% of Total	2.2%	2.2%	4.4%
	24	Count	1	0	1
		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	23	Count	1	0	1

		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	2	Count	3	6	9
		% within RD	33.3%	66.7%	100.0%
		% within SUCCESS	4.7%	22.2%	9.9%
		% of Total	3.3%	6.6%	9.9%
	17	Count	1	1	2
		% within RD	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%
	16	Count	1	0	1
		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	15	Count	1	0	1
		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	13	Count	3	1	4
		% within RD	75.0%	25.0%	100.0%
		% within SUCCESS	4.7%	3.7%	4.4%
		% of Total	3.3%	1.1%	4.4%
	11	Count	1	0	1
		% within RD	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	1	Count	27	13	40
		% within RD	67.5%	32.5%	100.0%
		% within SUCCESS	42.2%	48.1%	44.0%
		% of Total	29.7%	14.3%	44.0%
Total		Count	64	27	91
		% within RD	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L26

RD/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.258*	15	0.365
Likelihood Ratio	18.719	15	0.227
N of Valid Cases	91		

* 27 cells (84.4%) have expected count less than 5. The minimum expected count is .30.

Table L27

FIN/SUCCESS Cross Tabulation

			SUCCESS		
			No	Yes	Total
FIN	Yes	Count	56	27	83
		% within FIN	67.5%	32.5%	100.0%
		% within SUCCESS	87.5%	100.0%	91.2%
		% of Total	61.5%	29.7%	91.2%
	No	Count	8	0	8
		% within FIN	100.0%	0.0%	100.0%
		% within SUCCESS	12.5%	0.0%	8.8%
		% of Total	8.8%	0.0%	8.8%
Total		Count	64	27	91
		% within FIN	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L28

FIN/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.700*	1	0.054		
Continuity Correction**	2.306	1	0.129		
Likelihood Ratio	5.951	1	0.015		
Fisher's Exact Test				0.099	0.052
N of Valid Cases	91				

* 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.37.
** Computed only for a 2x2 table.

Table L29

THR/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
THR	R	Count	52	20	72
		% within THR	72.2%	27.8%	100.0%
		% within SUCCESS	81.3%	74.1%	79.1%
		% of Total	57.1%	22.0%	79.1%
	L	Count	12	7	19
		% within THR	63.2%	36.8%	100.0%
		% within SUCCESS	18.8%	25.9%	20.9%
		% of Total	13.2%	7.7%	20.9%
Total		Count	64	27	91
		% within THR	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L30

THR/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.592*	1	0.442		
Continuity Correction**	0.237	1	0.626		
Likelihood Ratio	0.575	1	0.448		
Fisher's Exact Test				0.573	0.307
N of Valid Cases	91				

* 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.64.
** Computed only for a 2x2 table.

Table L31

BAT/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
BAT	S	Count	8	2	10
		% within BAT	80.0%	20.0%	100.0%
		% within SUCCESS	12.5%	7.4%	11.0%
		% of Total	8.8%	2.2%	11.0%
	R	Count	39	12	51
		% within BAT	76.5%	23.5%	100.0%
		% within SUCCESS	60.9%	44.4%	56.0%
		% of Total	42.9%	13.2%	56.0%
	L	Count	17	13	30
		% within BAT	56.7%	43.3%	100.0%
		% within SUCCESS	26.6%	48.1%	33.0%
		% of Total	18.7%	14.3%	33.0%
Total		Count	64	27	91
		% within BAT	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L32

BAT/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.054*	2	0.132
Likelihood Ratio	3.952	2	0.139
N of Valid Cases	91		

* 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.97.

Table L33

USA/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
USA	Yes	Count	42	23	65
		% within USA	64.6%	35.4%	100.0%
		% within SUCCESS	65.6%	85.2%	71.4%
		% of Total	46.2%	25.3%	71.4%
	No	Count	22	4	26
		% within USA	84.6%	15.4%	100.0%
		% within SUCCESS	34.4%	14.8%	28.6%
		% of Total	24.2%	4.4%	28.6%
Total		Count	64	27	91
		% within USA	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L34

USA/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.560*	1	0.059		
Continuity Correction**	2.666	1	0.103		
Likelihood Ratio	3.866	1	0.049		
Fisher's Exact Test				0.077	0.048
N of Valid Cases	91				

* 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.71.
** Computed only for a 2x2 table.

Table L35

SAM/SUCCESS Cross Tabulation

			SUCCESS		
			No	Yes	Total
SAM	Yes	Count	30	21	51
		% within SAM	58.8%	41.2%	100.0%
		% within SUCCESS	46.9%	77.8%	56.0%
		% of Total	33.0%	23.1%	56.0%
	No	Count	34	6	40
		% within SAM	85.0%	15.0%	100.0%
		% within SUCCESS	53.1%	22.2%	44.0%
		% of Total	37.4%	6.6%	44.0%
Total		Count	64	27	91
		% within SAM	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L36

SAM/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.361*	1	0.007		
Continuity Correction**	6.160	1	0.013		
Likelihood Ratio	7.743	1	0.005		
Fisher's Exact Test				0.010	0.006
N of Valid Cases	91				

* 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.87.
** Computed only for a 2x2 table

Table L37

CRT/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
CRT	Yes	Count	28	22	50
		% within CRT	56.0%	44.0%	100.0%
		% within SUCCESS	43.8%	81.5%	54.9%
		% of Total	30.8%	24.2%	54.9%
	No	Count	28	0	28
		% within CRT	100.0%	0.0%	100.0%
		% within SUCCESS	43.8%	0.0%	30.8%
		% of Total	30.8%	0.0%	30.8%
	N/A	Count	8	5	13
		% within CRT	61.5%	38.5%	100.0%
		% within SUCCESS	12.5%	18.5%	14.3%
		% of Total	8.8%	5.5%	14.3%
Total		Count	64	27	91
		% within CRT	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L38

CRT/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.214*	2	0.000
Likelihood Ratio	24.748	2	0.000
N of Valid Cases	91		

* 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.86.

Table L39

POS/SUCCESS Cross Tabulation

			SUCCESS		
			No	Yes	Total
POS	SS	Count	4	4	8
		% within POS	50.0%	50.0%	100.0%
		% within SUCCESS	6.3%	14.8%	8.8%
		% of Total	4.4%	4.4%	8.8%
	P	Count	20	5	25
		% within POS	80.0%	20.0%	100.0%
		% within SUCCESS	31.3%	18.5%	27.5%
		% of Total	22.0%	5.5%	27.5%
	OF	Count	21	7	28
		% within POS	75.0%	25.0%	100.0%
		% within SUCCESS	32.8%	25.9%	30.8%
		% of Total	23.1%	7.7%	30.8%
	C	Count	1	2	3
		% within POS	33.3%	66.7%	100.0%
		% within SUCCESS	1.6%	7.4%	3.3%
		% of Total	1.1%	2.2%	3.3%
	3B	Count	7	4	11
		% within POS	63.6%	36.4%	100.0%
		% within SUCCESS	10.9%	14.8%	12.1%
		% of Total	7.7%	4.4%	12.1%
	2B	Count	0	4	4
		% within POS	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	14.8%	4.4%
		% of Total	0.0%	4.4%	4.4%
	1B	Count	11	1	12
		% within POS	91.7%	8.3%	100.0%
		% within SUCCESS	17.2%	3.7%	13.2%
		% of Total	12.1%	1.1%	13.2%
Total		Count	64	27	91
		% within POS	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L40

POS/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.301*	6	0.008
Likelihood Ratio	17.939	6	0.006
N of Valid Cases	91		

* 7 cells (50.0%) have expected count less than 5. The minimum expected count is .89.

Table L41

LG/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
LG	NL	Count	27	14	41
		% within LG	65.9%	34.1%	100.0%
		% within SUCCESS	42.2%	51.9%	45.1%
		% of Total	29.7%	15.4%	45.1%
	AL	Count	37	13	50
		% within LG	74.0%	26.0%	100.0%
		% within SUCCESS	57.8%	48.1%	54.9%
		% of Total	40.7%	14.3%	54.9%
Total		Count	64	27	91
		% within LG	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L42

LG/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.716*	1	0.397		
Continuity Correction**	0.379	1	0.538		
Likelihood Ratio	0.714	1	0.398		
Fisher's Exact Test				0.490	0.269
N of Valid Cases	91				

* 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.16.

** Computed only for a 2x2 table.

Table L43

TEAM/SUCCESS Cross Tabulation

			SUCCESS		Total
			No	Yes	
TEAM	Yankees	Count	7	0	7
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	10.9%	0.0%	7.7%
		% of Total	7.7%	0.0%	7.7%
	White Sox	Count	1	0	1
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	Twins	Count	1	1	2
		% within TEAM	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%
	Tigers	Count	2	2	4
		% within TEAM	50.0%	50.0%	100.0%
		% within SUCCESS	3.1%	7.4%	4.4%
		% of Total	2.2%	2.2%	4.4%
	Royals	Count	2	1	3
		% within TEAM	66.7%	33.3%	100.0%
		% within SUCCESS	3.1%	3.7%	3.3%
		% of Total	2.2%	1.1%	3.3%
	Rockies	Count	2	1	3
		% within TEAM	66.7%	33.3%	100.0%
		% within SUCCESS	3.1%	3.7%	3.3%
		% of Total	2.2%	1.1%	3.3%
	Reds	Count	1	1	2
		% within TEAM	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%
	Red Sox	Count	4	2	6
		% within TEAM	66.7%	33.3%	100.0%

		% within SUCCESS	6.3%	7.4%	6.6%
		% of Total	4.4%	2.2%	6.6%
	Rays	Count	1	2	3
		% within TEAM	33.3%	66.7%	100.0%
		% within SUCCESS	1.6%	7.4%	3.3%
		% of Total	1.1%	2.2%	3.3%
	Rangers	Count	4	1	5
		% within TEAM	80.0%	20.0%	100.0%
		% within SUCCESS	6.3%	3.7%	5.5%
		% of Total	4.4%	1.1%	5.5%
	Phillies	Count	2	3	5
		% within TEAM	40.0%	60.0%	100.0%
		% within SUCCESS	3.1%	11.1%	5.5%
		% of Total	2.2%	3.3%	5.5%
	Padres	Count	1	0	1
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	Orioles	Count	2	0	2
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	Nationals	Count	1	0	1
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	Mets	Count	3	1	4
		% within TEAM	75.0%	25.0%	100.0%
		% within SUCCESS	4.7%	3.7%	4.4%
		% of Total	3.3%	1.1%	4.4%
	Marlins	Count	2	0	2
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	3.1%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	Mariners	Count	3	1	4

		% within TEAM	75.0%	25.0%	100.0%
		% within SUCCESS	4.7%	3.7%	4.4%
		% of Total	3.3%	1.1%	4.4%
	Indians	Count	0	3	3
		% within TEAM	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	11.1%	3.3%
		% of Total	0.0%	3.3%	3.3%
	Giants	Count	2	1	3
		% within TEAM	66.7%	33.3%	100.0%
		% within SUCCESS	3.1%	3.7%	3.3%
		% of Total	2.2%	1.1%	3.3%
	Dodgers	Count	1	0	1
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	1.6%	0.0%	1.1%
		% of Total	1.1%	0.0%	1.1%
	Diamondbacks	Count	1	2	3
		% within TEAM	33.3%	66.7%	100.0%
		% within SUCCESS	1.6%	7.4%	3.3%
		% of Total	1.1%	2.2%	3.3%
	Cubs	Count	5	0	5
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	7.8%	0.0%	5.5%
		% of Total	5.5%	0.0%	5.5%
	Cardinals	Count	2	2	4
		% within TEAM	50.0%	50.0%	100.0%
		% within SUCCESS	3.1%	7.4%	4.4%
		% of Total	2.2%	2.2%	4.4%
	Brewers	Count	0	2	2
		% within TEAM	0.0%	100.0%	100.0%
		% within SUCCESS	0.0%	7.4%	2.2%
		% of Total	0.0%	2.2%	2.2%
	Braves	Count	1	1	2
		% within TEAM	50.0%	50.0%	100.0%
		% within SUCCESS	1.6%	3.7%	2.2%
		% of Total	1.1%	1.1%	2.2%

	Blue Jays	Count	3	0	3
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	4.7%	0.0%	3.3%
		% of Total	3.3%	0.0%	3.3%
	Athletics	Count	3	0	3
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	4.7%	0.0%	3.3%
		% of Total	3.3%	0.0%	3.3%
	Astros	Count	3	0	3
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	4.7%	0.0%	3.3%
		% of Total	3.3%	0.0%	3.3%
	Angels	Count	4	0	4
		% within TEAM	100.0%	0.0%	100.0%
		% within SUCCESS	6.3%	0.0%	4.4%
		% of Total	4.4%	0.0%	4.4%
Total		Count	64	27	91
		% within TEAM	70.3%	29.7%	100.0%
		% within SUCCESS	100.0%	100.0%	100.0%
		% of Total	70.3%	29.7%	100.0%

Table L44

TEAM/SUCCESS Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	35.090*	28	0.167
Likelihood Ratio	43.791	28	0.029
N of Valid Cases	91		

* 58 cells (100.0%) have expected count less than 5. The minimum expected count is .30.

APPENDIX M

Cumulative Contract Shirking Data from Research Question Five

Table M1

Cumulative Shirking Data

Last	First	Shirk	Adj. Shirk	Years Shirked	Total Years
Abreu	Bobby	Yes	Yes	3	5
Beltran	Carlos	Yes	Yes	5	7
Beltre	Adrian	Yes	Yes	3	5
Berkman	Lance	Yes	Yes	4	6
Bonds	Barry	No	No	2	5
Burnett	A.J.	Yes	Yes	3	5
Burrell	Pat	Yes	Yes	4	6
Cabrera	Miguel	No	No	1	8
Carpenter	Chris	Yes	Yes	4	5
Chavez	Eric	Yes	Yes	6	6
DeJesus	David	No	No	1	5
Drew	J.D.	Yes	Yes	5	5
Gallardo	Yovani	No	No	2	5
Giambi	Jason	Yes	Yes	7	7
Granderson	Curtis	Yes	Yes	3	5
Guerrero	Vladimir	Yes	Yes	3	5
Hampton	Mike	Yes	Yes	8	8
Helton	Todd	Yes	Yes	7	11
Hernandez	Felix	No	No	1	5
Holliday	Matt	Yes	Yes	6	7
Hunter	Torii	No	No	1	5
Jeter	Derek	Yes	Yes	10	10
Jones	Andruw	Yes	Yes	5	6
Konerko	Paul	No	No	2	5
Lackey	John	Yes	Yes	5	5
Lee	Carlos	Yes	Yes	5	6
Lee	Derrek	Yes	Yes	4	5
Lester	Jon	No	No	1	5
Markakis	Nick	Yes	Yes	6	6
Martinez	Victor	No	No	1	5
Matthews Jr.	Gary	Yes	Yes	5	5
Meche	Gil	No	No	2	5
Millwood	Kevin	Yes	Yes	3	5
Morneau	Justin	Yes	Yes	3	6

Last	First	Shirk	Adj. Shirk	Years Shirked	Total Years
Ordonez	Magglio	Yes	Yes	4	5
Oswalt	Roy	Yes	Yes	3	5
Peavy	Jake	Yes	Yes	4	5
Pedroia	Dustin	No	No	1	6
Peralta	Jhonny	No	No	2	5
Pierre	Juan	Yes	Yes	5	5
Posada	Jorge	No	No	0	5
Pujols	Albert	No	No	0	7
Ramirez	Aramis	Yes	Yes	4	5
Ramirez	Hanley	Yes	Yes	4	6
Ramirez	Manny	Yes	Yes	6	8
Rios	Alex	Yes	Yes	5	7
Rodriguez	Alex	Yes	Yes	5	10
Rolen	Scott	Yes	Yes	6	8
Rollins	Jimmy	No	No	2	5
Rowand	Aaron	Yes	Yes	5	5
Ryan	B.J.	Yes	Yes	4	5
Sabathia	C.C.	Yes	Yes	5	7
Santana	Johan	Yes	Yes	5	6
Soriano	Alfonso	Yes	Yes	7	8
Suzuki	Ichiro	Yes	Yes	4	5
Swisher	Nick	No	No	1	5
Teixeira	Mark	Yes	Yes	8	8
Tejada	Miguel	Yes	Yes	4	6
Thome	Jim	Yes	Yes	6	6
Upton	Justin	No	No	1	6
Utley	Chase	No	No	3	7
Verlander	Justin	No	No	1	5
Wells	Vernon	Yes	Yes	6	7
Wilson	Preston	No	No	2	5
Wright	David	No	No	3	6
Young	Chris	No	No	2	5
Young	Michael	Yes	Yes	5	5
Zambrano	Carlos	Yes	Yes	5	5
Zimmerman	Ryan	No	No	1	5
Zito	Barry	Yes	Yes	7	7

Last	First	% Shirk	Avg. WAR	Baseline
Abreu	Bobby	60.00%	4.62	5.8
Beltran	Carlos	71.43%	4.61	5.6
Beltre	Adrian	60.00%	4.26	5.0
Berkman	Lance	66.67%	3.85	5.4
Bonds	Barry	40.00%	7.24	7.8
Burnett	A.J.	60.00%	1.82	2.2
Burrell	Pat	66.67%	1.77	2.0
Cabrera	Miguel	12.50%	5.80	4.7
Carpenter	Chris	80.00%	2.72	4.7
Chavez	Eric	100.00%	1.65	5.0
DeJesus	David	20.00%	2.38	2.1
Drew	J.D.	100.00%	2.44	5.2
Gallardo	Yovani	40.00%	1.98	2.0
Giambi	Jason	100.00%	3.16	7.6
Granderson	Curtis	60.00%	4.26	4.4
Guerrero	Vladimir	60.00%	4.42	5.0
Hampton	Mike	100.00%	0.61	4.9
Helton	Todd	63.64%	4.25	5.0
Hernandez	Felix	20.00%	5.50	4.6
Holliday	Matt	85.71%	2.96	5.7
Hunter	Torii	20.00%	4.24	3.4
Jeter	Derek	100.00%	4.10	6.7
Jones	Andruw	83.33%	5.00	6.7
Konerko	Paul	40.00%	2.52	2.1
Lackey	John	100.00%	1.14	3.9
Lee	Carlos	83.33%	1.82	3.0
Lee	Derrek	80.00%	2.62	4.4
Lester	Jon	20.00%	3.92	2.9
Markakis	Nick	100.00%	1.92	4.7
Martinez	Victor	20.00%	3.28	1.4
Matthews Jr.	Gary	100.00%	0.20	3.4
Meche	Gil	40.00%	2.06	0.6
Millwood	Kevin	60.00%	1.76	2.3
Morneau	Justin	50.00%	2.58	2.8
Ordonez	Magglio	80.00%	2.72	3.9
Oswalt	Roy	60.00%	4.14	5.3
Peavy	Jake	80.00%	2.68	4.3

Last	First	% Shirk	Avg. WAR	Baseline
Pedroia	Dustin	16.67%	5.50	3.6
Peralta	Jhonny	40.00%	2.16	1.9
Pierre	Juan	100.00%	0.46	2.1
Posada	Jorge	0.00%	4.34	3.2
Pujols	Albert	0.00%	8.63	6.9
Ramirez	Aramis	80.00%	2.52	3.8
Ramirez	Hanley	66.67%	3.42	5.3
Ramirez	Manny	75.00%	4.59	5.8
Rios	Alex	71.43%	2.51	3.8
Rodriguez	Alex	50.00%	7.14	7.9
Rolen	Scott	75.00%	4.46	5.7
Rollins	Jimmy	40.00%	3.96	4.1
Rowand	Aaron	100.00%	0.48	3.1
Ryan	B.J.	80.00%	0.92	2.5
Sabathia	C.C.	71.43%	3.30	5.9
Santana	Johan	83.33%	2.53	6.6
Soriano	Alfonso	87.50%	1.43	3.2
Suzuki	Ichiro	80.00%	3.22	5.0
Swisher	Nick	20.00%	2.40	1.7
Teixeira	Mark	100.00%	2.68	5.6
Tejada	Miguel	66.67%	3.97	4.9
Thome	Jim	100.00%	3.12	5.9
Upton	Justin	16.67%	3.43	1.6
Utley	Chase	42.86%	5.89	5.6
Verlander	Justin	20.00%	5.24	3.9
Wells	Vernon	85.71%	1.07	3.6
Wilson	Preston	40.00%	1.34	0.9
Wright	David	50.00%	5.02	3.7
Young	Chris	40.00%	2.48	0.8
Young	Michael	100.00%	1.40	3.3
Zambrano	Carlos	100.00%	2.24	4.7
Zimmerman	Ryan	20.00%	4.60	3.4
Zito	Barry	100.00%	0.90	3.5

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