Succeeding in Major League Baseball in a Small Market

A Case Study on Cincinnati, Minnesota, and Oakland

The Honors Program
Senior Capstone Project
Jared Hager
Faculty Advisor: Dr. David Ketcham
April, 2008

Table of Contents

Abstract 1
Introduction 2
What is a Small Market? 3
WHY CINCINNATI, OAKLAND, AND MINNESOTA 7
Cincinnati 7
Oakland 8
Minnesota 9
What is success? 10
ATTENDANCE EFFECTS 11
Wins 11
New Stadium 18
STATISTICAL ANALYSIS 18
Homegrown Players vs. Free Agents 18
Payroll vs. Wins 19
ANALYZING PLAYER DEVELOPMENT 24
Evaluating the Amateur Draft 25
How often are homegrown players used? 29
What do homegrown players contribute? 32
CONCLUSION 37
Appendices 40
References 41

ABSTRACT

This project is a case study on three small market Major League Baseball teams: Oakland, Minnesota, and Cincinnati. The purpose is to discover why some small market teams fail and why some succeed using the hypothesis that small market teams with better player development systems are more successful. Using many different baseball statistics and developing numerous databases, I discovered that Oakland, while being the most successful franchise of the three teams, also has the best player development system. The paper defines small market teams while examining the relationship between winning and attendance, payroll, and wins. Other variables examined include the use homegrown players, the success of teams' drafts, and teams' player development systems. The latter is analyzed using a statistic known as VORP. In the end, it is concluded that better player development systems do lead to more success in small markets.

INTRODUCTION

The economics of Major League Baseball had always been an interesting area of study for scholars from many different backgrounds. Baseball is the ultimate numbers game. There is an unfathomable amount of statistics available to analyze a game, player, or organization. Although it may seem like just a game, it is also one of the most profitable businesses in the United States. Most people attribute winning in baseball to the ability a team has to spend money. The New York Yankees and Boston Red Sox are prime examples of this. However, there are always teams that present an anomaly to fans and baseball experts alike. How do the Colorado Rockies make it to the World Series in 2007 with one of the lowest payrolls in baseball? How have the Oakland Athletics stayed competitive for so many years while consistently being one of the lowest valued teams in the game? These are the questions I have set out to answer using three small market teams as a case study: Oakland, Cincinnati, and Minnesota. Each of these teams is different and has been chosen for certain reasons. Fifteen years (sixteen seasons) of baseball data have been compiled and analyzed beginning with the 1990 season and ending with 2005. This was the decade where spending in baseball became more of an issue following the players' strike in 1994. This analysis will deal with the modern era of baseball.

It is my belief that small market teams have success when they spend more money on player development. This goes with the belief that it is more cost effective to create your own talent in your minor league system than buy talent in the free agent market. Many different aspects will be analyzed in order to discover the key to winning in baseball. I will analyze small market teams in terms of the success of their homegrown players and what made these teams so successful in certain years yet fail in others.

Note: The Appendix to this study can be found on the attached CD as there were too many databases to attach to the paper.

What is a Small Market?

Major League Baseball consists of 30 teams in 28 cities across the United States and Canada. For the analysis, I must first define a small market. Four different criteria will be used: population of the surrounding metropolitan area, team value, attendance, and media market size. Since not all of the current 30 major league teams have existed between 1990 and 2005, many of the numbers have been averaged in order to make better comparisons. The goal is to split baseball into three different sectors: larger market, medium market, and small market. Not only will this help better define a small market, but it also help analyze better the difference between small and large market teams. In order to determine where each team falls, the teams will be ranked in each category by where they fall on average in a given year compared to the other 30 teams. All of this information can be found under Appendix A including attendance, population, and team valuation, along with the overall ranking system.

First, the attendance data for each Major League Baseball team for the 15 years under examination are readily available using this baseball attendance index from Baseball Prospectus. These data is available in appendix A. Looking at this chart, one can see average attendance for each team from 1990 until 2005. The Colorado Rockies are atop the chart; however, they have only been a franchise since 1993. Cincinnati, Oakland, and Minnesota all fall in the bottom half of attendance with, Cincinnati at 18, Oakland at 22, and Minnesota at 26. The effect of the strike can definitely be seen as both leagues saw record attendance in 1993 followed by a strike shortened season in 1994 that caused an obvious drop in attendance since the teams did not play out a full 162 game season. American League teams as whole averaged 2.4 million fans in 1993, while having just 1.8 million in 1995. The 1995 season saw only a slight increase in attendance over 1994, but the sport slowly regained popularity each season after that. Smaller teams seemed to be hurt by this the most, as Cincinnati and Oakland ranked in the top 10 in attendance from 1990 through 1992, and Minnesota can be included in the top 10 in 1991. The late 90s saw Oakland and Minnesota drop to the bottom of the league in attendance, while Cincinnati hovered in the middle of the pack. All three teams jumped up in 2003 but dropped right back in 2004 and 2005. The average seemed to be the best way to do this since not all of the teams had been in the league for all fifteen years. That said, judging from attendance only, the split between the three divisions of teams would be:

Large Market: Colorado Rockies, Las Angeles Dodgers, Baltimore Orioles, Arizona Diamondbacks, St. Louis Cardinals, Atlanta Braves, New York Yankees, Seattle Mariners, Chicago Cubs

Medium Market: Texas Rangers, Boston Red Sox, Cleveland Indians, San Francisco Giants, Las Angeles Angels of Anaheim, New York Mets, Houston Astros, Cincinnati Reds, Philadelphia Phillies, San Diego Padres

Small Market: Chicago White Sox, Oakland Athletics, Milwaukee Brewers, Florida Marlins, Pittsburgh Pirates, Minnesota Twins, Kansas City Royals, Detroit Tigers, Tampa Bay Rays, Washington Nationals

Some may look at that list and see things that they may not have expected, for instance the Red Sox being a medium market team. This is why other criteria must be explored. The next aspect is team valuation. Team valuation is how much the team is worth. This includes revenue, stadium value, payroll, and other expenses. *Forbes Magazine* reports these values after every season and I have been able to put them into a database and again rank the average for each team. Again Cincinnati, Oakland, and Minnesota fall in the bottom half with Cincinnati at 24, Oakland at 28, and Minnesota at 30. Many of the teams fall exactly as most people would anticipate, with teams like the Yankees, Mets, and Red Sox in the top five. But there are some surprises, especially with a team like the Washington Nationals having their average rank at 2. These two ranks get us closer to determine our large and small market teams.

The next two criteria are arguably the two most important ranks. The first is average population rank. For this, the data between 2000 and 2006 were used (data before the year 2000 was not readily available). The data, taken from the U.S. Census, include the major metropolitan area surrounding these cities. As we know, some of the teams play in the same city, like New York and Chicago. These teams received the same rank, with both the Mets and Yankees ranked at number one, while the Cubs and White Sox were at number three. Obviously, with the high rankings, one can tell that these cities are large enough to support two teams. The three teams we have focused on again prove to fall into the bottom third of the league in terms of population. Oakland falls at 20, Minnesota at 22, and Cincinnati at 26.

Some teams also show interesting anomalies, with low attendance figures yet high populations. Teams like the Tigers and Padres are in the top ten in average population, but in the bottom third of attendance. Also, the opposite can happen with the city of Denver ranking right at the middle of the league at 16, but the Colorado Rockies are the top team in attendance.

The final criterion is the average media market size. This data was very difficult to obtain, and therefore this only reflects the 2007 rankings of each major league city. Again, as in population, some of the cities have multiple teams, and thus had the same ranking for media market. A media market is, by definition, is a region where the population can receive the same or similar television, radio, and other types of offerings. The surrounding metropolitan region can also be included. This is also an interesting case because Toronto is in the Canadian market, where it ranks 1st. For our purposes, Toronto is also ranked 1st in this study tied with New York. Cincinnati, Oakland, and Minnesota showed slightly more interesting rankings this time, as Oakland is in the 6th largest media market, with Minnesota at 15, and Cincinnati at 24. The Rockies, after being in the top third of attendance and team valuation, finished in the bottom half of population and media market size. After all is said and done, it was necessary to take the average of all of the categories: attendance, team value, population, and media market size. The table in appendix A shows what happens with all of the rankings included.

The teams are listed in order from the highest overall rank to lowest. The top ten teams are considered large market teams, middle ten mid-market teams, and bottom ten are small market teams. This is what it looks like:

Large Market Teams: New York Yankees, Los Angeles Dodgers, New York Mets, Arizona Diamondbacks, Chicago Cubs, Toronto Blue Jays, Boston Red Sox, Atlanta Braves, Colorado Rockies, Baltimore Orioles

Medium Market Teams: Chicago White Sox, San Francisco Giants, Houston Astros, Philadelphia Phillies, Seattle Mariners, Texas Rangers, Washington Nationals, Cleveland Indians, Anaheim Angels, St. Louis Cardinals

Small Market Teams: Detroit Tigers, San Diego Padres, **Oakland Athletics**, Milwaukee Brewers, Florida Marlins, Tampa Bay Rays, **Cincinnati Reds**, **Minnesota Twins**, Pittsburgh Pirates, Kansas City Royals

Looking at these lists, there are some teams that appear as possibly falling in the wrong place. For instance, how can the Cubs be a large market team and the White Sox a medium market team? Well, it seems that population and media market size are more important to this analysis than attendance and team valuation. For this reason, we can do the same analysis but apply weights to each category. Attendance and team valuation will be multiplied by .2 while population and media market size will be multiplied by .3. These weights will all add up to 100% and this puts more emphasis and population and media market size with slightly less emphasis on attendance and team valuation this is what the results are:

Large Market Teams: New York Yankees, Los Angeles Dodgers, New York Mets, Arizona Diamondbacks, Chicago Cubs, Toronto Blue Jays, **Chicago White Sox, San Francisco Giants,** Colorado Rockies, Baltimore Orioles

Medium Market Teams: **Boston Red Sox, Atlanta Braves**, Houston Astros, Philadelphia Phillies, Seattle Mariners, Texas Rangers, Washington Nationals, Cleveland Indians, **San Diego Padres, Detroit Tigers**

Small Market Teams: **Anaheim Angels, St. Louis Cardinals**, Oakland Athletics, Milwaukee Brewers, Florida Marlins, Tampa Bay Rays, Cincinnati Reds, Minnesota Twins, Pittsburgh Pirates, Kansas City Royals

The teams that were moved have been put in bold. The chart on the following page will show how the numbers came out. Again there are some major surprises. Starting with the large market teams, the Diamondbacks and Rockies have not been considered large market teams, yet when going through these four criteria, they end up in the large market category both with and without the weights. The other surprises come from the Red Sox and the Braves. With the amount of spending the Red Sox do, everyone considers them a large market team. Under these criteria, they end up in the large market category without the weights, and in the mid-market category with the weights. Also, the Angels and Cardinals moved from mid-markets to

small markets, while the Padres and Tigers jumped up to mid-markets. To me, the initial numbers without the weights are better judgments of small and large markets. Therefore, those will be the statistics we will use to determine who our large and small market teams are.

WHY CINCINNATI, OAKLAND, AND MINNESOTA

The Cincinnati Reds, Oakland Athletics, and Minnesota Twins all represent different approaches to succeeding in small markets to over the last fifteen years. Each has gone through different times of success and failure. The way that each were chosen is pretty simple. First, they had to meet the requirements of being a small market team. As demonstrated above, each of these teams meets that requirement. Next, the success of each time was analyzed in terms on wins and losses, playoff appearances, and championships. The goal was to get one team that has been consistent, one team that has improved over the years from being a poor team to a successful one, and one team that had success at one time but has since failed to maintain that level of success. Each of these franchises will be analyzed in terms of their performance over the last fifteen seasons.

Cincinnati

The Cincinnati Reds have been a major league franchise since 1901. The team has won 5 world championships, 9 pennants, and had 12 playoff appearances. Since the 1990 season, the Reds have had 10 managerial changes with 9 different managers. The team has also seen three different general managers in that same time period. Bob Quinn Sr. was the GM from 1990-1992 before he left the team to go to the San Francisco Giants in 1993. Jim Bowden was his successor and stayed in the GM position for 11 years before being fired because of team's lack of success. He was hired as the Washington Nationals GM in 2005. Finally, Dan O'Brien Jr. took over the club in 2004 after being promoted from Director of Baseball Operations with the Rangers. The Reds have also gone through two different ballparks during this time period, the real effect of which will be analyzed later. The team began in Riverfront Stadium in 1971 and was there through the 1996 season. The stadium was then bought out in 1997 by

the Cinergy Corporation and renamed Cinergy Field. The stadium held 52,592 fans until 2001 when the outfield bleachers were removed for the building of the new stadium causing capacity to drop down to 39,000. It is owned by the City of Cincinnati and cost $45 million to build. It was initially an AstroTurf field until 2001 when the team decided to change to grass. After tearing down the outfield fences in 2001, construction on Great American Ball Park began. The new home of the Cincinnati Reds opened in 2003, holding a capacity crowd of 42,059. The open-air, grass field is owned by the City of Cincinnati and Hamilton County. The $325 million project was financed both publicly and privately. The public funding came from a half-cent-per-dollar increase on sales taxes that accounted for 86% or $280 million of the project. The private financing amounted to the remaining $45 million or 14% that came from the naming rights deal with Great American Insurance Company.

The Reds fit the criterion of being a good team early in the 1990s, but their performance has fallen off since then. The Reds were World Series Champions in 1990, followed by a 2nd place finish in 1992, and a division title in 1995. The team was also in first during the 1994 season before the season was cut short by the strike. Since that time, the Reds have not made the playoffs once, and had its highest finish of 2nd in 1999. Over that period from 1996 until 2005, the Reds have had an overall record of 777-843. Needless to say, they have not been one of the powerhouses in Major League Baseball for quite some time. The process will be to analyze where the team went wrong, what the formula was for those great seasons from 1990 through 1995, and what changed that caused the collapse.

<u>Oakland</u>

The Oakland Athletics have been the epitome of consistency over the fifteen year period analyzed here. Not only have they been consistent, but they have been consistently good. The team has had just three managerial changes in the time period from 1990 until 2005: Tony LaRussa, Art Howe, and Ken Macha. Additionally, the A's changed General Managers only once, beginning with Sandy Alderson through 1997 and then changing over to Billy Beane from 1998 until today. Alderson became the President of the A's in 1998 after Beane took over after having tremendous success during his 15 years as GM of the team. His tenure saw 4 Division Titles, 3 Pennants, and 1 World Series championship. However, the team fell into a lull during his final 5 years in the position. Billy Beane was promoted from his position as an

Assistant GM with the A's. The team also stayed in the same stadium, but for the most part played in Oakland Coliseum where it began playing in 1966 through 2007, after going through two name changes. The stadium was originally named the Oakland Coliseum before being called Network Associates Coliseum in 2004 and then its current name, McAfee Coliseum, in 2005. The stadium underwent under a series of renovations in 1995 in order to bring the National Football League's Raiders back to Oakland. The team was forced to play its first few home games in 1996 in Las Vegas while a $200 million renovation was completed. The stadium has gone through a few different changes that have altered in the full capacity of the stadium, beginning with 48,219 in 1990, then going down to 47,450 in 1991, 47,313 in 1992, and finally its current capacity of 48,219 in 1996. McAfee Coliseum is owned by the City of Oakland and Alameda County, with the original cost of just $25.5 million followed by the $200 million renovation. Even with the success, the team has consistently been in the bottom half of the league as far as attendance

As previously mentioned, the A's have been a very successful franchise, not just for a small market team, but any team in Major League Baseball. Between 1990 and 2005, the A's have had a record of 1344-1200, a winning percentage of .528. To go along with that record, the A's have also won 5 Division titles, 1 American League title, and 1 Wild Card playoff berth. In other words, that makes 6 playoff appearances in 16 seasons. Other than that, the team has finished in 2nd place four times over that period. The consistent success of the A's makes them very intriguing. Teams in large markets have difficulty achieving the type of success the A's have had in a small market. They are definitely a team that needs to be analyzed to discover what formula they have used for their consistent success over this time period, and if they did anything different in seasons where they did not perform as well.

Minnesota

The Minnesota Twins fit the model of a team who struggled for much of the 90s, but has experienced great success following the turn of the century. Between 1990 and 2005, the Twins have changed managers just two times. Tom Kelly held the reins of the team from

1987 to 2001 when he gave way to the current manager Ron Gardenhire. After leading the Twins to a World Series championship in 1991, Kelly had only two winning seasons in the next 10 years, a record of 703-868 in those seasons, a winning percentage of just .447. In fact, the team finished in either 4th or 5th for 8 straight seasons. On the other hand, Gardenhire led the team to 3 straight division titles after taking over the team in 2002, and then finishing 3rd in 2005. Gardenhire had a record of 359-258 in his first 4 seasons with the club, a winning percentage of .554. The team also experienced two different General Managers during this period, the first being Andy McPhail who ran the team from 1985 through 1994. He helped build two World Series championship teams (1987 and 1991), but left the team prior to the 1995 season because of three straight seasons near the bottom of the division. He moved on to become the President of the Chicago Cubs. Terry Ryan was promoted to the position of General Manager in 1995 and currently holds that position. The team continued to struggle while Ryan rebuilt the team until 2002, which coincided with the hiring of Ron Gardenhire.

The Hubert H. Humphrey Metrodome has been the home of the Minnesota Twins since 1982. The team will be opening an open-air stadium in 2010. Home to both the Twins and the Vikings, the Metrodome holds a capacity crowd of 55,883. It is owned by the Metropolitan Sports Facilities Commission and cost $68 million when it was built. It is the only air-supported dome in the major leagues and the roof actually required 250,000 cubic feet of air per minute to remain inflated.

As mentioned before, after winning the 1991 World Series, the Twins finished either 4th or 5th for eight out of ten seasons, but then ripped off three straight division titles. The Twins sudden improvement makes their formula for success an excellent situation for analysis. It is necessary to analyze what they did differently in the 90s that made them such a bad team, and what caused the sudden improvement in success.

<u>What is success?</u>
One of the major concepts that must be defined in this analysis is the meaning of “success” of a franchise. Some franchises may determine success differently than others. For instance, the

Red Sox and Yankees would consider a season in which they did not make the playoffs as unsuccessful. They may not consider only making the playoffs as successful, using the World Series as their measure. Sometimes it is easy, especially as a baseball fan in the northeast, to confuse success only as winning a championship. On the other hand, the Kansas City Royals or Tampa Bay Rays would be happy finishing with a record over the .500 mark. So what is it that determines success? Is it number of wins? Is it making the playoffs? Is it finishing in a certain position in the standings? One could make an argument for any of these criteria.

Fundamentally, the more games a team wins, the higher it finishes in the standings. However, this is not always the case, for instance in 2006, the Tigers, who finished second in the AL Central with 95 wins, but they would have won the AL West. These teams have no choice of which division that they play in. Also, fans are more interested in a team that can make the playoffs regardless of how many wins they have. Any fan would like to see his or her team win their division and make the playoffs than win 95 games and not make the playoffs at all. For this reason, in order to determine what success is for small market teams, it is necessary to put into perspective how well these teams are expected to finish. It is an extreme to imagine that a small market team could make the playoffs every year like the Red Sox and Yankees. However, it is conceivable that these teams should be able to make the playoffs once every 3 to 4 years. But, in order to determine yearly success, one must look at the position that they finish in the standings. This is how we will define success for a small market team. A team finishing in 1st or 2nd place is either a playoff team or at least in playoff contention. A successful small market team finishes either 1st or 2nd in its division in a given season. This puts it possibly in the playoffs, or a least in playoff contention in that year. This, to me, seems like a reasonable definition of success for a small market baseball team.

ATTENDANCE EFFECTS

Wins

Many people will argue that a winning baseball team will automatically draw more fans. It does seem logical that fans would want to come see a team that wins the majority of the time or has a chance to win a championship in any sport, not just baseball. The main tendency is to see more people at winning teams' games, and an empty stadium for losing teams. The

Boston Celtics, for instance, used to draw sellout crowds in the early to mid 1980s but saw a major drop-off during the 1990s and into the new century because the team was not winning as much, especially after having an NBA worst 24-58 record in 2006-2007. It would be interesting to see if the same stays true when analyzing the attendance and win statistics of Major League Baseball teams. These data can all be found under Appendix B under the Wins spreadsheet.

First of all, one would be remiss to mention the baseball strike that occurred in 1994 that cancelled the World Series, a strike that many thought would ruin the popularity of America's game. Data do show that attendance dropped in 1994, taking into account that 40 or so games were cancelled for most teams, and then a 154 game schedule was played in 1995 making up for a late end to the strike. Attendance went from an all-time high of 70,256,459 total fans for all of Major League Baseball in 1993, down to 50,009,024. Attendance would slowly climb throughout the decade, reaching 70,000,000 in 1998. There were then drops in attendance in 2002 and 2003, but attendance then picked back up as the league recorded a record in 2004, one broken in 2005 with an overall attendance of 74,915,268. The effects of the strike had definitely worn off over time.

It is necessary then to analyze individual teams and see if there is a correlation between winning and drawing fans. Minnesota, Cincinnati, and Oakland will be the first to be analyzed, as well as others throughout the league. The analysis will be taken on a year-by-year basis. In 1990, the Twins finished the season with 74 wins, putting them 22nd out of the 26 teams that existed in 1990, a ranking that was almost an exact correlation to their ranking 20th in attendance. That same year, The Reds met the A's in the World Series. The A's were the top ranked team with 103 wins while the Reds were fifth with 91 wins. The A's ended with a ranking of 3rd in attendance, while the Reds ended up 9th, again a pretty close correlation, but not an exact one: the Reds were one of the top teams in wins, but a middle of the road team in attendance. Toronto, the top team in attendance, finished 8th in wins. In 1991, the Twins moved up to 2nd in wins, with A's finishing in 8th and the Reds 21st. The Pirates, after finishing 1st in wins, were 17th in attendance. The same trend happened for the team the following year when it finished 2nd in wins yet still ended up 17th in attendance, actually losing 200,000 fans. The Twins were 12th in total attendance for the season, which shows

much improvement from their ranking 20th in the prior year. Oakland also saw an increase in its attendance rank, but a decrease in actual attendance by about 200,000 fans, which would be expected after dropping in the standings. The Blue Jays and Dodgers remained at the top of the list in attendance, as each finished in the top 5 in wins. In fact, each team improved its win total and increased its total attendance. While rank does matter, the total attendance will also need to be analyzed, since teams might show an increase in attendance but may fall in rank depending on circumstances.

Moving on to 1992, all three of the teams in question finished in the top 10 in both attendance and wins. Cincinnati finished 10th in both areas, a major increase from where they were in 1991. Also, the Twins finished 6th in both areas, while the A's finished 6th in standings and 4th in wins. It is obvious that there is more of a correlation between these numbers; however, only the Twins saw a real increase in fan attendance, by about 200,000, whereas the A's lost 250,000 fans and the Reds lost 62,000 fans. The A's would continue to see steady decreases in attendance until the 1999 season, when they had 87 wins. The 1999 season was by far their best season since 1992. In the seasons between these two the A's would end up ranking 23rd, 24th, 20th, 18th, 28th, and 24th respectively. 1997 was the worst of times for the A's as they finished dead last in the league in wins, and also watched their attendance steadily decline. As we continue to analyze the A's, from 1990 to 2005 their overall rank spanning in average wins per season was 4th, while their average attendance was 22nd. This would suggest that winning does not mean higher attendance. However, this is not the case. Teams that won more games may not have seen an increase in its attendance rank, however had an increase in overall attendance. This will be shown when looking at the 1999 to 2005 seasons. While the A's never reached the top 10 in wins, they did see their ranking slowly climb during those seasons. This chart shows their wins versus attendance ranking during that time period:

Oakland Athletics		
Year	Wins Rank	Attendance Rank
1999	10	26
2000	6	23
2001	2	19
2002	1	18
2003	4	16
2004	10	19
2005	9	19

While there is not a one-to-one correlation, it is obvious that as the team climbed in wins rank, its attendance rank climbed as well. This suggests that winning will help increase attendance. Pure numbers will also help show this same correlation. As the team won more games, its attendance also grew. However, after the 2002 season when the A's won 103 games, their attendance for the 2003 season as well, almost as a hangover type effect, but then dropped as the team's win total dropped in 2004 and 2005.

This same argument can further be proven with other teams. The Reds ended up with an average attendance rank of 18th and an average wins rank of 16th for the 1990 through 2005 seasons. In fact, as it was with the A's, the hangover effect from a prior successful season is also demonstrated by the Reds. The Reds won 96 games in 1999 and they saw an attendance increase of 270,000 fans. The next season, the Reds attendance rocketed up by 500,000, giving them a little over 2,570,000 fans. Again the attendance dropped in 2001 where the team won just 66 games. A sudden spike in attendance in 2003 up to 2,355,259 seems odd because the team won just 69 games, but this may be attributed to something else, such as the opening of the Great American Ballpark. Mostly, however, the team did see an increase in attendance when its win total increased.

This brings us to the final team, the Minnesota Twins. As mentioned before, the Twins saw a jump in attendance from 1990 to 1991 that was consistent with their jump in wins. This was followed by another jump in 1992 when the team finished 6th in wins and attendance. However, after the 1992 season, the Twins dropped down to a low of 53 wins in 1994 and never won more than 78 games until the 2001 season. During the seasons from 1993 through 2000, the team was ranked 20th, 20th, 26th, 22nd, 26th, 29th, 29th, and 29th in attendance

Minnesota Twins		
Year	Wins Rank	Attendance Rank
1993	20	20
1994	20	20
1995	28	26
1996	19	22
1997	28	26
1998	24	29
1999	30	29
2000	27	29

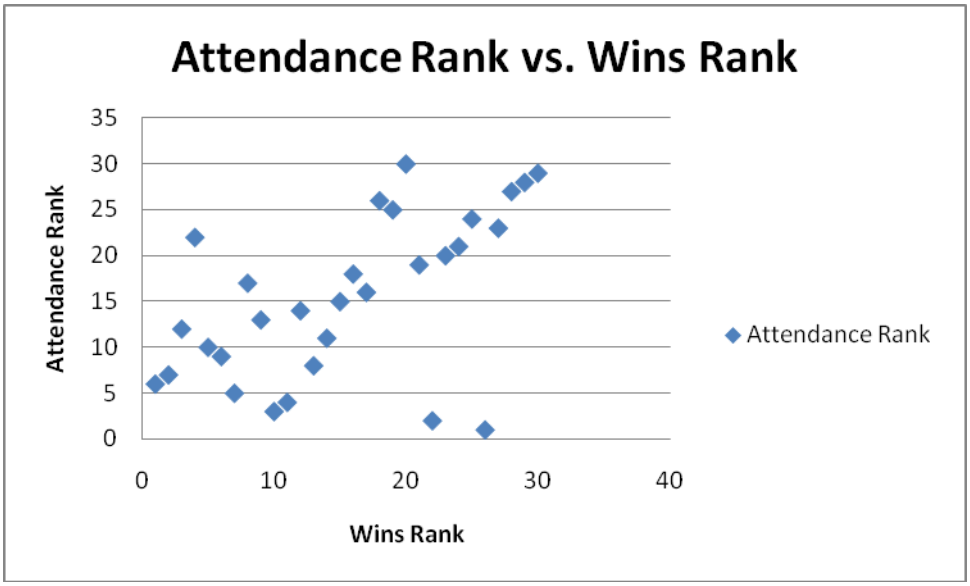
respectively. This chart shows how this matches up with their ranking in wins. During this period, when the team raised its wins ranking, it also raised its attendance ranking, but then dropped right back off towards the bottom of the league in both. From 2001 through 2005, it was a completely different story for the Twins. The team won 85, 94, 90, 92, and 83 games in each of the seasons from 2001 through 2005. The team saw a huge jump in their wins ranking, being in the top 10 in wins in each of those seasons except for 2005. However, the team saw only a small jump in attendance rank, going as high as 20th in 2002 and 2003, but dropping down to 23rd when it won 92 games and was ranked 6th in wins in 2004. However, although the ranking may not show much, the actual attendance numbers show that the Twins did see increased attendance in each of those seasons, including a 723,000 increase between 2000 and 2001. It seems that although teams may not jump in rank, their attendance numbers will still increase when the team wins more games.

Besides these three teams, other teams must also be analyzed in order to see if there is the same trend. First of all, let's look into how teams' win rank will compare with their attendance rank over the period from 1990 through 2005. The chart below indicates exactly this. Many of the rankings are very close with a few exceptions that should be pointed out. These are the Baltimore Orioles who had a wins rank of 22 but an attendance rank of 2, the Colorado Rockies with the top attendance rank but 26th in wins, and the Oakland A's who were 4th in wins but 22nd in attendance. The A's have already been covered so the other two teams will be looked at. Between 1990 and 2005, The Orioles did not have a season where they have been below 2,000,000 fans. This could be because of the new stadium and dedicated fans. The team had a few successful seasons during that time period including 89 wins in 1992, 85 in 1993, 88 in 1996,

Average Wins Rank vs. Average Attendance Rank		
Team	Wins Rank	Attendance Rank
Arizona Diamondbacks	11	4
Atlanta Braves	1	6
Baltimore Orioles	22	2
Boston Red Sox	3	12
Chicago Cubs	24	21
Chicago White Sox	5	10
Cincinnati Reds	16	18
Cleveland Indians	9	13
Colorado Rockies	26	1
Detroit Tigers	29	28
Florida Marlins	25	24
Houston Astros	8	17
Kansas City Royals	28	27
Los Angeles Angels	15	15
Los Angeles Dodgers	10	3
Milwaukee Brewers	27	23
Minnesota Twins	18	26
New York Mets	17	16
New York Yankees	2	7
Oakland Athletics	4	22
Philadelphia Phillies	21	19
Pittsburgh Pirates	19	25
San Diego Padres	23	20
San Francisco Giants	6	9
Seattle Mariners	12	14
St. Louis Cardinals	7	5
Tampa Bay Devil Rays	30	29
Texas Rangers	14	11
Toronto Blue Jays	13	8
Washington/MON	20	30

and 98 in 1997. The question would be did the team see an increase in attendance in those 4 seasons. In 1992, the team jumped attendance by 1,000,000 fans from 1991, as the team went from a 67 win season to an 89 win season. This gave the team a number two ranking in attendance that season. In 1993, the team saw a slight increase in attendance by about 100,000 fans while increasing its win total. The Orioles were once again ranked 2nd in attendance in 1996, as the team won 88 games and increased attendance by 600,000 fans from 1995 when it had 71 wins. The team dropped slightly in attendance in 1997, but was still ranked 2nd in attendance overall. The Orioles continue to show that wins will increase attendance from season to season, but rank will not necessarily raise or drop by the same amount. The Rockies did not come into existence until 1994, when the team had its highest attendance for the obvious reason that it was its inaugural season. The team saw a big increase between 1995 and 1996 when it went from winning 77 to 83 games, and attendance increased by 600,000. Other than these exceptions, the team hovered around the 70 and 80 win mark, and showed a big drop after their 82 win season in 2001. The team did not break the 3,000,000 fan mark after that until the 2007 season. But, once again, it shows more evidence that winning will bring in more fans.

A better way to look at this data is through a scatter plot. This scatter plot shows the relationship between win rank and attendance rank:



Seen through this chart, it is obvious that there is a positive correlation between attendance rank and wins rank. There are three obvious exceptions however, with the Rockies, Orioles, and A's. The Rockies were the number one team in attendance, but 26th in wins, while the Orioles were 2nd in attendance and 22nd in wins. Finally, the A's, one of the focuses of this study, were the 4th ranked team in wins but 22nd in attendance. Besides these teams, the chart makes it more obvious to see the effect that wins has on attendance in a positive way, with teams ranking higher in wins also ranking higher in attendance.

In conclusion, although the attendance rankings may not correlate exactly with teams' wins ranking from year to year, there is a definite relationship between an increase in wins and attendance increase. If the teams won more games, they would also see their attendance increase in that season, even if their ranking did not jump up. Therefore, it is fair to say that the more teams win, the higher attendance they will draw; however, this will not be sustained unless the team continues its success. This suggests that the market that a team is in will affect attendance to some degree regardless of how good the team is. Stadium capacity, among other factors, will cause increased or decreased attendance.

New Stadium

Between 1990 and 2005, thirteen different Major League Baseball teams changed stadiums, each, except for the Cleveland Indians, seeing an increase in attendance. In fact, the thirteen teams experience an average increase of 31.61% in the season that they moved into a new stadium. One factor that could contribute to the drop in attendance for Cleveland is that fact that Jacobs Field, the team's new stadium, has a capacity of 43,405 fans while the old stadium, Cleveland Municipal Stadium, had a capacity of 74,483. Also, the stadium opened the year of the baseball strike, a period when every team saw a drop in attendance. For most of these teams, the attendance either leveled off or dropped in the season immediately following the increase. This suggests that a new stadium will help to increase attendance, but this is sometimes short-lived. The chart in the appendix helps outline the exact increases in attendance from the season prior to the opening of the new stadium to the season with the new stadium. Although new stadiums will help increase attendance, this further proves that winning has more of an affect on attendance in the long-term, whereas new stadiums can help to increase capacity and provide short-term attendance boost for franchises.

STATISTICAL ANALYSIS

Homegrown Players vs. Free Agents

One of the main reasons small market teams would rather have more homegrown players than free agents is that homegrown players are cheaper in the long run than signing a free agent. For our purposes, a homegrown player is defined as any player who plays for the same team that they were drafted by. This also includes players who are signed as undrafted amateur free agents, but not those who are signed away from other professional leagues, such as those who played professionally in Japan and were then signed by a Major League team. Looking at the data from Oakland, Cincinnati, and Minnesota, it is obvious that homegrown players are cheaper than free agents. The left column shows the total amount followed by the average amount of money spent on homegrown players between 1990 and 2005 while the right column consists of the total and average amount paid to free agents over the same period. These data can be fully examined in Appendix D.

Minnesota Twins		Oakland Athletics		Cincinnati Reds	
Homegrown Salary	Free Agents	Homegrown Salary	Free Agents	Homegrown Salary	Free Agents
$259,087,001	$273,854,099	$214,125,999	$442,306,595	$206,048,556	$497,554,144
Avg	Avg	Avg	Avg	Avg	Avg
$819,895.57	$866,626.90	$767,476.70	$1,084,084.79	$928,146.65	$1,007,194.62

One interesting aspect of these numbers is looking at the teams that have had more success. The A's have been the most successful team of the three and they have the biggest discrepancy between the amount they pay free agents and the amount they pay their homegrown players. They also spend more on free agents than the other two teams and less on homegrown players. However, over the fifteen year period, they had the 2nd highest proportion of homegrown talent of the three teams. This will be discussed in more detail later in the analysis, as I will further break down how much each team spends in different periods and whether that shows an effect on success.

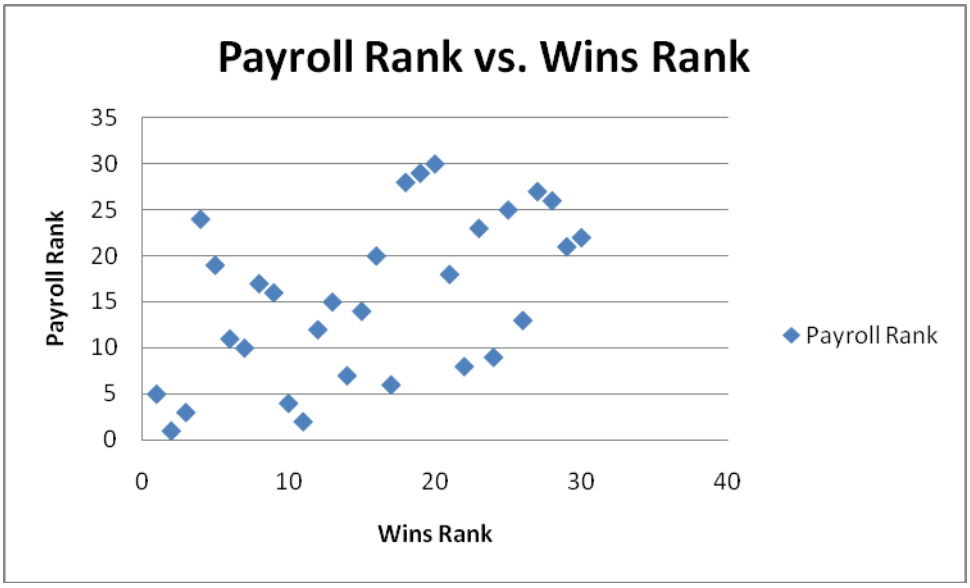
Payroll vs. Wins

A common assumption in baseball is that the more money one spends on players, the more wins that team will have. In order to analyze whether this statement is true, one must look at how successful these teams have been over the last fifteen years, using the number of games won as our measure. The Atlanta Braves rank first in average wins over the last fifteen seasons with 93.5 wins per year, while being 5th in the league in the average payroll at just under $61 million. If you look at the top 10 teams in terms of average wins, only 5 of those teams also ranked in the top 10 in payroll (Red Sox, Yankees, Braves, Dodgers, and Cardinals). This would suggest that there are other factors involved in achieving success, not just payroll. The following table shows all 30 major league teams and where they rank in average wins and payroll over the last fifteen years:

Team	Average Wins	Rank	Team	Average Payroll	Rank
Atlanta Braves	93.50	1	New York Yankees	84,784,672	1
New York Yankees	89.56	2	Arizona Diamondbacks	72,421,593	2
Boston Red Sox	85.13	3	Boston Red Sox	65,896,668	3
Oakland Athletics	**84.00**	**4**	Los Angeles Dodgers	61,075,550	4
Chicago White Sox	83.94	5	Atlanta Braves	60,912,584	5
San Francisco Giants	83.63	6	New York Mets	59,870,996	6
St. Louis Cardinals	83.31	7	Texas Rangers	54,313,626	7
Houston Astros	83.13	8	Baltimore Orioles	50,827,218	8
Cleveland Indians	82.44	9	Chicago Cubs	50,768,337	9
Los Angeles Dodgers	81.88	10	St. Louis Cardinals	50,545,381	10
Arizona Diamondbacks	81.50	11	San Francisco Giants	49,944,259	11
Seattle Mariners	80.56	12	Seattle Mariners	49,432,685	12
Toronto Blue Jays	79.69	13	Colorado Rockies	47,158,105	13
Texas Rangers	78.88	14	Los Angeles Angels	46,679,303	14
Los Angeles Angels	78.63	15	Toronto Blue Jays	46,578,570	15
Cincinnati Reds	**78.50**	**16**	Cleveland Indians	45,367,220	16
New York Mets	77.38	17	Houston Astros	43,195,547	17
Minnesota Twins	**76.94**	**18**	Philadelphia Phillies	42,588,583	18
Pittsburgh Pirates	76.81	19	Chicago White Sox	41,895,844	19
Washington Nationals	76.56	20	**Cincinnati Reds**	**40,768,770**	**20**
Philadelphia Phillies	76.44	21	Detroit Tigers	38,132,630	21
Baltimore Orioles	76.31	22	Tampa Bay Devil Rays	37,220,456	22
San Diego Padres	75.75	23	San Diego Padres	36,566,492	23
Chicago Cubs	75.25	24	**Oakland Athletics**	**34,678,282**	**24**
Florida Marlins	74.08	25	Florida Marlins	33,636,372	25
Colorado Rockies	73.00	26	Kansas City Royals	32,774,895	26
Milwaukee Brewers	72.19	27	Milwaukee Brewers	30,820,464	27
Kansas City Royals	70.38	28	**Minnesota Twins**	**29,997,235**	**28**
Detroit Tigers	68.00	29	Pittsburgh Pirates	28,268,643	29
Tampa Bay Devil Rays	64.75	30	Washington Nationals	25,436,128	30

Note: This data can be found under Appendix B.

Since only 5 out of the top 10 teams in wins are also in the top 10 of payroll, it is obvious that money is not the only factor that leads to wins. This scatter plot shows this in a more visual way:



There must be others involved, especially for those teams who do not spend a lot of money. This is why the Oakland Athletics are a very intriguing team, as they rank 4th in average wins per year, but just 24th in average payroll. In order to further analyze these statistics, there are two other relationships to look at. The first is the difference between the average payroll rank versus the average wins rank. This measure is the difference between a team's average payroll rank minus its average wins rank. A team would rather have a positive value in this measure, as that would mean it would be spending less money to achieve more wins. Most people would think that there should be a 1-to-1 correlation between spending and success and every team would score a zero, meaning that the team that spent the most money would also have the most wins. As the following table demonstrates, this is not the case:

Team	Pay Rank minus Win Rank
Oakland Athletics	20
Chicago Cubs	14
Minnesota Twins	10
Pittsburgh Pirates	10
Washington Nationals	10
Houston Astros	9
Cleveland Indians	7
San Francisco Giants	6
Atlanta Braves	4
Cincinnati Reds	4
St. Louis Cardinals	3
Toronto Blue Jays	2
Boston Red Sox	0
Florida Marlins	0
Milwaukee Brewers	0
San Diego Padres	0
Los Angeles Angels	-1
New York Yankees	-1
Seattle Mariners	-1
Kansas City Royals	-2
Philadelphia Phillies	-3
Los Angeles Dodgers	-6
Texas Rangers	-7
Detroit Tigers	-8
Tampa Bay Devil Rays	-8
Arizona Diamondbacks	-9
New York Mets	-11
Colorado Rockies	-13
Baltimore Orioles	-14
Chicago White Sox	-15

The Athletics are at the top of the list, meaning that they have the biggest discrepancy as far as payroll and wins, achieving far more wins than what their payroll would predict. Teams who have negative values have underperformed. The second statistical analysis comparing payroll with wins is the average amount the teams pay per win. This will tell how efficient the teams have been with their payroll. The following table shows this relationship:

Team	Average	Rank
New York Yankees	$ 946,653.70	1
Arizona Diamondbacks	$ 888,608.51	2
Los Angeles Angels	$ 593,695.43	3
Boston Red Sox	$ 774,116.51	4
New York Mets	$ 773,777.00	5
Texas Rangers	$ 688,603.82	6
Baltimore Orioles	$ 666,040.53	7
Atlanta Braves	$ 651,471.48	8
Colorado Rockies	$ 646,001.44	9
Seattle Mariners	$ 619,944.26	10
St. Louis Cardinals	$ 606,696.25	11
Chicago White Sox	$ 499,131.43	12
San Francisco Giants	$ 591,123.29	13
Toronto Blue Jays	$ 584,515.39	14
Tampa Bay Devil Rays	$ 574,833.29	15
Los Angeles Dodgers	$ 745,960.92	16
Detroit Tigers	$ 560,773.97	17
Philadelphia Phillies	$ 557,168.71	18
Chicago Cubs	$ 674,662.28	19
Cleveland Indians	$ 550,322.61	20
Houston Astros	$ 519,645.68	21
Cincinnati Reds	**$ 519,347.39**	**22**
San Diego Padres	$ 482,725.97	23
Kansas City Royals	$ 465,717.87	24
Florida Marlins	$ 454,073.56	25
Milwaukee Brewers	$ 426,950.15	26
Oakland Athletics	**$ 412,836.69**	**27**
Minnesota Twins	**$ 389,890.96**	**28**
Pittsburgh Pirates	$ 368,021.39	29
Washington Nationals	$ 332,226.98	30

There is a high correlation between payroll and these figures. This means that the teams who spend the most also pay the most per win, but this may not be a measure of success because a

team simply might not win a lot of games. Cincinnati, Minnesota, and Oakland are all in the bottom third of this category, although Oakland is in the top 5 of average wins. A team would obviously rather be spending less money per win since that translates into getting more bang for its buck. The Yankees spend the most per win, but they are also ranked 2nd in wins per year. This judges how efficient the teams have been and shows that some teams spend enormous sums of money per win, yet the small market teams remain near the bottom. The most important part of these data shows that a high payroll does not necessarily equal winning more games. Instead, there are other factors that must be taken into account, primarily the impact of player development, the main focus of this study.

ANALYZING PLAYER DEVELOPMENT

The previous data have allowed us a few conclusions. First and foremost, small market teams do have a chance to compete against large market teams even while paying less money, bringing in fewer fans, and playing in an overall smaller market. Efficiency in spending that money is the key. The Oakland A's are our prime example. Second, it is cheaper and more cost effective for teams to develop their own players and talent than signing veterans through the free-agent market. Our analysis has shown that homegrown players are significantly cheaper than free agent players who are signed. This is where the small market teams must excel in order to get ahead of large market teams. Also, this analysis has shown a high correlation between winning and attendance. Winning is the lifeblood that fuels an organization. In order for teams to achieve more revenue, they must win baseball games. Otherwise, discovering where talent and winning come from would be irrelevant. Small market teams must be able to find ways to win. Finally, this analysis indicates that a higher payroll does not necessarily correlate with more wins, as over a sixteen season period, only five of the teams in the top 10 in payroll were also in the top 10 in wins. These three conclusions have led us to the assumption that it is possible for small market teams to compete, but the question is how. It is my hypothesis that teams must allocate more resources towards player development in order to continue to develop cheaper talent, as they cannot compete with large market teams on a payroll scale. Teams with better player development systems will have better success in small markets than teams who do not succeed in

developing their own talent. This leads to two additional analyses. The first is to evaluate the player development system itself. This will be done by assessing the success of the amateur drafts of each franchise. Also, the homegrown players that make it to the Major Leagues will be examined for the level of individual success they have and how that has translated to team success. Also, we will take a look at how often homegrown players are used to fill roster spots on either small or large market teams and if that makes a difference in success. Second, these statistics must be compared against large market franchises in order to show that large market teams can go about achieving success in different ways.

Evaluating the Amateur Draft

Evaluating the player development systems of Major League Baseball teams can be a difficult task for one main reason: the player development budgets are not data that are available to the public. For this reason, many different analysts have come up with ways to evaluate them on their own. One of these methods is to examine the amateur draft results for the teams. The evaluation of the draft is pretty simple. First, how many players from the draft in a given year make it to the major leagues. We will look at Minnesota, Cincinnati, and Oakland as well as two large market teams (Boston Red Sox and Los Angeles Dodgers) in order to see differences. Next, we will see if these players made it to the major league level with the teams that drafted them, or with another team. This is basically an analysis of the scouting systems for each team, as most scouts are evaluated on how many players they can bring in who will eventually help their major league team.

Beyond evaluating the number of players who reach the major league level, a draft score will be used for each team. The draft score is a way to simplify the ranking of a draft class for each team in a given year. The formula is simply the total number of cumulative major league baseball seasons played to date by the players drafted by a given team. A point is given for each season whether the player played in 1 game or 162 games. If the team did not draft a player who played in the majors, a score of 0 is assigned. A player is only considered part of the rankings if he was signed to a contract by the drafting team, as often happens the players will not sign with a drafting team either because they do not want to sign with that particular team or decide to move on to college. Also, since the measure is the cumulative number of seasons, the score can be deceiving if the team had one player who played for 20 seasons but

did not draft another player who made it to the Major league level. This evaluation can be found in Appendix E.

It is important to note that the value of this formula is better served at least 5-6 years into history as any current values will not consider players still working their way up through a team's minor league system. For example, you will find more value in the 1975 results as opposed to 2005. This is why using the years from 1990 to 1999 are used to better evaluate whether these players have worked their way through the minor league system. Much of this information can be obtained from The Baseball Cube (www.thebaseballcube.com) which provides excellent information on the drafts for each major league baseball team.

Of the three small market teams, Oakland has the highest percentage of players make it to the Major league level, 12.96% (67 players out of 517 drafted). The team also happened to average the highest draft score for those 10 seasons with a score of 28.4. This placed it at an average rank of 10.4 in the league. This would suggest that it is no coincidence that the A's were also the most successful out of the three. It is also no coincidence that the Cincinnati Reds, the least successful of the three teams has the worst average draft rank at 15.3, as well as drafting the fewest number of players at 418. The Twins had an average draft rank of 11.4, with the lowest percentage of players making it to the major league level, 10.53%, but they also drafted the most players, having 570 picks in 10 seasons. This again comes back to evaluating how well the scouts have drafted over the ten year time span. The Oakland A's continue to show their superiority in finding players who can play at the major league level, both with the highest percentage of players and the greatest number of major league seasons contributed. The Twins, who have improved recently, also show that they have good success in the draft. This said, it does seem that small market teams who can gain more from the draft will also have more success.

The question then comes to large market teams and whether they also need to have success in the draft to build winning teams. The Boston Red Sox and Los Angeles Dodgers will be the two teams that will be evaluated. The Red Sox finished 3rd in wins between 1990 and 2005, while the Dodgers were in the 10th spot. The tables on the following page analyze exactly how the teams have done using the same criteria as the small market teams. The Red Sox have

been more successful than the Dodgers with 11.46% of their players reaching the major league level and an average draft score rank of 13.6, which is better than the Reds. The Dodgers on the other hand had just a 5.90% success rate with players reaching the major leagues and an average draft score ranking of 21.2. This means that they must be able to find other ways to win games and find talent other than the draft. It is also obvious that small market teams count on bringing up their young talent to a greater degree than do large market teams. Free agency spending for these two teams will be analyzed later in order to determine if large market teams spend more on free agency and use more talent from other organizations than they do their own. The table on the following page breaks down each year for both teams:

Boston Red Sox Draft Results						
	Year	MLB	Total Drafted	%	Draft Score	Draft Score Rank
	1990	5	36	13.89%	17	20
	1991	8	42	19.05%	54	6
	1992	6	49	12.24%	29	15
	1993	7	52	13.46%	48	1
	1994	7	49	14.29%	39	4
	1995	6	47	12.77%	13	27
	1996	6	51	11.76%	20	16
	1997	5	53	9.43%	15	18
	1998	5	65	7.69%	20	15
	1999	3	62	4.84%	14	14
Avg		5.8	50.6		26.9	13.6
Total		58	506	11.46%		
Los Angeles Dodgers Draft Results						
	Year	MLB	Total Drafted	%	Draft Score	Draft Score Rank
	1990	4	69	5.80%	14	23
	1991	6	100	6.00%	30	16
	1992	1	60	1.67%	1	28
	1993	3	59	5.08%	19	23
	1994	6	84	7.14%	23	17
	1995	2	93	2.15%	6	28
	1996	6	90	6.67%	36	5
	1997	1	79	1.27%	2	30
	1998	3	63	4.76%	12	23
	1999	5	58	8.62%	12	19
Avg		3.7	75.5		15.5	21.2
Total		37	755	4.90%		

Although these results do show the players who make it the Major league level, how do we know if these players actually play with the team that drafted them and how long did they play with this team?

To standardize the measure with the draft score metric, a player who was drafted by the team is counted as contributing to the drafting team whether he played one game or his entire career with that team. Looking at the draft results spreadsheet in the appendix, this analysis is

very easy to understand. The three small market teams had high percentages of drafted players reach the Major leagues and contribute to the franchise. The Twins, A's, and Reds had 74.58%, 62.69%, and 74.46% respectively over the seasons between 1990 and 1999. That is, 74.58% of the players that the Twins drafted reached the Major league level and played for the Twins franchise at some point during their career. The two large market teams show an obvious differences from the small market teams, as the Red Sox had just 48.28% and the Dodgers had 48.65%. This could be for many different reasons, but it seems to point to the fact that many of these teams will trade some of their prized prospects in order to obtain proven veterans to help with a playoff run or meet some other immediate need. For example, the Red Sox traded prized prospects Hanley Ramirez and Anibal Sanchez to the Marlins prior to the 2006 season for two of their franchise players, Josh Beckett and Mike Lowell. The Marlins knew that they could not afford to sign the players at the end of their season. Small market teams have a tendency to hold on to their prospects as they will be able to pay them a lower salary. This would explain why the small market teams bring more of their draft picks all they way through their system to contribute at the major league level, where large market teams do not put as much emphasis on developing these players, but would rather trade these prospects and draft picks to smaller market teams who cannot afford expensive veterans.

How often are homegrown players used?

One of the main statistics I have evaluated is how much do homegrown players make up of both the small and large market teams' rosters. It has already been determined that free agents are more expensive than homegrown talent, so one would think that large market teams use fewer homegrown players than small market teams. I broke the players down into 5 different categories: starting position players, starting pitchers, total pitchers, all-stars, and total roster. I looked at how many homegrown players as opposed to free agents were in each of these categories. Again, a homegrown player had to be drafted, or signed as an amateur free agent by that particular team. The data used in this section can be found as part of Appendix D.

Out of the three small market teams, Oakland was the most successful between 1990 and 2005, finishing either in first or second place ten times. Minnesota was next with 6 seasons, followed by Cincinnati with 5. Oakland used 279 homegrown players in that 15 year period; this accounted for 40.61% of their total roster. Almost three-quarters of their all-stars during

that time were also homegrown. When comparing the three small market teams, Oakland and Minnesota, who both have had more recent success, are more similar to each other than Cincinnati. Cincinnati used the lowest number of homegrown players, just 31.01% of their total roster. The biggest difference looks to be in pitching, especially starting pitchers. Cincinnati had just 25.44% homegrown starting pitchers while Oakland and Minnesota used 36.89% and 39.42% respectively. In their successful years, Oakland used more homegrown starting pitchers than either of the other two teams as 25 out of 61 of their starters were homegrown (40.98%). Still, does this really contribute to the success of the team?

Success is still determined by how well these players perform, however there are a few different conclusions to be drawn from this analysis. Only 28.95% of Minnesota's starting pitchers during their 6 successful seasons between 1990 and 2005 were homegrown, while Oakland used 40.98%. However, Oakland's total roster was made up of just 35.66% homegrown players and Minnesota's was 47.11%. At the same time, it is easy to see that Minnesota used more homegrown starting position players, as they accounted for 57.41% compared to Oakland's 47.78%. This does not say that it is necessarily better to use more homegrown starting pitchers over homegrown starting position players, but it is necessary to decide where to allocate your resources. It is very difficult for teams to build a roster completely made of homegrown talent, and holes will need to be filled using free agents. It is obvious that Oakland values its young starting pitching more than Minnesota, but Minnesota develops better position players. Both teams have had significant success, especially over the final 5 seasons included in this study. They have achieved that success in different ways but still were able to use large percentages of homegrown talent.

The recent success of Minnesota and Oakland and the struggles of Cincinnati can be summed up by looking at the numbers just between 2001 and 2005. In that period, Cincinnati used just 63 homegrown players out of 235 (26.81%), and just 4 of those were starting pitchers, making up 10.26% of their starting rotation. Minnesota had 47.32% of its roster consisting of homegrown talent, and while just 22.58% of its starting rotation was homegrown; almost 70% of its starting position players came up through its player development system. Oakland, although it had a roster that was only 31.84% homegrown, it had 56.67% of its starting pitchers drafted and rising through its system. This further proves that small market teams

need to use homegrown talent to succeed, as Minnesota and Oakland have, this can be achieved in two different ways; either by allocating player development resources towards pitching or position players and using free agent money to fill holes in whichever of these options is not chosen.

Not only does looking at the 2001 through 2005 time period help show what Minnesota and Oakland have done to succeed, but it also shows how things have changed throughout the 16 seasons period for both small and large market teams. Oakland used 46.18% homegrown players in the 1990 to 1995 period, but that group dropped down to 31.84% in the 2001 through 2005 period. For Minnesota there was a drop, but only slightly as it went from 52.85% down to 47.32% in those periods. Cincinnati saw the greatest decrease, which could also explain its drop in success during those same periods, as it had a roster that consisted of 46.48% homegrown players in the 1990 through 1995 time period, but that percentage dropped all the way down to 26.81% in the 2001 through 2005 period. The strike, followed by the new labor agreement, opened the door for higher player salaries and a larger free agent market, decreasing the use of homegrown talent for many teams. The small market teams like Minnesota and Oakland, who continued to build up from within became successful after the turn of the century while teams like Cincinnati, forced to turn to players from outside the organization, struggled because they could not afford the high priced and more talented free agents.

Although analyzing the small market teams is very helpful, the question remains as to whether they really differ from large market teams as far as building up homegrown talent. Looking at the overall numbers, Boston obviously differentiates itself in the way it built its team from 1990 through 2005, as it used just 28.65% homegrown talent, again showing that large market teams can afford to pay for veteran free agents. The Dodgers, however, used more homegrown talent than Cincinnati, at 36.99% of its total roster. Although Cincinnati has struggled, it is still surprising to see a large market team using more homegrown talent than a small market team. That said, let’s look to see if these two teams changed anything at the turn of the century as did the small market teams. The Dodgers saw a noticeable drop-off in their use of homegrown players, as its roster was 27.68% homegrown between 2000 and 2005. Boston seemed not to care about using its farm system at all, as it was able to use just 17.30%

homegrown players. Boston was able to use its wallet to build its championship teams, as opposed to the small market teams that could not afford to use such a low percentage of homegrown players.

Although there is no proven formula for using a certain number of homegrown players to guarantee success in a small market, this section has shown that, especially in the recent past, many teams are using less homegrown talent because of the increasing size of the free agent market. That said, small market teams still use a higher percentage of homegrown players and therefore need them to contribute more towards winning than do large market teams. It also does not mean that the team needs to completely build solely from its farm system, but this can provide a solid base. Also, although it cannot be proven whether it is better to develop pitching or position players, Oakland and Minnesota showed that it is better to concentrate on building up one or the other from the minor league system, while using the free agent market to fill-in the other.

<u>What do homegrown players contribute?</u>
In order to further examine the impact of homegrown players, we will examine how many wins homegrown players contributed to their respective teams from 1990 through 2005 for the three small market teams as well as the Red Sox and the Dodgers. This again will allow us to see if homegrown players are more of an important to the success of small market teams than they are to large market teams. It will also allow us to examine how well the player development systems have done in turning out quality major league players, and look at the financial cost of marginal wins per player with homegrown players as opposed to free agents. All of these statistics can be found in the Minnesota, Oakland, Cincinnati, Boston, and Los Angeles homegrown players databases as part of Appendix C, while Appendix D contains a summary of both the homegrown and VORP statistics for each team.

The statistics that will be used to measure the number of wins contributed by players to their teams is something called Value Over Replacement Players (VORP). It measures the value that a player contributes to a team over that a replacement-level player would contribute given the same number of plate appearances, or for pitchers, innings pitched. Basically, it is the number of runs a player contributes to the team over that of a replacement player. This

statistic does not take into account a players' defense at all, and therefore could be considered incomplete, but it is the best measure that can be found to assess the performance of a player. For pitchers, VORP is defined as the number of runs a pitcher surrenders below what a replacement level pitcher would have given up in the same number of innings. Replacement level is set at +1.00 above the league average runs allowed. The replacement level for hitters is set well below the league positional average, as league backups do not usually hit at the rate of starters. All defensive statistics are assumed to be the same and players are all considered to be average base-stealers. It is also a park-adjusted statistic because some parks are more or less friendly for hitters. The VORP statistics are found in the appendix folders labeled for each team's VORP.

The VORP contribution for the small market teams varies between the three teams. Oakland had the greatest contribution overall, getting a total of 3,259.1 from its homegrown players, and the most from both position players and pitchers. Cincinnati had the lowest at 1,809.7, receiving only 416.4 from its pitching staff. The team was carried by its free agent pick-ups who contributed 3,280.6. Minnesota was in the middle as expected and also got a better VORP average for their homegrown position players over free agents while their free agent pitchers averaged a higher VORP than their homegrown pitchers. This makes sense considering the fact that Minnesota used a higher percentage of homegrown position players than it did pitchers. Oakland had better averages for both their pitchers and position players over free agents, but had a higher average for pitchers than position players, which includes the higher use of homegrown pitchers. Also, this explains why Oakland was more successful throughout the sixteen seasons than Minnesota and Cincinnati, as it got more contribution from homegrown players than from free agents.

Looking at how these three teams fared during their more successful seasons, it becomes more apparent that small market teams count more on their homegrown players than do large market teams. In their successful seasons, Oakland had a higher average VORP for homegrown players than free agents, with homegrown players averaging 15.979 and free agents only 7.7127. Although their homegrown players still averaged a higher VORP in unsuccessful seasons, the difference was smaller, only 6.826 for homegrown players as opposed to 5.930 for free agents. Also, the major difference seems to be Oakland's free agent

pitchers contributed more during unsuccessful seasons, supporting the idea that Oakland uses more homegrown pitchers than other teams and needs to get production out of those pitchers rather than free agents. Looking at the other two teams, Cincinnati had a higher average VORP for homegrown players in its successful seasons, while its free agents had a higher average VORP in its unsuccessful seasons. In this case, Cincinnati uses a higher percentage of homegrown position players and needs those players to produce more, which is why they were much more successful in seasons where homegrown position players had higher VORPs than did its free agent position players. Finally, Minnesota showed a similar pattern. In its successful seasons, homegrown players averaged only a slightly higher VORP than free agents (10.994 to 10.469). However, again Minnesota has a higher percentage of homegrown position players than pitchers. Their successful seasons show that homegrown position players need to produce more than free agents, while the team's free agent pitchers need to produce more than its homegrown pitchers. The small market teams need their homegrown players to produce, especially at the positions where they have a higher percentage of that talent.

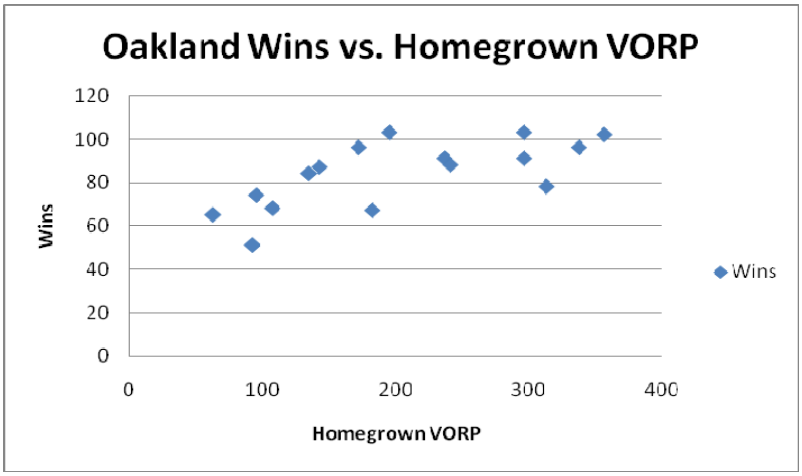
Beyond the significance of the homegrown players, we must also look at which player development system is better. Since Oakland has produced higher VORPs over the last sixteen seasons, it has a better player development system than the other small market teams. In fact, Oakland had a higher VORP than both Minnesota and Cincinnati, and they had 10 seasons during that period where they were in playoff contention. Although the financial data on how much is invested in player development is unavailable, one can look at the talent and contributions that the homegrown talent has produced. Oakland's VORP was 3259.1, and it had the highest average per player. This says that, of the small market teams, Oakland has produced the best talent, which also points towards their success. Cincinnati has had the worst contributions from their homegrown players, and was also the least successful team. The two large market teams (Boston and Los Angeles) had higher VORPs for homegrown players than did Cincinnati, but lower than Minnesota and Oakland. However, the free agent VORP shows that they can afford to get better free agent talent than the small market teams as they had higher free agent VORPs than all three small market teams. Again, Cincinnati had the higher

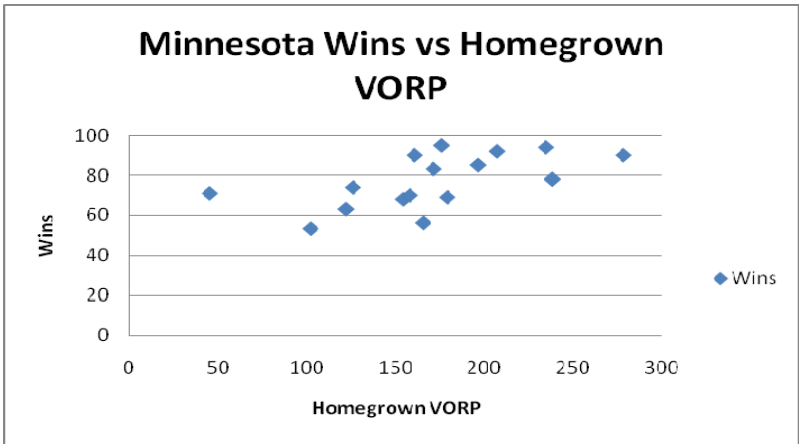
free agent VORP among the small market teams; however, this could lead to some of their failures as they do not have the ability to afford the free agent talent as do large market teams.

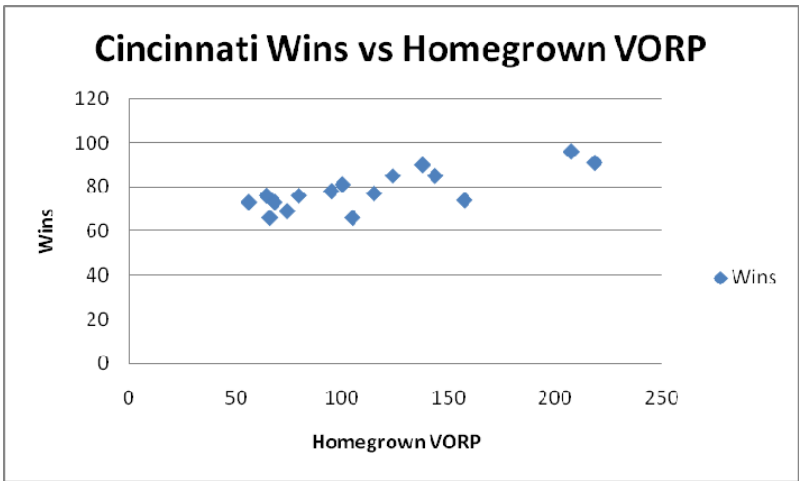
One question that could arise is whether large market teams also count on homegrown talent as much as do small market teams. It has already been shown that over the past five seasons, the Red Sox and Dodgers have used a significantly lower percentage of homegrown talent than the three small market teams involved in this study. This is further demonstrated when looking at the VORP for 2001 through 2005. Boston had a homegrown VORP of just 391.8, while their free agents scored 2122.9. Meanwhile, the Dodgers had a free agent VORP of 1415.4 and a homegrown VORP of just 422.5. Large market teams use free agents and count on free agents more in the modern age (after the turn of the century). This puts more pressure on small market teams who cannot afford big name free agents to produce better talent in their farm systems and through the draft.

The next step in analyzing the player development of small market teams is to look at how efficient each team has been in its spending on homegrown players. For this, we will take the money that each team spent on its homegrown players and divide it by the homegrown VORP. This turned out exactly as anticipated, with Oakland being the most efficient team, spending the least amount of money per run. The A's spent $65,700 on homegrown VORP, while the Twins spent $95,385, and the Reds spent $113,857. The A's have proven throughout this entire study that they have a better player development system than other small market teams; as a result, they have also been the most successful. The Twins had a better player development system than the Reds, and were the second most successful, while the Reds continued to struggle. While it is impossible to tell exactly how much Oakland spends on player development, their system has been the most effective and has led to their success.

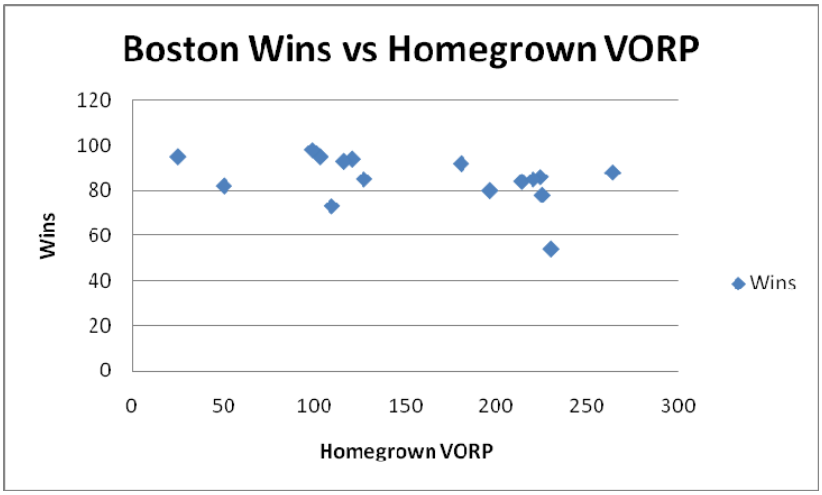
Finally, I wanted to see if homegrown VORP correlated with winning for both small market and large market teams. In order to do this, I created scatter plots for each team. These charts can be seen on the following page:


Oakland Wins vs. Homegrown VORP
Wins
120
100
80
60
40
20
0
0
100
200
300
400
Homegrown VORP
Wins


Minnesota Wins vs Homegrown VORP
Wins
100
80
60
40
20
0
0
50
100
150
200
250
300
Homegrown VORP
Wins


Cincinnati Wins vs Homegrown VORP
Wins
120
100
80
60
40
20
0
0
50
100
150
200
250
Homegrown VORP
Wins

The charts for the three small market teams show a positive correlation between homegrown VORP and wins, meaning that the higher the homegrown VORP for the team, the more games that the team won. This can be compared to a large market such as the Red Sox:



Boston does not show this same correlation that the other three teams do. In fact, they had higher win totals in years when they got less contributions from their homegrown players. This would suggest that large market teams do not count as much on homegrown talent in order to win as small market teams do. Cincinnati, Oakland, and Minnesota all had higher win totals when they had higher contributions from their homegrown talent. This makes player development much more important to these teams than large market teams like the Red Sox, as they were still able to win with less contributions from their homegrown talent.

CONCLUSION

Throughout this study, the goal has been to prove that small market teams that invest more in player development are more successful. Because it is impossible to uncover exactly how much each team spends on player development, other ways were developed to evaluate teams. These small market teams were also compared to large market teams. In the end, we have been able to come up with several different conclusions. First, small market teams were defined in the beginning, showing that Oakland, Minnesota, and Cincinnati all fit the criteria, while Boston and Los Angeles fit the description of large market teams. We came up with a definition of success, and described exactly why Oakland, Minnesota, and Cincinnati were

chosen. After all this background information was established, we could get into the statistical analysis.

First, we examined the effects of winning on attendance. The study showed that although other things can influence attendance, winning is the lifeblood that drives attendance and ticket sales. That said, winning is very important for all teams in order to bring in more revenue. Next, we demonstrated that where salary is concerned, homegrown players are cheaper than free agents. This is one reason that, since they have smaller budgets, small market teams need to use more homegrown players. They can spend their money on cheaper homegrown talent rather than try to compete with large market teams on the free agent market. However, those large market teams that do spend a lot of money on free agents do not always win. Only five of the top ten teams in payroll also finished in the top ten in wins over the sixteen seasons from 1990 through 2005. This is important for small market teams who do not feel that they have a chance to succeed, as it is obvious that there are other keys to success beyond spending more money.

The next step in the analysis was an evaluation of teams' player development systems. First, the amateur draft was looked at to see how many players these teams drafted and were able to bring up to the major leagues. Oakland had the highest draft score for the 10 amateur drafts between 1990 and 1999. The Reds had the worst draft scores, and were also the worst of the three small market teams. When comparing the small market teams to the Red Sox and Dodgers, the Red Sox had a better draft score than the Dodgers, but still were not at the level of the Oakland A's and did not bring as many players up through their system to actually play with the Red Sox. This was the first piece of evidence that showed that small market teams count more on homegrown talent and perform better in the amateur draft, it also points toward the success of the A's. The use of homegrown players was also evaluated for the 1990 through 2005 seasons, and again it was shown that small market teams use homegrown players more than do large market teams. Also, even though Oakland did not use more homegrown players in successful seasons as unsuccessful, it was shown that their pitching staff stems from their player development system, as opposed to the Twins' who used its player development system for positional players. The Reds used the fewest number of homegrown players and were also the least successful during that time frame. Finally, we

used VORP to determine how well homegrown players performed for each team and if this made a significant difference in success. It was not surprise that Oakland was again the team with the best homegrown VORP and the most efficient in its spending on these homegrown players. This shows that the A's, while the most successful team, also had the best player development system. This is no coincidence, as this tremendous player development system is what led to the success of the franchise in the small market it operates in.

While the financial numbers are not available to prove that Oakland spends more on player development, the statistics show that, of the teams examined, they have the best system. Also, since it was shown that large market teams use free agents to a greater degree, it is important for small market teams to develop their talent from within in order to spend as little money on talent as possible. The next question that can be asked is exactly how to evaluate talent. Many books have been written about the topic, and it will continue to be a matter of discussion. It is easy to see that Oakland does a tremendous job bringing in top-of-the-line pitchers, and it continues to produce more every year. Pitchers like Tim Hudson, Mark Mulder, and Barry Zito have all come up from the Oakland system and moved on to other teams to make more money. Oakland knows that they cannot keep them forever and continues to replace them with more talent with guys like Joe Blanton, Rich Harden, and Danny Haren. One thing is certain; Oakland has shown that small market teams can succeed: Minnesota has also demonstrated this since the turn of the century. These two teams also realize that success must start within their own organization, as both have produced more talent from their farm systems than has Cincinnati. In this day in age, large market teams have shown to use fewer players from their own systems in a more "win-now" mentality. Small market teams must take advantage of this and continue to build up their player development systems to produce the most talent possible as cheaply as possible. Oakland has proven to be the model franchise for this. One this is certain, small market teams have always shown that they can compete with large market teams; they just need to go about it in a more monetarily efficient way. This starts by building up their minor league systems.

APPENDICES

Please See Attached Disk

REFERENCES

Bedenhausen, K. & Ozanian, M.(2006). *The Business of Baseball*. www.forbes.com. April 6, 2006.

Fay, J. (2001). Cincinnati Enquirer. *Reds Resurrect Farm System*. www.reds.enquirer.com. 21 January 2001.

Fort, R (2008). Rodney Fort's Sports Business Data Pages. 15 January 2008.

Gennaro, V. (2007). Diamond Dollars: The Economics of Winning in Baseball. Maple Street Press. Hingham, MA..

Nielsen Media Research (2007). Media Market Sizes. www.nielsen.com. 20 February 2008.

Population Division, U.S. Census Bureau (2007). Annual Estimates of the Population for Incorporated Places Over 100,000, Ranked by July 1, 2006 Population: April 1, 2000 to July 1, 2006. 28 June 2007.

Prospectus Entertainment Ventures, LLC (2008). Baseball Prospectus. www.baseballprospectus.com 20 January 2008.

Sports Reference, LLC. (2008). Baseball Reference. www.baseball-reference.com. 22 January 2008.

The Baseball Cube (2008). www.thebaseballcube.com. 3 March 2008.

USA Today (2006). USA Today Payroll Index. www.usatoday.com. 14 January 2008.