The Strategies of Pittsburgh Pirates Club Analysis

Yiwen Li

University of Toronto, Toronto, ON M5S, Canada

`yiwenvanessa.li@mail.utoronto.ca`

Abstract. The Pittsburgh Pirates have one of the lowest baseball payrolls, with the management being given only a $15 million budget in 2013 to bring in more baseball talent. Between the years 2007 and 2008, The Pittsburgh Pirates made about $29.4 million which is recorded in the financial statement documents. Even though some clubs disagree vehemently on the fact, it has become evident that Pittsburgh has spent relatively less time compared to its opponents and also evidently in the won-loss records posted. The trend shows that the team has been gaining regardless of the losses that it has been recording which still raises the question of 'does the team lose to gain more revenue' and in case the team decided to be winning, would it gain more or it would lose its consistent track of increasing trend of the revenue. Pittsburgh Pirates have utilized a skill that hasn't been used to measure the capability of players before - the Pirates used pitch-framing data to identify catchers with this skill, Framing refers to the method in which the pitched ball is received from the pitcher for presenting the pitch to the umpire in an increasing likelihood manner; hence the pitch ball being called a strike. Some of the top catchers of the team include Ralph Kiner, Honus Wagner, Willie Stargell, and Pie Traynor. The team is known to have low payments to the players and employees to save more money.

Keywords: Pittsburgh Pirates, Financial history, Revenue, Pitch framing, Catchers, Baseball theory

1. Introduction

1.1 About The Pittsburgh Pirates (Background)

The Pittsburgh Pirates have one of the lowest baseball payrolls, with the management being given only a $15 million budget in 2013 to bring in more baseball talent. For the small team that didn't have enough money to support development, under general manager Neal Huntington, the Pittsburgh Pirates started to find those undervalued players who could be brought into the team at lower salaries [1]. But how do find these underrated players in the crowd? The development of the big data era has helped them. The capability of those undervalued players can be visible due to data analysis. These teams formulate management models that are more suitable for themselves to organize these players, thereby increasing their winning ratios.

1.2   Topic Rationale

In this paper, we shall discuss the discus the revenue of the Pittsburgh Pirates club. This includes the overview of the club, the financial history of the club where the paper shall shed more light on the way that the club generates its revenue focusing on 2001 through 2021 despite the continuous loss in the games, discuss on pitch framing of the club which is also considered a way that is used in the club to generate revenue. The paper also aims at focusing on some of the top team players who have made pointable history in the club. In this case, the paper shall focus on the top catchers. Lastly, the paper points to the general theory that applies to baseball.

1.3   Research Gap

From the past research on the Pittsburgh Pirates club, we noted that there is a gap in that there are no researches that have focused on the source of income of the club as well as the club's performance in creating legends. This is the reason that the following paper focused on creating a report on the income of the club d some of the all-time catchers not excluding the baseball theory.

1.4   Research Aim and Significance

The following research aims to create awareness on how some of the clubs in baseball do not make winnings but still keep on top f the chart in making income every season. The research shall be useful to club managers to employ the same strategies for income advantage in case their club is not well-performing. Secondly, it is useful in educating shareholders of the Pittsburgh Pirates club.

2   The Pittsburgh Pirates' Financial History

Between the years 2007 and 2008, The Pittsburgh Pirates made about $29.4 million which is recorded in the financial statement documents. The year was a streak of futility for the team. The document additionally noted that the team got relatively lower than half of the income of the resources from MLB [2]. These resources included revenue sharing, league merchandise sales, network television, and the MLB website. The teams also made sure the cost remained as low as possible by keeping the salaries of the players as low as possible in the National League. The team was shedding pricier talents holding to the hopes that there would be a blossom of untested prospects. According to the North American Sports Economist Association's president, David Berri, the numbers are an indication of why fans suspect they're taking money from baseball and keeping it rather than spending it on players [3]. He also added that the teams could maximize the winning rates like the Yankees or be like the Pirates by making as much money as possible in the industry and ignoring the endeavoring aspect.

Even though some clubs disagree vehemently on the fact, it has become evident that Pittsburgh has spent relatively less time compared to its opponents and also evidently

in the won-loss records posted [3]. The winning of the team has not been the trend as most expect. The team has been losing consecutively but is assumed to be making a huge amount of money compared to the other teams.

However, the officials of the team claimed to be building a competitive team in the field [3]. They additionally noted no nefarious dealings of the team's finance. In the report that was given in 2010 report, it noted that the Pirates were being backed up by MLB. The team has been complying with the rules and regulations which include sharing their revenue. The revenues are set to help club that is considered to be less well-off like the Boston Red Sox and New York Yankees.

There are however some concerns that are raised by the fans of the club as well as multiple owners. The concerns also extend to the top sports economists. According to most of the fans, the club owners are interested in just making profits which in most cases benefits them, and not the sole purpose of the club's performance. Additionally, the top economists in the sports sector who were involved in analyzing the team's statement were in a dilemma to understand if the team makes more money while losing or if it should make even more money while winning. However, given that they focus on winning, some other additional considerations include increasing the payroll which shall also set different revenue gate levels. However, some economists like Roger Noll from Stanford University noted, probably there would be less profitability for the Pirates if they tried enhancing the team substantially" [3].

According to the report that was offered by the president of the team Frank Connelly in 2007-08, he noted that most of the revenue that they collect in several ways that are aimed at creating winners which include "scouting; amateur draft choices; a new Dominican Republic academy that cost more than $5 million; player development; and, an expensive new computer system used in player evaluation" [3].

3   Revenue of the Pittsburgh Pirates (MLB) from 2001 to 2021

The revenue of the Pittsburgh Pirates [4] according to MLB has generally been increasing from 2001 to 2019. There was a great loss in the year 2020. The drop was from $273 million in 2019 to $116 million in 2020. In the following year 2021, the revenue of the club increased abruptly from $116 to $258 million. The drop can be associated with the manifestation of the COVID-19 pandemic that led to all sporting activities being abolished because there was no physical interaction between people [3]. This means the team depended on limited sources of revenue income like online TV, and websites, and there were fewer investments like in selling their merchandise to the customers.

The trend shows that the team has been gaining regardless of the losses that it has been recording which still raises the question of 'does the team lose to gain more revenue' and in case the team decided to be winning, would it gain more or it would lose its consistent track of increasing trend of the revenue? However, since the team is associated with a low payroll, it is assumed that most teams take this lane to save more of their money wlalshich could in the end show an increasing trend in their revenue [5].

However, it is not ethical because they are not only demoralizing the team but also attracting less experienced players. The less experienced players getting low pay may keep the team low in its performance.

4   Contemporary Moneyball Theory: Pitch Framing

Pittsburgh Pirates have utilized a skill that hasn't been used to measure the capability of players before - the Pirates used pitch-framing data to identify catchers with this skill, Framing refers to the method in which the pitched ball is received from the pitcher for presenting the pitch to the umpire in an increasing likelihood manner; hence the pitch ball being called a strike. Pirates trained all their catchers to excel at getting extra called strikes for the Pirates pitchers. A catcher's pitch framing skills are quantified as "Framing Runs" across a full season, because getting the umpire to call more strikes brought a huge amount of value in that pitch framing translating runs into wins. Due to the advent of the big data era, more and more accurate measurement methods have emerged, so Pittsburgh uses valuable data in pitch framing to find several notably successful players. Several reports recognized it.

From 2013 to 2015, was the most successful period in the history of the Pirates. Andrew McCutchen won the MVP award for the Pirates with 8.1 WAR and $4.5 million in salaries. It is in 2013, 185 hits, a power speed of 23.6 (3rd), 12 intentional walks and 78 walks (4th), 97 runs (6th) 38 doubles and 121 singles, 21 home runs (7th), 84 RBIs, and 27 stolen bases (the fifth straight year with twenty or more stolen bases). He led all NL center fielders on defense with 3 double plays and was 3rd with 11 assists. And five players including All-Stars like Francisco Liriano (3.0 WAR and $1 million in salary) and Starling Marte (5.0 WAR and $500,000 in salary) provide value.

5   Top Pirate Catchers

Pittsburgh Pirates is appreciated as one of the oldest teams in baseball since their start of playing professionally in 1882 and it is also appreciated as one of the members who were in the founding team of the American Association. Since then, there are a good number of people who have become legends in the Pittsburgh Pirates uniform serving as the team catchers. They include men like Ralph Kiner, Honus Wagner, Willie Stargell, and Pie Traynor. In this section, we shall focus on the most talented catchers that have accrued their fame while playing for the team [6]. Among the top five according to catchersHome.com include Russell Martin with a rating of 55.1 which is referred to as Win Above Replacement (WAR). According to WAR, he is currently the best catcher to have played for the team so far. He also came up with the Los Angeles Dodgers which led to becoming famous in LA before he moved to New York Yankees and in Pittsburgh from 2013 to 2014.

The second catcher in Pittsburgh is Jason Kendall rated 37.1 by the WAR. He began to play for the team in 1992 and created his name known to the public in 1996. Unfortunately, he eventually left the team and later played for about five more teams with most of his career time being spent at Bucs. The third catcher is Smoky Burgess, 34.2

rating in his career according to the WAR. he played in the era of 1950s and spend 18 years in his career with six of the years being spent in Pirates. He is also recorded to have started five of the pirate games of the seven games that he played in the team in 1960. Manny Sanguillen is the fourth catcher that was rated 27.7 in his career at pirates by WAR. apart from the Oaklands A's solitary season, Manny Sanguillen spent all of his career period playing for the Pirates and he was very dependable to the team because of his productivity in the 1970s. He was a Panamanian. Lastly, Tony Peña (1980-1986) was rated 23.9 by WAR. he was also a member of the Latino Baseball Hall of Fame (Salón de la Fama del Béisbol Latino) and a five-star player because of his solid defensive catching which led to winning four gloves.

In the appendix area, there are additional information and statistics that have been included from https://www.baseball-reference.com/.

6   Low payroll ranking teams are modeled around saving money

Huntington did an amazing job overhauling the amateur scouting department, among other parts of the organization that were overhauled. He increased the focus on the amateur international market by almost 100 percent. The Pirates had surprisingly good comparative results from their international ranks, mostly due to developing Starling Marte. In 2012, the Pirates promoted Marte from Indianapolis Indians to reach the major leagues. He hit a home run on the first pitch he faced in his major league career, The hit made Marte the third player in Pirates' franchise history to do so.

However, although they have had a high winning record during some periods, it's been rare lately for the Pirates to finish over 500. The Pirates started to face the competition with a negative attitude because they can keep the club running with very low overhead by using the revenue-sharing from the league to warrant income, even if they don't spend money on finding and hiring new talent players. Recent moves under Huntington made the Pirates always be criticized, with the trade bringing right-hander Chris Archer to Pittsburgh among the more widely panned deals. Huntington agreed to part with longtime top prospects Austin Meadows and Tyler Glasnow, in addition to highly regarded pitching prospect Shane Baz. The move was designed to bring an affordable, high-end starter with three-and-a-half seasons of club control to Pittsburgh, but Archer has struggled in the Steel City while Glasnow and Meadows look like foundational pieces for the Tampa Bay organization. These behaviors look like Huntington has focused on saving money for the club but not the winning record of the game.

There is a team that's had a history similar to the Pittsburgh Pirates, which is the Minnesota Twins. They also rank among the lowest in team payroll with only a projected payroll of approximately $110 million for 2022, but they have had a much better ratio of wins than the Pittsburgh Pirates. Under manager Ron Gardenhire, the Minnesota Twins won the division six times and advanced to the division on the last day of the regular season in 2006 [7]. At that season, Ron Gardenhire dropped underperforming veterans like Tony Batista, Juan Castro, and Kyle Lohse, replacing them with talented rookies from the Rochester Red Wings. They had the Cy Young winner Johan

Santana, Santana won the pitching Major League Triple Crown in 2006, the first pitcher to do so since Dwight Gooden in 1985. He completed the season leading the majors in ERA (2.77) and strikeouts (245) and tied Chien-Ming Wang in wins (19). He became the first pitcher to win the triple crown with fewer than 20 wins and the first to win it with an ERA above 2.60. and a pitcher who out-performed him for half the year, Francisco Liriano, Liriano was awarded the 2005 International League Rookie of the Year. He led all minor league pitchers in strikeouts that year, with 204. The strong team organized by Gardenhire made the Minnesota Twins end up winning their division on the last day of the regular season.

7   The General Theory in Baseball

The game theory according to Swartz "is the study of strategic decision-making, which lends itself very well to baseball." Decision-making in the team depend on the decision level. This is because different levels are considered when making a decision. For instance, the player level, manager, or general manager as well as individual levels. Decisions that are made at a personal level are influenced highly by some things like personal beliefs, actions that need to be taken, personal preferences, and interests among others. All these considerations can be understood by the understanding of the game theory [8].

The primary difference between other economies and game theory is the incorporation of the actions of other people at the individual level which also influences one own decision. Strategy in a game theory is defined by the available options for the player at any given time [9]. The options of the employers that they choose are influenced by the known information at that particular level. It is important however to understand the game theory and concepts because they help in coming up with the best responses which can be referred to in the incorporation in Nash Equilibrium [8]. In Nash equilibrium, the outcome of the game is in such a way that the players have responded the best to their opponents' strategies. In this case, no team regrets the strategy that they have employed.

The Yankees are the representation of general theory in baseball because it runs a high rank of payrolls and a winning record. In 2020, the franchise had a team payroll of $122 million, and this figure climbed to $223 million by the end of 2021. They spent a lot of money to hire more talented and capable players, like Mark Teixeira, and Didi Gregorius, thus ensuring their game-winning percentage, while at the same time winning the game will give the player a better reputation and audience, attract sponsors, increase attendance of games and therefore increase revenue [10].

But as a comparative, it's not that hard to find that teams with low payrolls also have their own special set of survival rules. From the above two teams, it can be concluded that teams with low payrolls can still survive in the MLB because the subsidy and revenue sharing of the league is enough to allow them to keep their basic expenses of the teams. They use data to find those low-paid but capable players like pitch framing or Moneyball. At the same time, they purchase free agents with more trades or find

cheaper new rookies [10]. Besides, It is also their best choice to give up veterans timely who are already incapable, because they do not have more expenses to support them.

8   Conclusion

Pittsburgh Pirates have one of the lowest baseball payrolls. The management was given only a $15 million budget in 2013 to bring in more baseball talent. Under Neal Huntington, the Pittsburgh Pirates started to find those undervalued players who could be brought into the team at lower salaries. Pittsburgh Pirates made about $29.4 million between 2007 and 2008. The team has been losing consecutively but is assumed to be making a huge amount of money. According to the North American Sports Economist Association's president, David Berri, the numbers are an indication of why fans suspect they're taking money from baseball and keeping it rather than spending it on players. According to the president of the team Frank Connelly in 2007-08, most of the revenue that they collect is aimed at creating winners which include "scouting, amateur draft choices and player development". Pittsburgh Pirates' revenue dropped from $273 million in 2019 to $116 million in 2020. The drop can be associated with the manifestation of the COVID-19 pandemic that led to all sporting activities being abolished because there was no physical interaction between people. Since the team is associated with a low payroll, it is assumed that most teams take this lane to save more of their money which could in the end show an increasing trend in their revenue. It is not ethical because they are demoralizing the team and attracting less experienced players. Pittsburgh Pirates used pitch-framing data to identify catchers with this skill. Andrew McCutchen won the MVP award for the Pirates with 8.1 WAR and $4.5 million in salaries from 2013 to 2015. Ralph Kiner, Honus Wagner, Willie Stargell, and Pie Traynor were also part of the team's founding team of the American Association in 1882. Since then, there are a good number of people who have become legends in the Pittsburgh Pirates uniform serving as the team catchers. Huntington overhauled the amateur scouting department, among other parts of the organization that were overhauled. The Pirates had surprisingly good results from their international ranks, mostly due to developing Starling Marte. Recent moves under Huntington have made the Pirates always be criticized. There is a team that's had a history similar to the Pittsburgh Pirates, which is the Minnesota Twins. The game theory according to Swartz "is the study of strategic decision-making, which lends itself very well to baseball" [8]. This is because different levels are considered when making a decision. Strategy in a game theory is defined by the available options for the player at any given time. The Yankees are the representation of general theory in baseball because it runs a high rank of payrolls and a winning record. In 2020, the franchise had a team payroll of $122 million, and this figure climbed to $223 million by 2021. But as a comparison, it's not hard to find teams with low payrolls also have their own special set of survival rules.

9   Appendix

Below are some of the important statistics of the discussed players in the paper. All the data was collected from https://www.baseball-reference.com/ and there is much more about the players including their payment over the period over time arranged by the team they were playing.

Player Value--Batting WAR Explained (v2.2): 8+ MVP, 5+ A-S, 2+ Starter, 0-2 Sub, < 0 Repl   Share & Export ▾   Glossary

Year	Age	Tm	Lg	G	PA	Rbat	Rbaser	Rdp	Rfield	Rpos	RAA	WAA	Rrep	RAR	WAR	waaWL%	162WL%	oWAR	dWAR	oRAR	Salary	Pos	Awards
2006	23	LAD	NL	121	468	0	1	0	0	8	8	0.7	15	22	2.1	.506	.505	2.1	0.7	22		*2/HD	RoY-9
2007 ★	24	LAD	NL	151	620	14	-3	0	18	9	39	3.7	19	58	5.6	.525	.524	3.8	2.7	40	$387,500	*2/HD	AS,GG,SS
2008 ★	25	LAD	NL	155	650	8	2	1	1	10	22	2.0	20	42	3.9	.514	.514	3.9	1.0	41	$500,000	*25/HD	AS
2009	26	LAD	NL	143	588	-6	-1	-2	7	9	7	0.6	18	25	2.4	.505	.504	1.7	1.6	18	$3,900,000	*2/HD5	
2010	27	LAD	NL	97	387	-4	1	0	5	6	8	0.7	12	20	1.9	.508	.505	1.4	1.1	15	$5,050,000	2/H	
2011 ★	28	NYY	AL	125	476	-1	-1	-3	4	8	6	0.7	18	24	2.4	.505	.504	2.0	1.3	20	$4,000,000	*2/HD	AS
2012	29	NYY	AL	133	485	-3	1	0	-5	8	1	0.0	18	19	1.8	.500	.500	2.4	0.2	24	$7,500,000	*2/HD	
2013	30	PIT	NL	127	506	2	-2	1	14	8	23	2.5	16	39	4.1	.520	.516	2.5	2.4	25	$6,500,000	*2/H5D9	MVP-24
2014	31	PIT	NL	111	460	22	-2	-2	13	7	39	4.2	15	54	5.7	.539	.527	4.3	2.2	41	$8,500,000	2/HD	MVP-13
2015 ★	32	TOR	AL	129	507	9	-2	-3	0	7	12	1.4	18	30	3.2	.510	.508	3.2	0.9	30	$7,000,000	*2/HD4	AS,MVP-24
2016	33	TOR	AL	137	535	-2	0	-2	-3	8	0	0.1	19	19	2.0	.500	.500	2.3	0.6	22	$15,000,000	*2H/D45	
2017	34	TOR	AL	91	365	-1	0	-2	0	6	4	0.4	13	17	1.7	.504	.502	1.7	0.6	17	$20,000,000	25/H	
2018	35	TOR	AL	90	352	-1	-4	-1	1	5	1	0.2	13	13	1.4	.501	.501	1.3	0.8	12	$20,000,000	25/67	
2019	36	LAD	NL	83	249	-4	-1	0	1	4	0	-0.1	8	8	0.6	.500	.500	0.6	0.4	7	$20,000,000	2H/51	

Fig. 1. Russell Martin (Data source: https://www.baseball-reference.com/)

Player Value--Batting WAR Explained (v2.2): 8+ MVP, 5+ A-S, 2+ Starter, 0-2 Sub, < 0 Repl   Share & Export ▾   Glossary

Year	Age	Tm	Lg	G	PA	Rbat	Rbaser	Rdp	Rfield	Rpos	RAA	WAA	Rrep	RAR	WAR	waaWL%	162WL%	oWAR	dWAR	oRAR	Salary	Pos	Awards
1996 ★	22	PIT	NL	130	471	6	0	2	-11	8	4	0.2	15	19	1.6	.503	.503	2.8	-0.5	30	$109,000	*2/H	AS,RoY-3
1997	23	PIT	NL	144	572	13	-2	2	4	9	26	2.4	18	44	4.1	.518	.516	3.8	1.2	39	$235,000	*2/H	
1998 ★	24	PIT	NL	149	627	27	3	1	-1	9	39	3.7	20	59	5.6	.526	.524	5.8	0.7	60	$600,000	*2/H	AS
1999	25	PIT	NL	78	334	21	3	0	5	5	34	3.1	10	44	4.1	.541	.520	3.7	0.9	39	$1,250,000	2/H	
2000 ★	26	PIT	NL	152	678	28	-3	1	-6	9	29	2.5	21	50	4.5	.518	.517	5.2	0.2	56	$2,250,000	*2/H	AS
2001	27	PIT	NL	157	672	-14	-4	1	-8	7	-17	-1.9	21	4	0.1	.489	.489	1.0	-0.1	11	$5,100,000	*279/H	
2002	28	PIT	NL	145	605	-7	-2	3	3	9	5	0.4	19	24	2.3	.504	.503	2.0	1.1	21	$6,571,429	*2/H	
2003	29	PIT	NL	150	666	14	-3	1	5	10	27	2.5	20	47	4.5	.518	.517	4.0	1.4	41	$8,571,429	*2/H	
2004	30	PIT	NL	147	658	13	2	0	-4	10	21	2.0	20	41	3.9	.514	.513	4.3	0.5	45	$8,571,429	*2/H	
2005	31	OAK	AL	150	676	-6	3	-1	-4	10	2	0.2	24	26	2.5	.501	.501	2.9	0.6	30	$10,571,429	*2/D	
2006	32	OAK	AL	143	626	-4	0	-1	11	9	15	1.5	22	38	3.7	.510	.509	2.6	2.1	26	$11,492,454	*2/HD	
2007	33	OAK	AL	80	312	-20	-1	0	20	5	4	0.5	12	16	1.6	.505	.503	-0.4	2.6	-4	$12,858,194	2/7	
2007	33	CHC	NL	57	202	-1	0	1	-11	3	-9	-0.9	6	-3	-0.3	.485	.495	0.8	-0.8	9		2/H	
2008	34	MIL	NL	151	587	-17	0	2	19	10	13	1.1	18	31	2.9	.509	.508	1.0	2.9	12	$4,250,000	*2/H	
2009	35	MIL	NL	134	526	-15	0	-1	-7	9	-14	-1.5	16	3	0.1	.490	.491	0.9	0.1	10	$5,000,000	*2/H	
2010	36	KCR	AL	118	490	-19	-1	-2	1	8	-13	-1.3	18	6	0.5	.489	.492	0.4	1.0	5	$2,250,000	*2	

Fig. 2. Jason Kendall Stats (Data source: https://www.baseball-reference.com/)

Player Value--Batting WAR Explained (v2.2): 8+ MVP, 5+ A-S, 2+ Starter, 0-2 Sub, < 0 Repl   Share & Export ▼ Glossary

Year	Age	Tm	Lg	G	PA	Rbat	Rbaser	Rdp	Rfield	Rpos	RAA	WAA	Rrep	RAR	WAR	waaWL%	162WL%	oWAR	dWAR	oRAR	Salary	Pos	Awards
1949	22	CHC	NL	46	60	-2	0	0	2	0	1	0.1	2	3	0.3	.502	.500	0.1	0.2	1	$4,800	H/2	
1951	24	CHC	NL	94	239	-10	0	-1	-4	2	-12	-1.3	9	-3	-0.4	.487	.492	0.1	-0.2	1	$7,000	2H	
1952	25	PHI	NL	110	424	14	-1	1	4	4	21	2.2	16	37	3.9	.521	.514	3.5	0.8	33	$7,500	*2/H	
1953	26	PHI	NL	102	351	5	0	-2	0	3	6	0.5	13	19	1.8	.506	.503	1.9	0.3	19	$11,000	2/H	
1954 ★	27	PHI	NL	108	392	24	0	-1	-1	3	25	2.4	15	40	3.9	.523	.515	4.0	0.2	41	$12,000	2H	AS
1955 ★	28	PHI	NL	7	24	0	0	-1	0	0	-1	-0.1	1	0	0.0	.488	.499	0.0	0.0	0	$15,500	/2H	AS
1955 ★	28	PHI	NL	116	477	14	-1	0	-1	5	16	1.4	18	34	3.2	.514	.510	3.6	0.2	35		*2H	AS
1956	29	CIN	NL	90	258	5	0	2	0	2	10	0.9	10	20	1.9	.512	.507	2.1	0.1	20	$18,000	2H	
1957	30	CIN	NL	90	232	11	-2	0	-2	2	10	1.0	9	19	1.8	.511	.506	2.1	-0.1	21	$18,000	H2	
1958	31	CIN	NL	99	274	-2	-2	-2	3	3	1	0.1	10	11	1.1	.501	.501	0.8	0.6	8	$18,000	2H	
1959 ★	32	PIT	NL	114	418	9	-2	0	0	5	12	1.3	16	28	2.9	.511	.508	2.9	0.6	28	$20,000	2H	AS,AS
1960 ★	33	PIT	NL	110	376	6	-1	0	8	5	18	1.8	14	32	3.3	.517	.512	2.4	1.4	24		2H	AS,AS,MVP-20
1961 ★	34	PIT	NL	100	356	12	-1	0	3	5	18	1.8	14	32	3.2	.519	.512	2.9	0.6	29		2H	AS,AS
1962	35	PIT	NL	103	399	11	-2	0	1	5	15	1.6	15	30	3.1	.515	.510	3.0	0.7	29		2/H	
1963	36	PIT	NL	91	293	5	-1	-1	1	4	7	0.9	11	18	2.1	.509	.505	1.9	0.6	17		2H	
1964 ★	37	PIT	NL	68	188	-6	0	-1	-2	2	-7	-0.8	7	0	0.0	.488	.495	0.2	0.1	2		2H	AS
1964 ★	37	CHW	AL	7	7	1	0	0	0	0	1	0.1	0	1		.511	.500		0.0	1	$28,500	H	AS
1965	38	CHW	AL	80	89	3	0	1	1	0	5	0.5	3	8	0.8	.507	.503	0.7	0.1	7	$28,500	H/2	
1966	39	CHW	AL	79	80	3	0	0	0	0	4	0.4	3	6	0.7	.505	.503	0.7	-0.1	6		H/2	
1967	40	CHW	AL	77	76	-4	0	0	0	0	-4	-0.5	2	-2		.494	.497		-0.1	-2		H	

Fig. 3. Smoky Burgess (Data source: https://www.baseball-reference.com/)

Player Value--Batting WAR Explained (v2.2): 8+ MVP, 5+ A-S, 2+ Starter, 0-2 Sub, < 0 Repl   Share & Export ▼ Glossary

Year	Age	Tm	Lg	G	PA	Rbat	Rbaser	Rdp	Rfield	Rpos	RAA	WAA	Rrep	RAR	WAR	waaWL%	162WL%	oWAR	dWAR	oRAR	Salary	Pos	Awards
1967	23	PIT	NL	30	103	-4	0	0	0	1	-3	-0.3	4	1	0.1	.489	.498	0.0	0.2	1		2/H	
1969	25	PIT	NL	129	481	3	0	-1	6	7	15	1.8	16	32	3.5	.513	.511	2.7	1.5	26		*2H	
1970	26	PIT	NL	128	510	5	1	0	8	7	22	2.4	17	40	4.1	.518	.514	3.2	1.7	32		*2/H	MVP-11
1971 ★	27	PIT	NL	138	559	7	2	0	10	8	26	3.1	17	45	5.0	.522	.518	3.8	2.2	35		*2/H	AS,MVP-8
1972 ★	28	PIT	NL	136	547	1	-2	1	6	8	13	1.7	18	31	3.4	.511	.510	2.6	1.7	25		*2H/7	AS,MVP-16
1973	29	PIT	NL	149	619	-1	-2	1	9	4	10	0.9	20	30	2.9	.507	.507	2.0	1.3	21		29/H	
1974	30	PIT	NL	151	632	-6	0	1	4	10	9	0.9	21	30	2.9	.507	.506	2.4	1.5	26		*2/H	
1975 ★	31	PIT	NL	133	537	21	0	0	-2	9	28	2.9	17	45	4.7	.523	.519	4.8	0.7	47		*2/H	AS,MVP-16
1976	32	PIT	NL	114	426	-3	-2	-1	3	7	5	0.5	14	19	1.8	.505	.503	1.4	1.1	16		*2/H	
1977	33	OAK	AL	152	601	-17	-1	2	2	-1	-15	-1.4	22	7	0.6	.490	.491	0.4	0.2	5	$145,000	2D/3H	
1978	34	PIT	NL	85	235	-8	-1	0	-4	-1	-13	-1.4	8	-6	-0.8	.482	.491	-0.4	-0.5	-2		3H2	
1979	35	PIT	NL	56	80	-5	-1	0	-2	0	-7	-0.8	3	-5	-0.6	.486	.495	-0.4	-0.2	-3		H/23	
1980	36	PIT	NL	47	53	-3	-1	0	1	0	-3	-0.3	2	-1	-0.1	.494	.498	-0.2	0.1	-2		H/3	

Fig. 4. Manny Sanguillen (Data source: https://www.baseball-reference.com/)

Player Value--Batting WAR Explained (v2.2): 8+ MVP, 5+ A-S, 2+ Starter, 0-2 Sub, < 0 Repl   Share & Export ▼ Glossary

Year	Age	Tm	Lg	G	PA	Rbat	Rbaser	Rdp	Rfield	Rpos	RAA	WAA	Rrep	RAR	WAR	waaWL%	162WL%	oWAR	dWAR	oRAR	Salary	Pos	Awards
1980	23	PIT	NL	8	21	2	0	0	-1	0	1	0.1	1	1	0.1	.508	.500	0.3	-0.1	2		/2H	
1981	24	PIT	NL	66	223	-2	0	1	4	4	7	0.8	8	15	1.6	.512	.505	1.1	0.9	11		2/H	RoY-6
1982 ★	25	PIT	NL	138	523	3	-3	-2	6	9	14	1.6	18	32	3.4	.511	.510	2.6	1.7	26	$72,500	*2/H	AS
1983 ★	26	PIT	NL	151	580	8	-1	1	3	10	20	2.1	20	40	4.1	.515	.514	3.7	1.3	37	$365,000	*2/H	MVP-12,GG
1984 ★	27	PIT	NL	147	592	12	0	0	13	9	35	3.9	20	55	5.9	.526	.524	4.3	2.5	42	$700,000	*2/H	AS,GG
1985 ★	28	PIT	NL	147	587	-9	0	0	13	9	13	1.4	20	33	3.5	.510	.509	1.9	2.5	20	$1,075,000	*2/3	AS,GG
1986 ★	29	PIT	NL	144	565	5	-3	-1	7	9	18	1.9	19	37	3.8	.514	.512	3.0	1.7	30	$1,225,000	*2/H3	AS
1987	30	STL	NL	116	425	-26	0	-1	-4	7	-24	-2.5	15	-9	-1.1	.478	.485	-0.7	0.3	-5	$1,150,500	*2/3H9	
1988	31	STL	NL	149	546	-7	-1	1	3	9	5	0.4	19	23	2.4	.504	.503	2.0	1.3	20	$1,100,000	*2/H3	
1989 ★	32	STL	NL	141	464	-12	-5	-2	6	8	-4	-0.6	15	11	0.9	.497	.497	0.2	1.5	5	$1,220,000	*2/H9	AS
1990	33	BOS	AL	143	540	-7	-2	-2	0	9	-2	-0.2	19	17	1.7	.499	.499	1.8	0.9	17	$1,700,000	*2/H3	MVP-21
1991	34	BOS	AL	141	512	-20	-2	-3	3	8	-14	-1.4	18	5	0.4	.490	.491	0.1	1.2	2	$2,300,000	*2/H	GG
1992	35	BOS	AL	133	450	-19	1	-1	-1	8	-13	-1.3	17	4	0.3	.490	.492	0.4	0.8	5	$2,400,000	*2/H	
1993	36	BOS	AL	126	347	-30	-2	-1	2	6	-25	-2.5	13	-12	-1.3	.480	.485	-1.4	0.8	-14	$2,200,000	*2/HD	
1994	37	CLE	AL	40	126	2	-1	-1	-1	2	1	0.1	5	6	0.5	.502	.500	0.6	0.1	7	$400,000	2	
1995	38	CLE	AL	91	279	-7	-1	-1	-3	5	-8	-0.7	10	3	0.3	.492	.496	0.6	0.2	6	$516,666	2	
1996	39	CLE	AL	67	195	-18	-1	-1	3	3	-13	-1.1	7	-6	-0.5	.482	.493	-0.8	0.7	-9	$558,333	2	
1997	40	CHW	NL	31	76	-8	-1	-1	-6	1	-14	-1.4	3	-12	-1.1	.455	.491	-0.5	-0.4	-5	$425,000	2/5H	
1997	40	HOU	NL	9	22	-1	0	0	-1	0	-2	-0.2	1	-1	-0.1	.480	.499	0.0	-0.1	0		/2H	

Fig. 5. Tony Peña (1980-1986) (Data source: https://www.baseball-reference.com/)

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