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

Briton A. Hagan
University of New Mexico

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Briton A. Hagan

Candidate

Health, Exercise & Sport Sciences

Department

This dissertation is approved, and it is acceptable in quality and form for publication:

Approved by the Dissertation Committee:

Dr. Todd Seidler, Chairperson

Dr. John Barnes

Dr. Evan Frederick

Dr. R. Douglas Manning

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

by

BRITON A. HAGAN

B.S., Sport Management
California University of Pennsylvania, 2011

M.S., Sport Management
California University of Pennsylvania, 2012

DISSERTATION

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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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 2007). To strengthen the integrity of baseball, owners met after the 1878 season and secretly agreed not to steal players from other owners (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 at all. 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 (Hauptert, 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 (Hauptert, 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 (Nightingale, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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 (Hauptert, 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)

- Bargaining Power/Negotiating Power – 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)
- Cost Per Win – 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)
- Designated Hitter (DH) – 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)
- Earned Run Average (ERA) – the primary measure of a pitcher's success. It is expressed as an average number of opponents' earned runs scored per nine inning game: $ERA = \text{Earned Runs Allowed} * 9 / \text{Innings Pitched}$. (Baseball-Reference, 2011)
- Fielding Percentage – 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.)
- Journeyman – 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: $(\text{club payroll} - (28 \times \text{major league minimum})) / ((\text{winning percentage} - .300) \times 162)$. 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)

- Minimum Salary – 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)
- Minor League Baseball (MiLB) – 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)
- Most Valuable Player Award (MVP) – 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)
- On-Base Plus Slugging (OPS) – 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)
- Pythagorean Winning Percentage – 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)
- Relief Pitcher (aka reliever, collectively the bullpen) – a pitcher who specializes in 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 $([\text{Singles}] + [\text{Doubles} \times 2] + [\text{Triples} \times 3] + [\text{Home Runs} \times 4]) / [\text{At Bats}]$. 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; Schoenfeld, 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 20th 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).

Journeyman 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, & Hauptert, 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

| Age | Successful? | | Total | Percent |
|-------|-------------|-----|-------|---------|
| | No | Yes | | |
| 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? | | Total | Percent |
|-------|-------------|-----|-------|---------|
| | No | Yes | | |
| 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

| Year | Successful? | | Total | Percent |
|-------|-------------|-----|-------|---------|
| | No | Yes | | |
| 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)

| SAL | | SUCCESS | | |
|-------------------------|------------------|---------|-------|--------|
| | | 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)

| AVG | | SUCCESS | | |
|-----------------------|------------------|---------|-------|--------|
| | | 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)

| AGE | | SUCCESS | | |
|-----|------------------|---------|-------|--------|
| | | 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)

| EXP | | SUCCESS | | |
|-----|------------------|---------|--------|--------|
| | | 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 | 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, $\chi^2(1, N = 91) = 3.560, p > .05$.

Table 33

SAM/SUCCESS Cross Tabulation

| SAM | | SUCCESS | | |
|-------|------------------|---------|--------|--------|
| | | No | 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, $\chi^2 (1, N = 91) = 7.361, p < .01$.

Table 35

CRT/SUCCESS Cross Tabulation

| CRT | | SUCCESS | | |
|-------|------------------|---------|--------|--------|
| | | No | 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, $\chi^2(2, N = 91) = 17.214, p < .01$.

Table 37

POS/SUCCESS Cross Tabulation (Partial)

| POS | | SUCCESS | | |
|-----|------------------|---------|--------|--------|
| | | 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)

| TEAM | | SUCCESS | | |
|--------------|------------------|---------|--------|--------|
| | | 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

Utey, 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 |
| 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 | | | |
| Avg. | 2.44 | 5.2 | Yes | |

| | |
|--------|-----|
| 24.710 | |
| 4.942 | Yes |

| | |
|---------------|---------|
| Years Shirked | 5/5 |
| % Shirked | 100.00% |

| |
|---------|
| 5/5 |
| 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, Andrew

| 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 | | |
| Avg. | 2.53 | 6.6 | Yes |

| | |
|--------|-----|
| 37.401 | |
| 6.234 | Yes |

| | |
|---------------|--------|
| Years Shirked | 5/6 |
| % Shirked | 83.33% |

| |
|--------|
| 5/6 |
| 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 | | |
| Avg. | 4.60 | 3.4 | No |

| | |
|--------|----|
| 16.949 | |
| 3.390 | No |

| | |
|---------------|--------|
| Years Shirked | 1/5 |
| % Shirked | 20.00% |

| |
|--------|
| 1/5 |
| 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 | 0.00% |
| 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

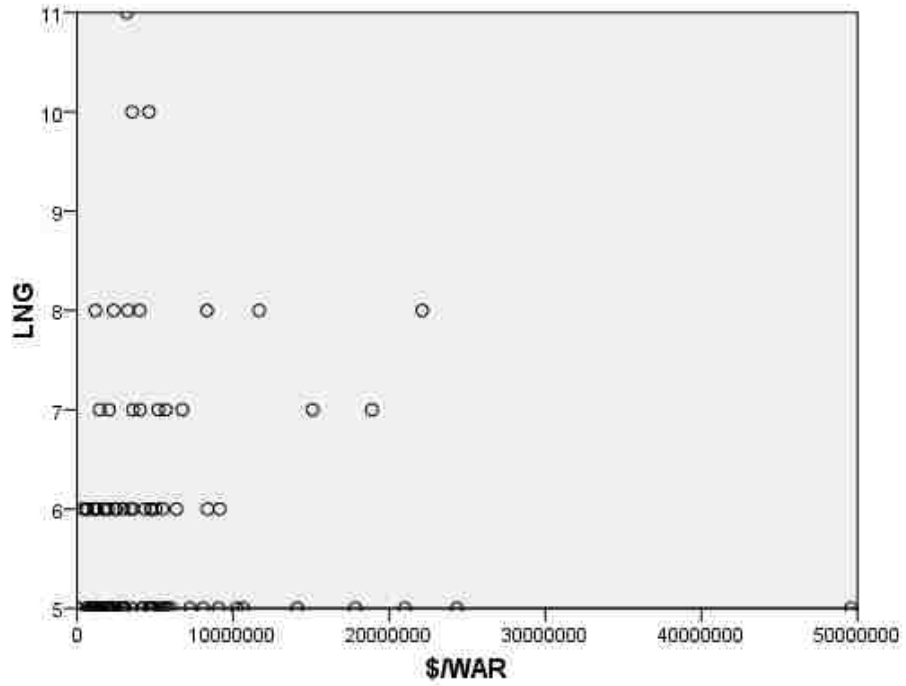


Figure J2

SAL and \$/WAR Scatterplot

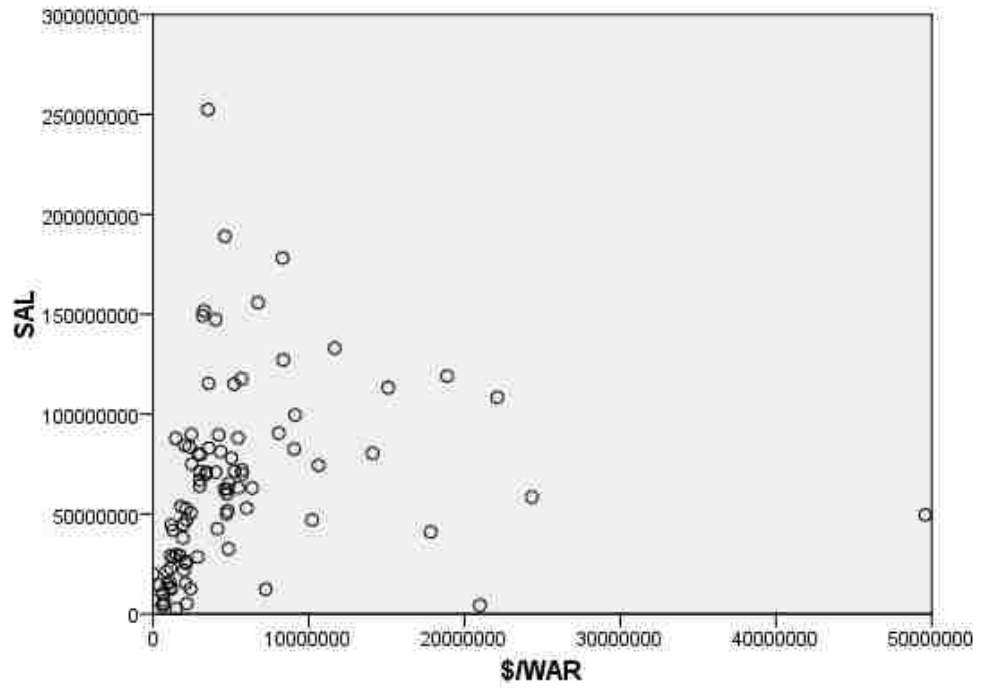


Figure J3

AVG and \$/WAR Scatterplot

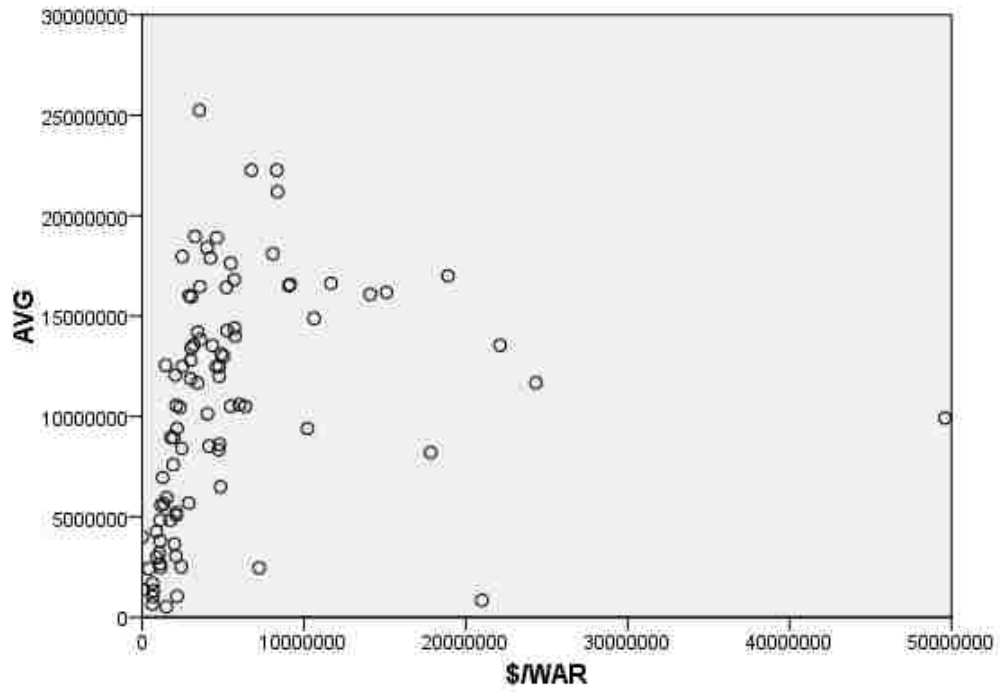


Figure J4

PAY and \$/WAR Scatterplot

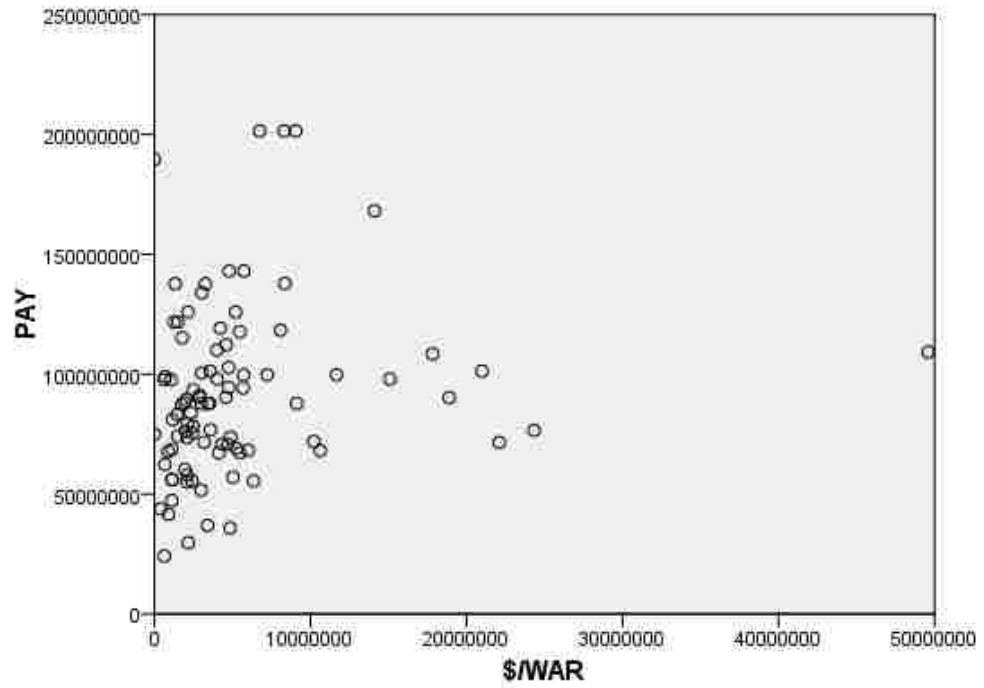


Figure J5

AGE and \$/WAR Scatterplot

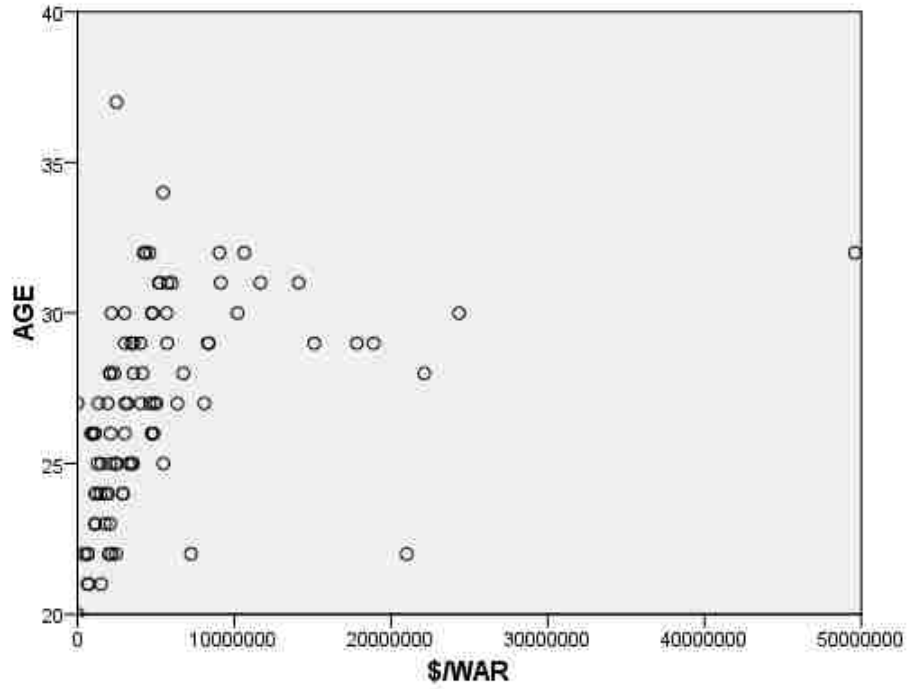


Figure J6

EXP and \$/WAR Scatterplot

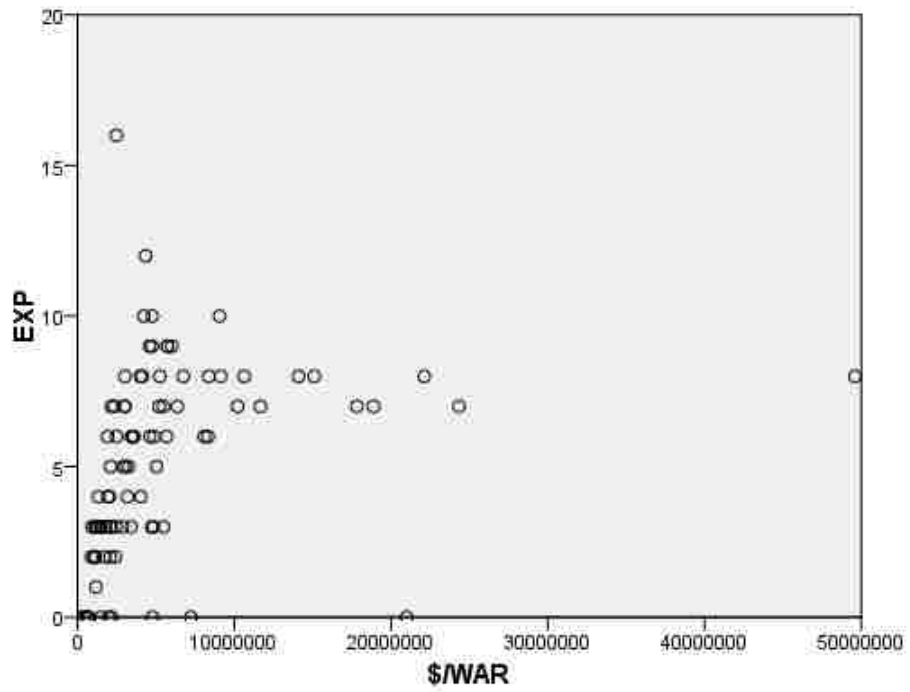


Figure J7

POP and \$/WAR Scatterplot

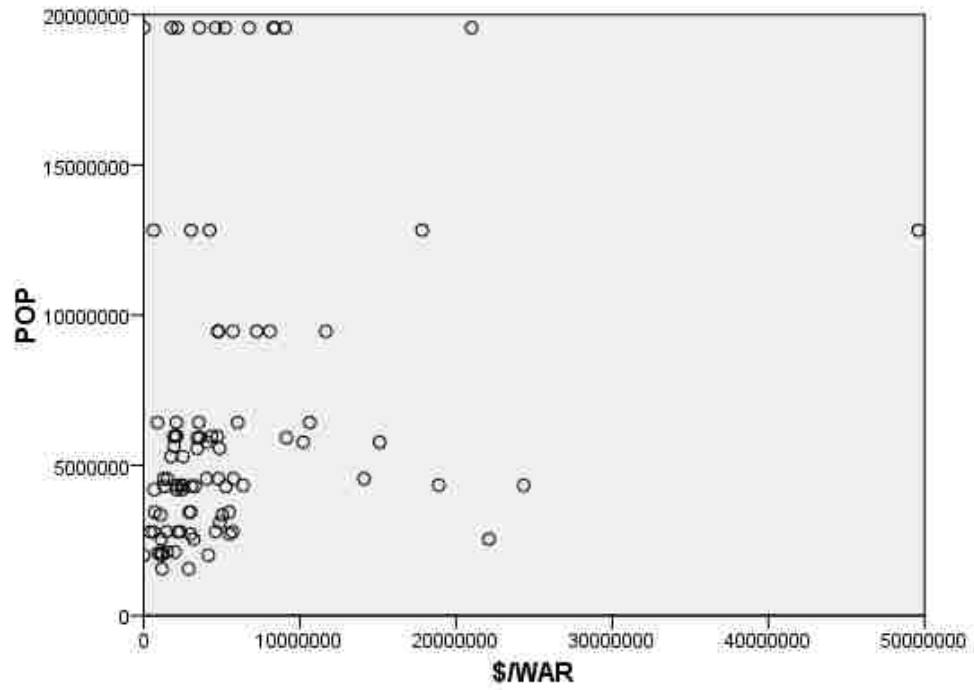


Figure J8

DEB and \$/WAR Scatterplot

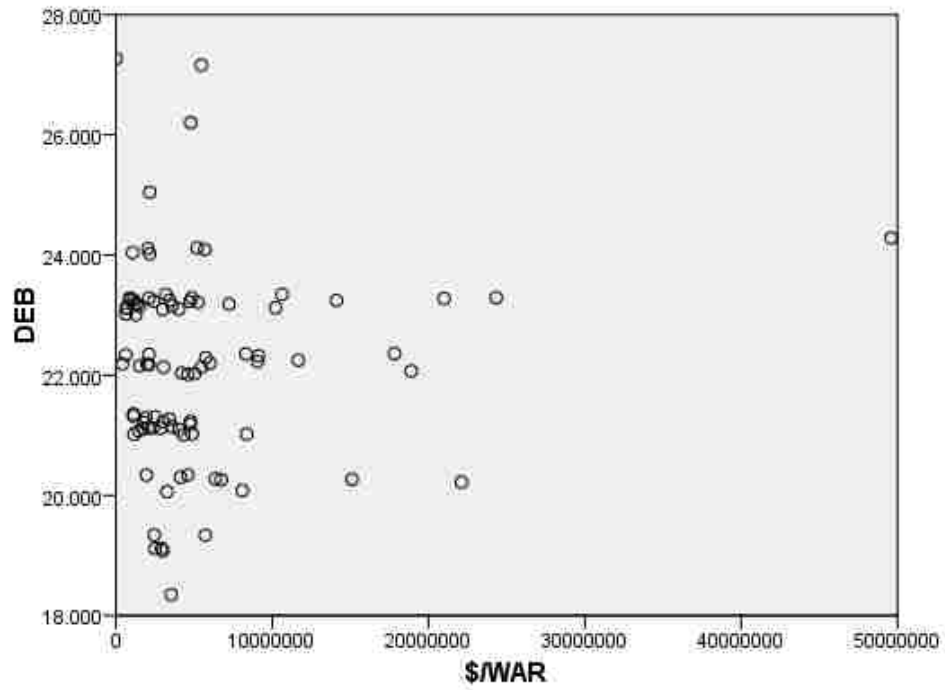


Figure J9

AS and \$/WAR Scatterplot

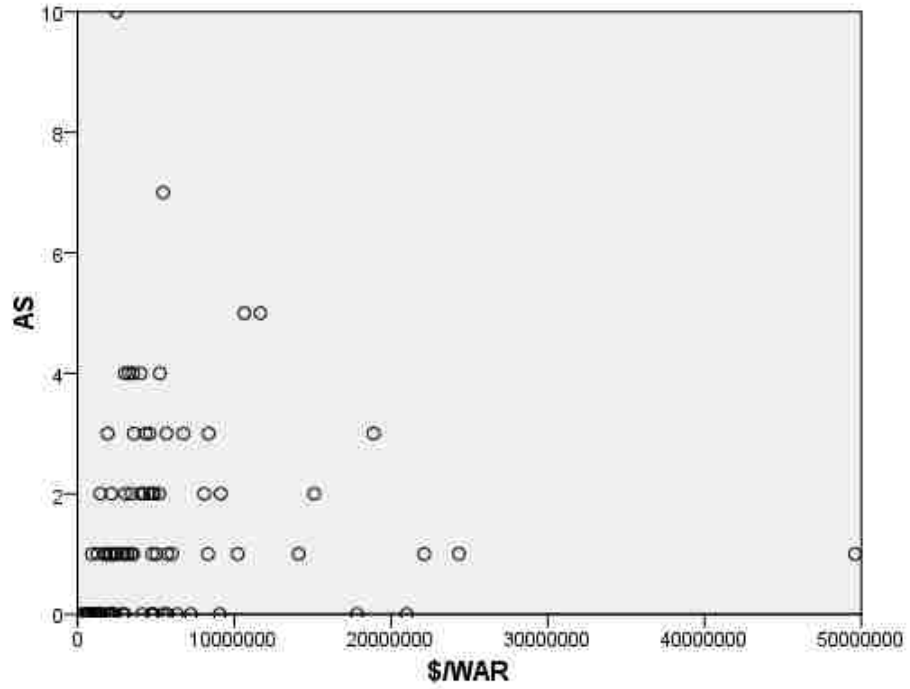


Figure J10

MVP and \$/WAR Scatterplot

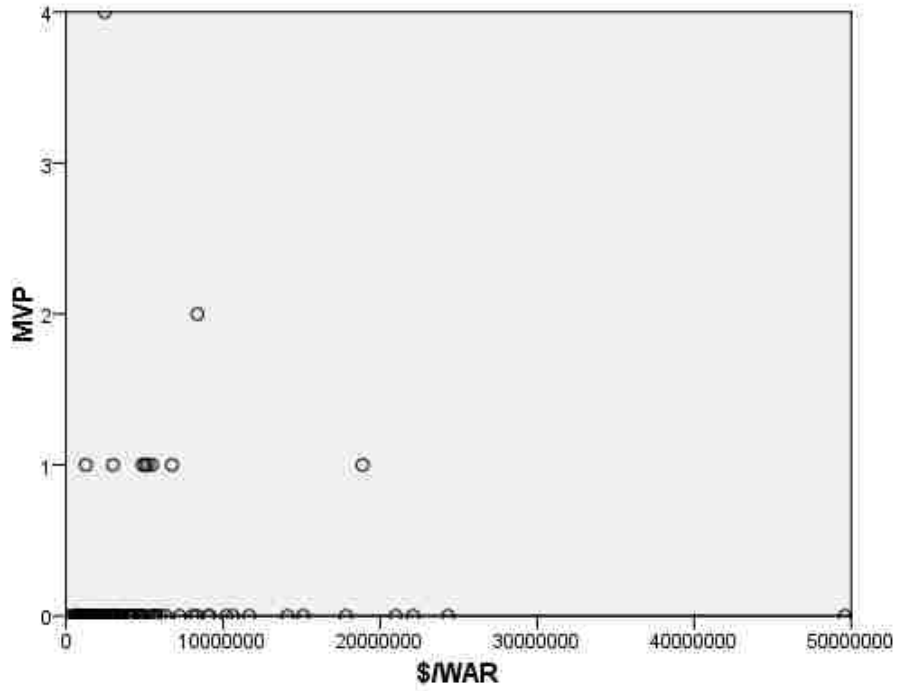


Figure J11

HT and \$/WAR Scatterplot

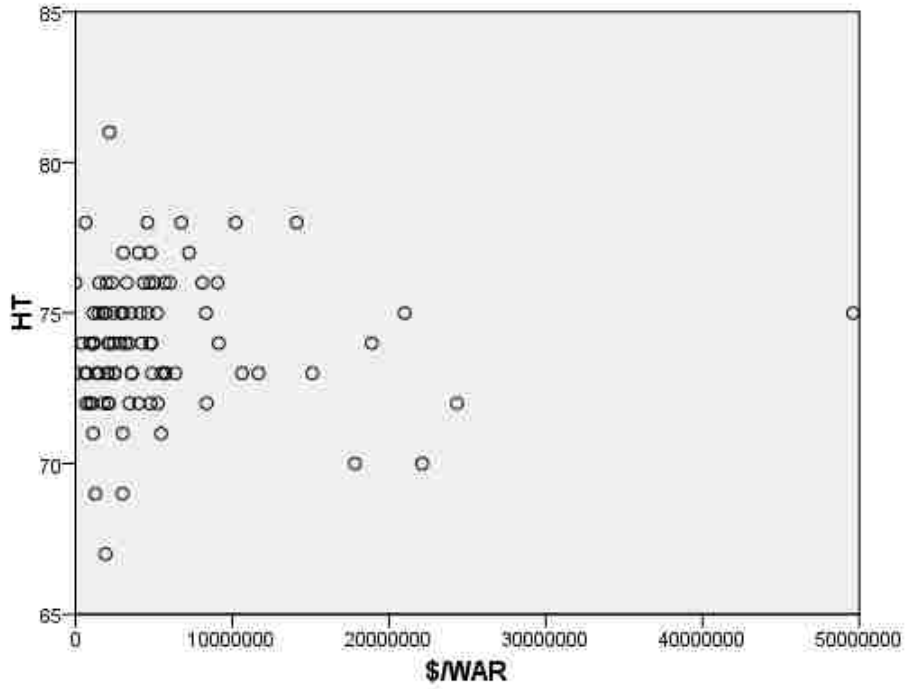
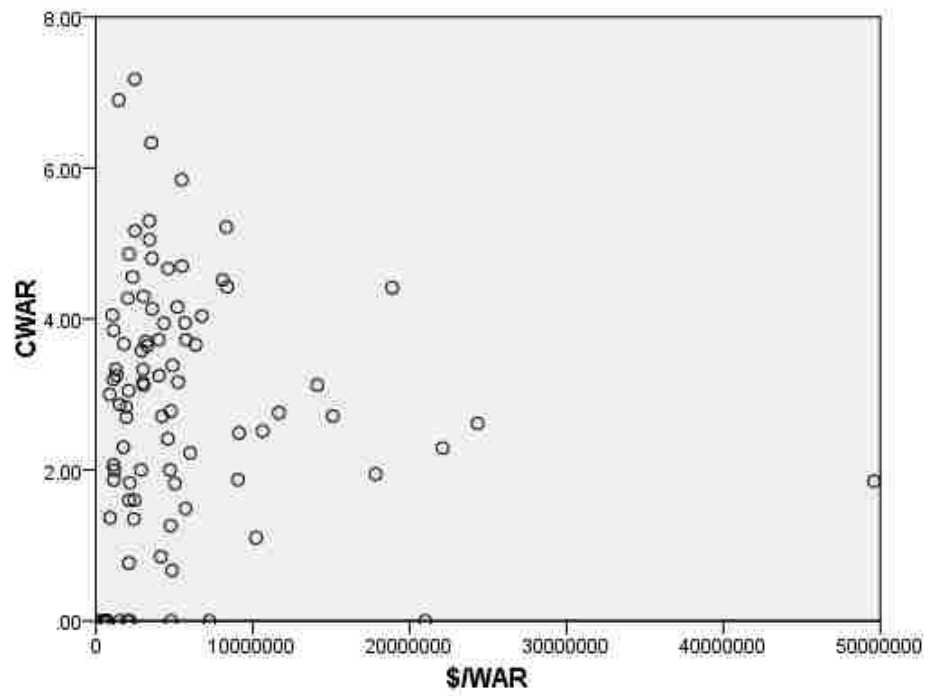


Figure J12

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 | | Total |
|-------------------------|-----------------------|------------------|---------|--------|--------|
| | | | No | Yes | |
| 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 | | Total |
|-------|------------------|------------------|---------|--------|--------|
| | | | No | Yes | |
| 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 | | Total |
|-------|------------------|------------------|---------|--------|--------|
| | | | No | Yes | |
| 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 | | Total |
|-------|------------------|------------------|---------|--------|--------|
| | | | No | Yes | |
| 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 |

References

- Abrams, R.I. (1999). Before the Flood: The History of Baseball's Antitrust Exemption. *Marquette Sports Law Review*, 9(2), 307-313.
- Abrams, R.I. (2009). Arbitrator Seitz Sets the Players Free. *Baseball Research Journal*, 38(2). Retrieved from <http://sabr.org/research/arbitrator-seitz-sets-players-free>
- Akerlof, G. (1981). Jobs as dam sites. *Review of Economic Studies*, 48(1), 37-49.
- Alchian, A., & Demsetz, H. (1972). Production, information costs, and economic organization. *American Economic Review*, 62, 777-795.
- Badenhausen, K. (2015, January 23). Average MLB Player Salary Nearly Double NFL's, But Still Trails NBA's. *Forbes*. Retrieved from <http://www.forbes.com/sites/kurtbadenhausen/2015/01/23/average-mlb-salary-nearly-double-nfls-but-trails-nba-players/>
- Barra, A. (2011). How Curt Flood Changed Baseball and Killed His Career in the Process. *The Atlantic*. Retrieved from <http://www.theatlantic.com/entertainment/archive/2011/07/how-curt-flood-changed-baseball-and-killed-his-career-in-the-process/241783/>
- Barra, A. (2011, September 27). The Many Problems With 'Moneyball.' *The Atlantic*. Retrieved from <https://www.theatlantic.com/entertainment/archive/2011/09/the-many-problems-with-moneyball/245769/>
- Barthel, T. (2007). *Baseball Barnstorming and Exhibition Games, 1901-1962: A History of Off-Season Major League Play*. Jefferson, NC: McFarland & Company.
- Baseball-Reference. (n.d.). WAR Explained. Retrieved from http://www.baseball-reference.com/about/war_explained.shtml

Baseball-Reference. (2006a). Fielding Percentage. Retrieved from http://www.baseball-reference.com/bullpen/Fielding_Percentage

Baseball-Reference. (2006b). Sabermetrician. Retrieved from <http://www.baseball-reference.com/bullpen/Sabermetrician>

Baseball-Reference. (2006c). Total Bases. Retrieved from http://www.baseball-reference.com/bullpen/Total_bases

Baseball-Reference. (2007). Win Shares. Retrieved from http://www.baseball-reference.com/bullpen/Win_Shares

Baseball-Reference. (2008). Unconditional Release. Retrieved from <http://www.baseball-reference.com/bullpen/Release>

Baseball-Reference. (2009a). All-Star. Retrieved from http://www.baseball-reference.com/bullpen/All_Star

Baseball-Reference. (2009b). Runs Batted In. Retrieved from <http://www.baseball-reference.com/bullpen/RBI>

Baseball-Reference. (2010a). At Bat. Retrieved from <http://www.baseball-reference.com/bullpen/At-bat>

Baseball-Reference. (2010b). Players Protective Association. Retrieved from http://www.baseball-reference.com/bullpen/Players_Protective_Association

Baseball-Reference. (2010c). Trade. Retrieved from <http://www.baseball-reference.com/bullpen/Trade>

Baseball-Reference. (2011). Earned Run Average. Retrieved from <http://www.baseball-reference.com/bullpen/ERA>

Baseball-Reference. (2012a). Reserve Clause. Retrieved from http://www.baseball-reference.com/bullpen/Reserve_clause

Baseball-Reference. (2012b). Strike (labor). Retrieved from [http://www.baseball-reference.com/bullpen/Strike_\(labor\)](http://www.baseball-reference.com/bullpen/Strike_(labor))

Baseball-Reference. (2012c). Walk. Retrieved from <http://www.baseball-reference.com/bullpen/Walk>

Baseball-Reference. (2013a). Arbitrator. Retrieved from <http://www.baseball-reference.com/bullpen/Arbitrator>

Baseball-Reference. (2013b). Major League Baseball Players Association. Retrieved from http://www.baseball-reference.com/bullpen/Players_Association

Baseball-Reference. (2013c). OPS. Retrieved from <http://www.baseball-reference.com/bullpen/OPS>

Baseball-Reference. (2013d). Slugging Percentage. Retrieved from <http://www.baseball-reference.com/bullpen/Slugging>

Baseball-Reference. (2013e). Wins Above Replacement. Retrieved from <http://www.baseball-reference.com/bullpen/WAR>

Baseball-Reference. (2014a). Knickerbocker Base Ball Club of New York. Retrieved from http://www.baseball-reference.com/bullpen/Knickerbocker_Base_Ball_Club_of_New_York

Baseball-Reference. (2014b). Runs created. Retrieved from http://www.baseball-reference.com/bullpen/Runs_created

Baseball-Reference. (2015a). Cincinnati Red Stockings. Retrieved from http://www.baseball-reference.com/bullpen/Cincinnati_Red_Stockings

- Baseball-Reference. (2015b). Minimum Salary. Retrieved from http://www.baseball-reference.com/bullpen/Minimum_salary
- Baseball-Reference. (2015c). Most Valuable Player Award. Retrieved from <http://www.baseball-reference.com/bullpen/MVP>
- Baseball-Reference. (2015d). National Association of Professional Base Ball Players. Retrieved from http://www.baseball-reference.com/bullpen/National_Association_of_Professional_Base_Ball_Players
- Baseball-Reference. (2015e). Positions. Retrieved from <http://www.baseball-reference.com/bullpen/Position>
- Baseball-Reference. (2015f). Pythagorean Theorem of Baseball. Retrieved from http://www.baseball-reference.com/bullpen/Pythagorean_Theorem_of_Baseball
- Baseball-Reference. (2015g). Relief Pitcher. Retrieved from http://www.baseball-reference.com/bullpen/Relief_pitcher
- Baseball-Reference. (2016). Designated Hitter. Retrieved from http://www.baseball-reference.com/bullpen/Designated_hitter
- Baumer, B.S., Jensen, S.T., & Matthews, G.J. (2013). OpenWAR: An Open Source System for Evaluating Overall Player Performance in Major League Baseball.
- Baumer, B.S., & Matthews, G.J. (2014). A Statistician Reads the Sports Page: There is No Avoiding WAR. *Chance*, 27(3), 41-44. doi: 10.1080/09332480.2014.965630
- Bendix, P. (2008). The History of the American and National League, Part 1. *Beyond the Box Score*. Retrieved from <http://www.beyondtheboxscore.com/2008/11/18/664028/the-history-of-the-america>

Berkow, I. (1999, September 10). Catfish Hunter, Who Pitched in 6 World Series for A's and Yankees, Dies at 53. *The New York Times*.

<http://www.nytimes.com/1999/09/10/sports/catfish-hunter-who-pitched-in-6-world-series-for-a-s-and-yankees-dies-at-53.html?pagewanted=all>

Berring, R.C. (2010). The Macmillan Baseball Encyclopedia, the West System, and Sweat Equity. *Baseball Research Journal*. Retrieved from

<http://sabr.org/research/macmillan-baseball-encyclopedia-west-system-and-sweat-equity>

Bertin, M. (2012, October 15). The True Cost of Winning in MLB. *GrantLand*. Retrieved from <http://grantland.com/the-triangle/the-true-cost-of-winning-in-the-mlb/>

Birnbaum, P. (2010, April 24). The marginal value of a win in baseball. *Sabermetric*

Research. Retrieved from <http://blog.philbirnbaum.com/2010/04/marginal-value-of-win-in-baseball.html>

Birnbaum, P. (2014, October 29). Do baseball salaries have “precious little” to do with ability? *Sabermetric Research*. Retrieved from

<http://blog.philbirnbaum.com/search?q=do+baseball+salaries+have+precious+little+to+do+with+ability>

Bos, C. (2011, September 1). Moneyball – Bill James and Sabermetrics. *Awesome*

Stories. Retrieved from <https://www.awesomestories.com/asset/view/BILL-JAMES-and-SABERMETRICS-Moneyball>

Brown, C. (2008, February 29). Collusion and the No-Risk Free Agents of 1988. *The*

Hardball Times. Retrieved from <http://www.hardballtimes.com/collusion-and-the-no-risk-free-agents-of-1988/>

- Brown, K.H., & Jepsen, L.K. (2009). The Impact of Team Revenues on MLB Salaries. *Journal of Sports Economics*, 10(2), 192-203.
- Brown, M. (2014, December 10). Major League Baseball Sees Record \$9 Billion in Revenues For 2014. *Forbes*. Retrieved from <http://www.forbes.com/sites/maurybrown/2014/12/10/major-league-baseball-sees-record-9-billion-in-revenues-for-2014/>
- Cameron, D. (2014, March 4). The Cost of a Win in the 2014 Off-Season. *FanGraphs Baseball*. Retrieved from <http://www.fangraphs.com/blogs/the-cost-of-a-win-in-the-2014-off-season/>
- Cassidy, M. (2014, November 22). Giancarlo Stanton's \$325 Million Deal Isn't as Rich as it Seems. *The Fiscal Times*. Retrieved from <http://www.thefiscaltimes.com/2014/11/22/Giancarlo-Stanton-s-325-Million-Deal-Isn-t-Rich-it-Seems>
- Castle, G. (2016). Television. In *Baseball's Game Changers: Icons, Record Breakers, Scandals, Sensational Series, and More*. Washington, DC: Rowman & Littlefield.
- Coates, D. (2008). [Review of the book *The Baseball Economist: The Real Game Exposed*, by J.C. Bradbury]. *Journal of Sports Economics*, 9(4), 441-445.
- Collins Dictionary. (2016). Bargaining Power. Retrieved from <http://www.collinsdictionary.com/dictionary/english/bargaining-power>
- Cot's Baseball Contracts. (n.d.). *Baseball Prospectus*. Retrieved from <http://www.baseballprospectus.com/compensation/cots/>
- Davenport, D. (1969). Collusive Competition in Major League Baseball: Its Theory and Institutional Development. *American Economist*, 13, 6-30.

- DeMause, N. (2013, December 5). Bang For Your Buck. *Sports on Earth*. Retrieved from <http://www.sportsonearth.com/article/64332632/>
- Dinerstein, M. (2007, May 11). Free Agency and Contract Options: How Major League Baseball Teams Value Players. Stanford University, Stanford, CA.
- Dodd, M. (2011, April 11). MLB Expansion Effects Still Felt 50 Years Later Around the Leagues. *USA Today*. Retrieved from http://usatoday30.usatoday.com/sports/baseball/2011-04-07-angels-baseball-expansion_N.htm
- Dorhauer, A. (2015, December 3). The Unionization of Baseball. *The Hardball Times*. Retrieved from <http://www.hardballtimes.com/the-unionization-of-baseball/>
- Dupaul, G. (2012, August 8). What is WAR good for? *The Hardball Times*. Retrieved from <http://www.hardballtimes.com/what-is-war-good-for/>
- Fair, R.C. (2007). Estimated Age Effects in Baseball. *Yale University: Cowles Foundation Discussion Paper No. 1536*. Retrieved from <http://cowles.econ.yale.edu/>
- Faurot, D.J., & McAllister, S. (1992, July). Salary Arbitration and Pre-Arbitration Negotiation in Major League Baseball. *Industrial & Labor Relations Review*, 697-710.
- Fein, B. (2005). Baseball's Privileged Antitrust Exemption. *Washington Lawyer*. Retrieved from <http://www.dcbbar.org/bar-resources/publications/washington-lawyer/articles/october-2005-taking-the-stand.cfm>
- Ferkovich, S. (2015, November 3). Macmillan Baseball Encyclopedia: The Baseball Book That Changed My Life. *The National Pastime Museum*. Retrieved from

<http://www.thenationalpastimemuseum.com/article/macmillan-baseball-encyclopedia>

Fort, R. (2003). *Sports Economics*. Upper Saddle River, NJ: Prentice Hall.

Gaines, C. (2015, May 15). The 25 Highest-Paid Players in Major League Baseball.

Business Insider. Retrieved from <http://www.businessinsider.com/highest-paid-mlb-players-2015-5?op=1>

Ghosh, R. (2013, April 1). Today in Sports History: 1972 MLB Strike. *Metta Chronic*.

Retrieved from <http://mettachronicles.com/today-in-sports-history-41-1972-mlb-strike/>

Gorman, T. (2012, January 18). The BP Wayback Machine: The Arbitration Process.

Baseball Prospectus. Retrieved from <http://www.baseballprospectus.com/article.php?articleid=15864>

Green, C.D. (2003). Psychology Strikes Out: Coleman R. Griffith and the Chicago Cubs.

History of Psychology, 6(3), 267-283.

Griffith, C.R. (1926). *The psychology of coaching: A study of coaching methods from the point of psychology*. New York: Scribner's.

Grosnick, B. (2014, January 10). Basic Sabermetrics: Wins above replacement. *Beyond*

The Box Score. Retrieved from <http://www.beyondtheboxscore.com/2014/1/10/5291950/basic-sabermetrics-wins-above-replacement-war-fwar-bwar-warp>

Grow, N. (2010). Defining the “Business of Baseball”: A Proposed Framework for Determining the Scope of Professional Baseball’s Antitrust Exemption.

University of California, Davis Law Review, 44, 557-623.

- Hadley, L., & Gustafson, E. (1991). Major League Baseball Salaries: The Impacts of Arbitration and Free Agency. *Journal of Sport Management*, 5, 111-127.
- Hagen, P. (2014, January 11). Arbitrator: A-Rod suspended for 2014 season. *Major League Baseball*. Retrieved from <http://m.mlb.com/news/article/66433260/arbitrator-rules-alex-rodriquez-to-be-suspended-for-2014-season>
- Hakes, J.K., & Turner, C. (2009). Pay, productivity and aging in Major League Baseball. *J Prod Anal*, 35, 61-74.
- Ham, E.L. (2011a). Broadcast 90 Years Ago was First to Help Listeners ‘See’ Series. *Sports Business Daily*. Retrieved from <http://m.sportsbusinessdaily.com/Journal/Issues/2011/10/17/Opinion/Eldon-Ham.aspx>
- Ham, E.L. (2011b). The Talking Box. In *Broadcasting Baseball* (p.20). Jefferson, NC: McFarland & Company, Inc.
- Hauptert, M. (2007). The Economic History of Major League Baseball. *Economic History Association*. Retrieved from <http://eh.net/encyclopedia/the-economic-history-of-major-league-baseball/>
- Hauptert, M. (2011). Baseball’s Major Salary Milestones. *Society for American Baseball Research*. Retrieved from <http://sabr.org/research/baseball-s-major-salary-milestones>
- Hauptert, M. (2012). MLB’s Annual Salary Leaders Since 1874. *Society for American Baseball Research*. Retrieved from <http://sabr.org/research/mlbs-annual-salary-leaders-1874-2012>

- Helfand, L. (2006, February 1). Pro Sports Contract Violations. *Ask Men*. Retrieved from http://www.askmen.com/sports/business_100/113_sports_business.html
- Heyman, J. (2012, October 18). Yankees May Want to Talk A-Rod Trade, but Marlins and Dodgers Don't Seem Too Eager. *CBS Sports*. Retrieved from <http://www.cbssports.com/mlb/writer/jon-heyman/20595938/yankees-may-want-to-talk-a-rod-trade-but-marlins--dodgers-dont-seem-too-eager>
- Holmstrom, B. (1979). Moral hazard and observability. *Bell Journal of Economics and Management*, 10(1), 74-91.
- Horowitz, I., & Zappe, C. (1998). Thanks for the Memories: Baseball Veterans' End-of-Career Salaries. *Managerial and Decision Economics*, 19, 377-382.
- Jaffe, J. (2013, March 4). Mike Trout's 2013 salary in perspective. *Sports Illustrated*. Retrieved from <http://www.si.com/mlb/strike-zone/2013/03/04/mike-trout-angels-salary>
- Jensen, S.T. (2013). A Statistician Reads the Sports Pages: Salaries and Wins in Baseball. *Chance*, 26(1), 47-52. doi: 10.1080/09332480.2013.772393
- Kahn, J.P. (2015, April 1). Are Long Baseball Contracts Worth It? *Boston Globe*. Retrieved from <https://www.bostonglobe.com/magazine/2015/04/01/are-long-baseball-contracts-worth/IJNSnCd8VjSvO9YQLb0zH/story.html>
- Kahn, L.M. (1991). Discrimination in Professional Sports: A Survey of the Literature. *Industrial and Labor Relations Review*, 44(3), 395-418.
- Kahn, L.M. (1993). Free Agency, Long-Term Contracts and Compensation in Major League Baseball: Estimates from Panel Data. *The Review of Economics and Statistics*, 75(1), 157-164.

- Kahn, L.M. (2000). The Sports Business as a Labor Market Laboratory. *Journal of Economic Perspectives*, 14(3), 75-94.
- Kelly, M. (n.d.). Dec. 31, 1974: Catfish Hunter Signs Free Agent Contract with New York Yankees. *National Baseball Hall of Fame*. Retrieved from <http://baseballhall.org/discover/inside-pitch/catfish-hunter-signs-with-yankees>
- Kenny, B. (2016, July 6). Death To The Curse. *Sports On Earth*. Retrieved from <http://www.sportsonearth.com/article/188202912/death-to-the-curse-brian-kenny-book-excerpt>
- Klopman, M. (2014, November 15). 4 Numbers That Prove Mike Trout Really Was The Most Valuable Player In Baseball. *Huffington Post*. Retrieved from http://www.huffingtonpost.com/2014/11/15/mike-trout-mvp-salary_n_6160780.html
- Klutho, D.E. (2015). Baseball's \$100 Million Men. *Sports Illustrated*. Retrieved from <http://www.si.com/mlb/photos/2014/03/31/100-million-dollar-men-baseball/2>
- Knowles, G., Murray, J., Sherony, K., & Hauptert, M. (2013). Shirking in Major League Baseball in the Era of the Reserve Clause. *A Journal of Baseball History and Culture*, 12(1), 59-71.
- Kornspan, A. (2014, January). A Historical Analysis of the Chicago Cubs' Use of Statistics to Analyze Baseball Performance. *Journal of Baseball History and Culture*, 23(1), 17-40. Doi: 10.1353/nin.2014.0032
- Krautmann, A.C. (1990). Shirking or Stochastic Productivity in Major League Baseball? *Southern Economic Journal*, 961-968.

- Krautmann, A.C., & Ciecka, J. (2009). The Postseason Value of an Elite Player to a Contending Team. *Journal of Sports Economics*, 10(2), 168-179.
- Krautmann, A.C. & Donley, T.D. (2009). Shirking in Major League Baseball Revisited. *Journal of Sports Economics*, 10(3), 294-304. doi: 10.1177/1527002508325817
- Krautmann, A.C., Gustafson, E., & Hadley, L. (2000). Who Pays for Minor League Training Costs? *Contemporary Economic Policy*, 18(1), 37-47.
- Krautmann, A.C., & Oppenheimer, M. "Training in Major League Baseball: Are Players Exploited?" in *Baseball Economics: Current Research* John Fizek et al., eds., Greenwood Publishing, Westport, Conn., 1996.
- Krautmann, A.C., & Oppenheimer, M. (2002). Contract Length and the Return to Performance in Major League Baseball. *Journal of Sports Economics*, 3(1), 6-17. doi: 10.1177/1527002502003001002
- Krautmann, A.C., & Solow, J.L. (2009). The Dynamics of Performance Over the Duration of Major League Baseball Long-Term Contracts. *Journal of Sports Economics*, 10(1), 6-22. doi: 10.1177/1527002508327382
- Lewis, E.M. (2001). The Players' League and the Brotherhood War of 1890. Retrieved from <http://www.ethanlewis.org/pl/ch1.html>
- Lewis, M.M. (2003). *Moneyball: The Art of Winning an Unfair Game*. New York, NY: W.W. Norton.
- Linshi, J. (2015, April 7). See Which MLB Teams and Stadium Items are the Most (and Least) Expensive. *Time*. Retrieved from <http://time.com/3774279/mlb-ticket-price/>

Major League Baseball. (n.d.). Transactions. Retrieved from

<http://mlb.mlb.com/mlb/transactions/?year=2001&month=1>

Matthews, W. (2014, January 11). A-Rod to miss all of 2014 season. *ESPN*. Retrieved

from http://espn.go.com/new-york/mlb/story/_/id/10278277/alex-rodriguez-suspension-reduced-162-games

Maxcy, J.G. (1996). *Efficient contract choice in the market for uniquely skilled labor*.

Unpublished doctoral dissertation, Department of Economics, Washington State University.

Maxcy, J.G. (2004). Motivating Long-term Employment Contracts: Risk Management in

Major League Baseball. *Managerial and Decision Economics*, 25, 109-120.

Maxcy, J.G., Fort, R.D., & Krautmann, A.C. (2002). The Effectiveness of Incentive

Mechanisms in Major League Baseball. *Journal of Sports Economics*, 3(3), 246-255.

McCue, A. (2014). Allan Roth. *Baseball Research Journal*. Retrieved from

<http://sabr.org/bioproj/person/350155ef>

Megdal, H. (2013, July 19). How Did We Get Here? *Sports on Earth*. Retrieved from

<http://www.sportsonearth.com/article/53981424/the-story-of-the-yankees-and-alex-rodriguez-and-their-contract-from-the-beginning>

Meltzer, J. (2005). *Average Salary and Contract Length in Major League Baseball:*

When Do They Diverge? (Master's Thesis). Stanford University, Stanford, CA.

Merriam-Webster Dictionary. (n.d.a). *Definition of Shirk*. Retrieved from

<http://www.merriam-webster.com/dictionary/shirk>

- Merriam-Webster Dictionary. (n.d.b). *Definition of Stochastic*. Retrieved from <http://www.merriam-webster.com/dictionary/stochastic>
- MLB Players. (2016, June 29). History of the Major League Baseball Players Association. *MLB Players*. Retrieved from <http://mlbplayers.mlb.com/pa/info/history.jsp>
- Mondout, P. (2015). National Association of Base Ball Players. *Baseball Chronology: The Game Since 1845*. Retrieved from <http://www.baseballchronology.com/baseball/leagues/NABBP/>
- Munzel, E. (1959, November 18). Bruins Beam at Hill's '59 Figures. *The Sporting News*, 17.
- Munzel, E. (1964, February 20). Holland Fastest Negotiator – Cub Pacts All Inked. *The Sporting News*, 20.
- New York Yankees Games Returning to WPIX-TV After Deal with YES Network. (2015, January 22). *PIX11*. Retrieved from <http://pix11.com/2015/01/22/new-york-yankees-games-returning-to-wpix-tv-after-deal-with-yes-network-2/>
- Neyer, R. (2016, February 2). Sabermetrics. *Encyclopaedia Britannica*. Retrieved from <https://www.britannica.com/sports/sabermetrics#ref1182357>
- Nightengale, B. (2014, August 11). 1994 Strike Most Embarrassing Moment in MLB History. *USA Today*. Retrieved from <http://www.usatoday.com/story/sports/mlb/2014/08/11/1994-mlb-strike/13912279/>
- Normandin, M. (2014, November 18). Giancarlo Stanton's back-loaded Marlins contract and opt-out details. *SB Nation*. Retrieved from

<http://www.sbnation.com/mlb/2014/11/18/7242483/giancarlo-stanton-contract-marlins-back-loaded-opt-out>

Outrun Change. (2012). Typical Wages in 1860 Through 1890. Retrieved from

<http://outrunchange.com/2012/06/14/typical-wages-in-1860-through-1890/>

Pappas, D. (2004, March 9). Marginal Payroll / Marginal Wins. Retrieved from

<http://www.baseballprospectus.com/article.php?articleid=2648>

Pesca, M. (2009, July 30). The Man Who Made Baseball's Box Score A Hit. *NPR*.

Retrieved from <http://www.npr.org/templates/story/story.php?storyId=106891539>

Politi, S. (2013, June 7). The worst sports contract ever. *CNN*. Retrieved from

<http://www.cnn.com/2013/06/07/opinion/politi-rodriquez-contract/>

Pollis, L. (2013, October 15). How Much Does a Win Really Cost? *Beyond the Box*

Score. Retrieved from

<http://www.beyondtheboxscore.com/2013/10/15/4818740/how-much-does-a-win-really-cost>

Polner, M. (1982). *Branch Rickey: A Biography*. New York: Atheneum.

Posnanski, J. (n.d.). No Place Like Home: Baseball's Best Races May Involve Where

Game 1 Starts, and Not Who's Playing. *NBC Sports*. Retrieved from

<http://sportsworld.nbcsports.com/home-field-advantage-important/>

Puerzer, R.J. (2006). The Chicago Cubs' College of Coaches: A Management Innovation

That Failed. *The National Pastime*, 26, 3-17.

Reuter, J. (2013, December 9). Evaluating the Success Rate of MLB Contracts over \$100

Million. *Bleacher Report*. Retrieved from

<http://bleacherreport.com/articles/1880902-evaluating-the-success-rate-of-mlb-contracts-over-100-million>

Roberts, S. (2007, July 15). Just How Long Does the Average Baseball Career Last? *The New York Times*. Retrieved from

http://www.nytimes.com/2007/07/15/sports/baseball/15careers.html?_r=0

Rogers, P. (2014, November 26). Free Agency's Roots Begin with Catfish. *MLB.com*.

Retrieved from <http://m.mlb.com/news/article/102531820/phil-rogers-free-agencys-roots-begin-with-catfish-hunter>

Roos, D. (n.d.). 10 Egregiously Bad Sports Contracts. *How Stuff Works*. Retrieved from

<http://money.howstuffworks.com/10-bad-sports-contracts.htm>

Ryczek, W. (2014, April 30). Brooklyn's Union Grounds: Baseball's First Enclosed Field. *The National Pastime Museum*. Retrieved from

<http://www.thenationalpastimemuseum.com/article/brooklyns-union-grounds-baseballs-first-enclosed-field>

Rymer, Z.D. (2012, November 15). AL MVP Award 2012 Voting Results: Why Mike Trout Got Totally Screwed. *Bleacher Report*. Retrieved from

<http://bleacherreport.com/articles/1410684-al-mvp-award-2012-voting-results-why-mike-trout-got-totally-screwed>

Saint Onge, J.M., Rogers, R.G., & Krueger, P.M. (2008). Major League Baseball Players' Life Expectancies. *Social Science Quarterly*, 89(3), 817-830.

Schiff, A. (2008). *The Father of Baseball: A Biography of Henry Chadwick*. Jefferson, NC: McFarland.

- Schlegel, J. \$100 Million Men Yield Varying Results. *MLB.com*. Retrieved from <http://m.mlb.com/news/article/16259698/>
- Schoenfield, D. (2012, July 19). What we talk about when we talk about WAR. *ESPN*. Retrieved from <http://espn.go.com/blog/sweetspot/print?id=27050&imagesPrint=off>
- Schulz, R., Musa, D., Staszewski, J., & Siegler, R.S. (1994). The Relationship Between Age and Major League Baseball Performance: Implications for Development. *Psychology and Aging*, 9(2), 274-286.
- Schwartz, L. (n.d.). Sportscasting Firsts: 1920 – Present. *American Sportscasters Online*. Retrieved from <http://www.americansportscastersonline.com/sportscastingfirsts.html>
- Schwarz, A. (2004a, July 8). A numbers revolution. *ESPN*. Retrieved from http://www.espn.com/mlb/columns/story?id=1835745&columnist=schwarz_alan
- Schwarz, A. (2004b, July 8). Darwins of the Diamond. *ESPN*. Retrieved from http://www.espn.com/mlb/columns/story?id=1835736&columnist=schwarz_alan
- Scoggins, J.F. (1993). Shirking or Stochastic Productivity in Major League Baseball: Comment. *Southern Economic Journal*, 60, 239-240.
- Simonton, D. K. (1990). Creativity and wisdom in aging. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (3rd ed., pp. 320-329). San Diego, CA: Academic Press.
- Spatz, L. (2012). *The Team That Changed Baseball and America Forever: The 1947 Brooklyn Dodgers*. University of Nebraska Press. Retrieved from <http://sabr.org/bioproj/person/6d0ab8f3>

- SponsorPitch. (2016). Property Summary. Retrieved from <https://sponsorpitch.com/properties/minor-league-baseball-milb>
- Sporting Charts. (2015a). MLB Cost Per Win (By season): 2015 MLB Season. Retrieved from <http://www.sportingcharts.com/mlb/stats/mlb-cost-per-win-by-season/2015/>
- Sporting Charts. (2015b). What is Clubhouse? Retrieved from <http://www.sportingcharts.com/dictionary/mlb/clubhouse.aspx>
- Stankiewicz, K. (2009a). *Length of Contracts and the Effect on the Performance of MLB Players*. Unpublished Manuscript, Economics Department, Illinois Wesleyan University, Bloomington, IL.
- Stankiewicz, K. (2009b). Length of Contracts and the Effect on the Performance of MLB Players. *The Park Place Economist*, 17, 76-83.
- Statistics Canada. (n.d.). Population of Census Metropolitan Areas. *Government of Canada*. Retrieved from <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/demo05a-eng.htm>
- Studeman, D. (2007, December 6). Long-term contracts. *The Hardball Times*. Retrieved from <http://www.hardballtimes.com/long-term-contracts/>
- Sullivan, J. (2010, July 28). MLB Trade Deadline FAQ: What It Is, What It Means, and Why It's Awesome. *SB Nation*. Retrieved from <http://www.sbnation.com/2010/7/28/1591502/mlb-trade-deadline-faq-what-it-is-rumors-waivers>
- Tarman, A. (2005). *The Effect of Monopsony Power in Major League Baseball on the Salaries of Players with Less Than Six Years in the Majors*. Unpublished

Manuscript, Economics Department, Illinois Wesleyan University, Bloomington, IL.

Thompson, D., & Hufford, T. (n.d.). A History of SABR. *Society for American Baseball Research*. Retrieved from <http://sabr.org/about/history/1>

Thorn, J. (2013, March 7). Rickey and Roth and Lindsey and Cook. *Our Game*. Retrieved from <https://ourgame.mlblogs.com/rickey-and-roth-and-lindsey-and-cook-7aa9576e5e29#.cpoo065rt>

Thornley, S. (n.d.). The Demise of the Reserve Clause: The Players' Path to Freedom. *Milkees Press*. Retrieved from <http://milkeespress.com/reserveclause.html>

Turvey, J. (Fall 2013). The Future of Baseball Contracts: A Look at the Growing Trend in Long-Term Contracts. *The Baseball Research Journal*, 101-106.

United States Census. (2013, March). 2010 Census Population and Housing Tables. *U.S. Census Bureau*. Retrieved from <https://www.census.gov/population/www/cen2010/cph-t/cph-t-5.html>

Weinberg, N. (2015, January 16). The Beginner's Guide to Understanding Park Factors. *FanGraphs*. Retrieved from <http://www.fangraphs.com/library/the-beginners-guide-to-understanding-park-factors/>

Weintraub, R. (2012, December 1). Failed Baseball Union Helped Pave Way for Success. *The New York Times*. Retrieved from <http://www.nytimes.com/2012/12/02/sports/baseball/failed-baseball-union-helped-pave-way-for-success.html>

- Wertheim, J. (2012, November 27). Marvin Miller Changed Player's Union – and Baseball – Forever. *Sports Illustrated*. Retrieved from <http://www.si.com/more-sports/2012/11/27/marvin-miller-obituary>
- Witnauer, W.D., Saint Onge, J.M., & Rogers, R.G. (2007). Major League Baseball Career Length in the 20th Century. *Population Research and Policy Review*, 26(4), 371-86.
- Yoder, M. (2013, May 17). How MLB Splits Your TV Dollars. *Awful Announcing*. Retrieved from <http://awfulannouncing.com/2013/how-mlb-splits-your-tv-dollars.html>