Rockies 2017 - Week #8

Jim Reed (jdreed@q.com)

May 29, 2017

Figure 1: Mark Reynolds: First Baseman, Colorado Rockies. Mark is currently one of the top two hitters for the Rockies this year. He currently has an OBP of .401 and SLG of .587.

> "When I was up there at the plate, my purpose was to get on base anyway I could, whether by hitting or by getting hit." – Shoeless Joe Jackson

Table 1: NL West Standings

Tm	W	L	W-L%	GB
Colorado Rockies	33	19	.635	–
Los Angeles Dodgers	31	20	.608	1.5
Arizona Diamondbacks	31	21	.596	2.0
San Francisco Giants	22	30	.423	11.0
San Diego Padres	19	33	.365	14.0

Table 2: Current Rockies Results as of 2017-05-29

Wins	Losses	Win.Pct	Runs	Runs.Ag	Predicted Season Wins
33	19	63.462	267	222	96

Week #8

The Rockies have had a good week, winning four in a row and five of the last seven, since May 21. Cargo is showing signs of returning to form. To date (May 29, 2017), Cargo has OBP, SLG and OPS values of .308, .375 and .683, respectively. This is better than the performance reported for the same date in 2016: .298, .337 and .636. Things are moving in the right direction for Cargo. Trevor Story returned to the lineup on Wednesday, May 24, 2017.

Here is a synopsis of what is included this week.

- **Featured Article**
  - Career Statistics Comparison: Barry Bonds and Hank Aaron
- Colorado Rockies Dashboards
  - Rockies Win/Loss Graphs for 2017 and 2007
  - National and American League Standings
  - Game-by-Game Results
  - **Pythagorean Theorem** prediction of the number of wins.
  - Batting Statistics (for non-pitchers)
  - Pitching Statistics
  - Current Injuries **New**
- Topics for Future Articles
- Glossary
  - Batting Statistics
  - Pitching Statistics
  - Fielding Statistics

Most of the source data for this article can be found at URL http://baseball-reference.com.

Let me know what other special interest statistics you might like to see. Remember to refer to the Glossaries at the end of the document if unfamiliar with one or more of the statistic abbreviations in the tables.

Featured Article

Career Statistics Comparison: Barry Bonds and Hank Aaron

Barry Lamar Bonds

Figure 2: Barry Bonds played in MLB 1986 to 2007.

Barry Lamar Bonds was born on July 24, 1964 in Riverside, California. His father, Bobby Bonds, is a formr major league baseball player. Bobby played fourteen years in the majors with various teams in both the American and National leagues. His longest stint was with the San Francisco Giants (1967-74).

Barry Bonds was a multi-sport athelete in high scool, playing baseball, basketball and football. He batted .467 his senior year and was named prep All-American. Wikipedia.

Bonds was drafted by the San Francisco Giants but he and the franchise could not come to an amicable agreement on salary. Bonds' minimum to go pro was $75,000. The Giants highest offer was $70,000. So, he decided to go college.

Bonds attended Arizon State University. After college, the Pittsbugh Pirates drafted Bonds. He played for the Pirates from 1986 until 1992. As a free agent in 1993, Bonds signed with the San Francisco Giants for whom he played for the remainder of his career (1993-2007).

In this article we will focus on Barry Bonds and his phenomenal baseball career. Among other records, Bonds is the MLB leader in the most career home runs, 762. He holds the single season record for the most home runs, 73, set in 2001. It is clear that Bonds was an extrodinary baseball player on both offense and defense.

To show how extraordinary Bonds really was, it is instructive to compare Bonds with another baseball great. For this comparison, we will use one of the all-time great hitter, Hank Aaron.

Bonds Batting Statistics by Year

Table 3: Bonds Batting Statistics by Year

Year	Age	G	AB	R	H	2B	3B	HR	RBI	SB	CS	BB	SO	Avg	SLG	OBP	OPS
1986	21	113	413	72	92	26	3	16	48	36	7	65	102	0.223	0.416	0.274	0.691
1987	22	150	551	99	144	34	9	25	59	32	10	54	88	0.261	0.492	0.263	0.755
1988	23	144	538	97	152	30	5	24	58	17	11	72	82	0.283	0.491	0.293	0.784
1989	24	159	580	96	144	34	6	19	58	32	10	93	93	0.248	0.426	0.289	0.715
1990	25	151	519	104	156	32	3	33	114	52	13	93	83	0.301	0.565	0.322	0.886
1991	26	153	510	95	149	28	5	25	116	43	13	107	73	0.292	0.514	0.329	0.842
1992	27	140	473	109	147	36	5	34	103	39	8	127	69	0.311	0.624	0.363	0.987
1993	28	159	539	129	181	38	4	46	123	29	12	126	79	0.336	0.677	0.360	1.037
1994	29	112	391	89	122	18	1	37	81	29	9	74	43	0.312	0.647	0.332	0.979
1995	30	144	506	109	149	30	7	33	104	31	10	120	83	0.294	0.577	0.345	0.922
1996	31	158	517	122	159	27	3	42	129	40	7	151	76	0.308	0.615	0.372	0.987
1997	32	159	532	123	155	26	5	40	101	37	8	145	87	0.291	0.585	0.358	0.943
1998	33	156	552	120	167	44	7	37	122	28	12	130	92	0.303	0.609	0.347	0.956
1999	34	102	355	91	93	20	2	34	83	15	2	73	62	0.262	0.617	0.317	0.934
2000	35	143	480	129	147	28	4	49	106	11	3	117	77	0.306	0.688	0.352	1.039
2001	36	153	476	129	156	32	2	73	137	13	3	177	93	0.328	0.863	0.411	1.274
2002	37	143	403	117	149	31	2	46	110	9	2	198	47	0.370	0.799	0.461	1.260
2003	38	130	390	111	133	22	1	45	90	7	0	148	58	0.341	0.749	0.418	1.166
2004	39	147	373	129	135	27	3	45	101	6	1	232	41	0.362	0.812	0.494	1.306
2005	40	14	42	8	12	1	0	5	10	0	0	9	6	0.286	0.667	0.328	0.995
2006	41	130	367	74	99	23	0	26	77	3	0	115	51	0.270	0.545	0.368	0.913
2007	42	126	340	75	94	14	0	28	66	5	0	132	54	0.276	0.565	0.398	0.963

Hank Aaron

Figure 3: Hank Aaron played 21 years for the Atlanta Braves and two years for the Milwaukee Brewers.

Henry Louis "Hank" Aaron was born February 5, 1934. He spent much of his young life in and around Mobile, Alabama. Hank Aaron played for twenty-three seasons in MLB, twenty-one seasons for the Atlanta Braves (NL) and two years for the Milwaukee Brewers (AL). Aaron holds many MLB records:

- Most seasons as an All-Star and most All-Star Games (25)
- Most career RBIs (2,297)
- Extra-base hits (1,477)
- Total bases (6,856)

Aaron holds second place in records for career home runs (755) and at-bats (12,364). He holds the third-place record career games played (3,298)

Hank Aaron Batting Statistics by Year

Table 4: Aaron Batting Statistics by Year

Year	Age	G	AB	R	H	2B	3B	HR	RBI	SB	CS	BB	SO	Avg	SLG	OBP	OPS
1954	20	122	468	58	131	27	6	13	69	2	2	28	39	0.280	0.447	0.252	0.699
1955	21	153	602	105	189	37	9	27	106	3	1	49	61	0.314	0.540	0.282	0.822
1956	22	153	609	106	200	34	14	26	92	2	4	37	54	0.328	0.558	0.278	0.836
1957	23	151	615	118	198	27	6	44	132	1	1	57	58	0.322	0.600	0.292	0.892
1958	24	153	601	109	196	34	4	30	95	4	1	59	49	0.326	0.546	0.297	0.843
1959	25	154	629	116	223	46	7	39	123	8	0	51	54	0.355	0.636	0.300	0.936
1960	26	153	590	102	172	20	11	40	126	16	7	60	63	0.292	0.566	0.278	0.844
1961	27	155	603	115	197	39	10	34	120	21	9	56	64	0.327	0.594	0.292	0.886
1962	28	156	592	127	191	28	6	45	128	15	7	66	73	0.323	0.618	0.301	0.919
1963	29	161	631	121	201	29	4	44	130	31	5	78	94	0.319	0.586	0.305	0.891
1964	30	145	570	103	187	30	2	24	95	22	4	62	46	0.328	0.514	0.303	0.817
1965	31	150	570	109	181	40	1	32	89	24	4	60	81	0.318	0.560	0.294	0.854
1966	32	158	603	117	168	23	1	44	127	21	3	76	96	0.279	0.539	0.285	0.824
1967	33	155	600	113	184	37	3	39	109	17	6	63	97	0.307	0.573	0.290	0.863
1968	34	160	606	84	174	33	4	29	86	28	5	64	62	0.287	0.498	0.280	0.779
1969	35	147	547	100	164	30	3	44	97	9	10	87	47	0.300	0.607	0.313	0.920
1970	36	150	516	103	154	26	1	38	118	9	0	74	63	0.298	0.574	0.304	0.878
1971	37	139	495	95	162	22	3	47	118	1	1	71	58	0.327	0.669	0.318	0.987
1972	38	129	449	75	119	10	0	34	77	4	0	92	55	0.265	0.514	0.319	0.833
1973	39	120	392	84	118	12	1	40	96	1	1	68	51	0.301	0.643	0.320	0.962
1974	40	112	340	47	91	16	0	20	69	1	0	39	29	0.268	0.491	0.275	0.767
1975	41	137	465	45	109	16	2	12	60	0	1	70	51	0.234	0.355	0.275	0.630
1976	42	85	271	22	62	8	0	10	35	0	1	35	38	0.229	0.369	0.262	0.631

Carreer Statistics for Aaron and Bonds

Table 5: Aaron and Bonds Carreer Statistics

Name	Yrs	G	AB	R	H	2B	3B	HR	RBI	BB	SO	SB	Avg	SLG	OBP	OPS
Aaron	23	3298	12364	2174	3771	624	98	755	2297	1402	1383	240	0.305	0.555	0.293	0.847
Bonds	22	2986	9847	2227	2935	601	77	762	1996	2558	1539	514	0.298	0.607	0.356	0.963

Below is a scatter plot of Barry's batting average for each season of his career. The size of the sample points corresponds to his OPS for that season. OPS is the sum of his On base Percentage (OBP) and his Slugging score (SLG).

Note the unique shape of the curve as he begins career reaches a peak in his late twenties, plateaus for several years with a significant dip when he 34 years old. Then, a miraculous surge in both his batting average as well his OPS performance starting at age 35.

At 36 (2001) he turns in his most productive season, hitting a record 73 home runs, batting .328, OBP of .863 and SLG of .411. His OPS was 1.274. The year after, Bonds hit a career high of .370.

Bonds played until 2007, age 42. His batting average had fallen to .276 but achieved a very respectable .963 OPS.

To conclude, both the shape of the overall batting average curve as well as the magnitude of the surge late in Bonds' career are **atypical.** I leave it up the reader to interpret the cause and significance of these data.

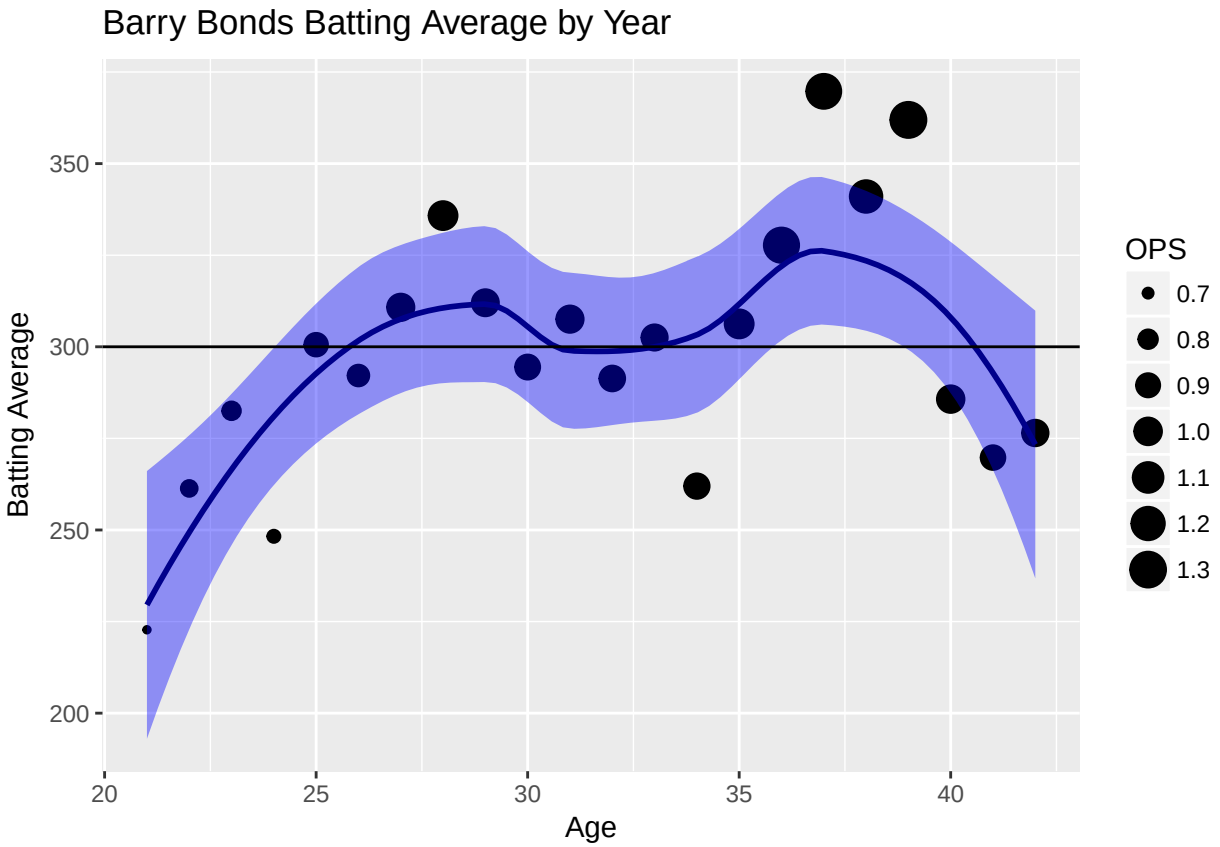


Figure 4: Barry Bonds - Batting Average by Year

Hank Aaron

Hank Aaron, active in MLB 1954 to 1976, was not a contemporary of Barry Bonds, but his profile is one of the prototypical great hitter. He grew to his peak in his late twenties and then experienced a gradual decline over his remaining years in baseball. In the book *Analyzing Baseball Data with R* by Max Marchi and Jim Albert, the authors characterize this a "career trajectory" and model it as a quadratic equation of the form:

$$A + B(Age - 30) + C(Age - 30)^2$$

The values of A, B and C are chosen to best fit the model to the players batting performance.

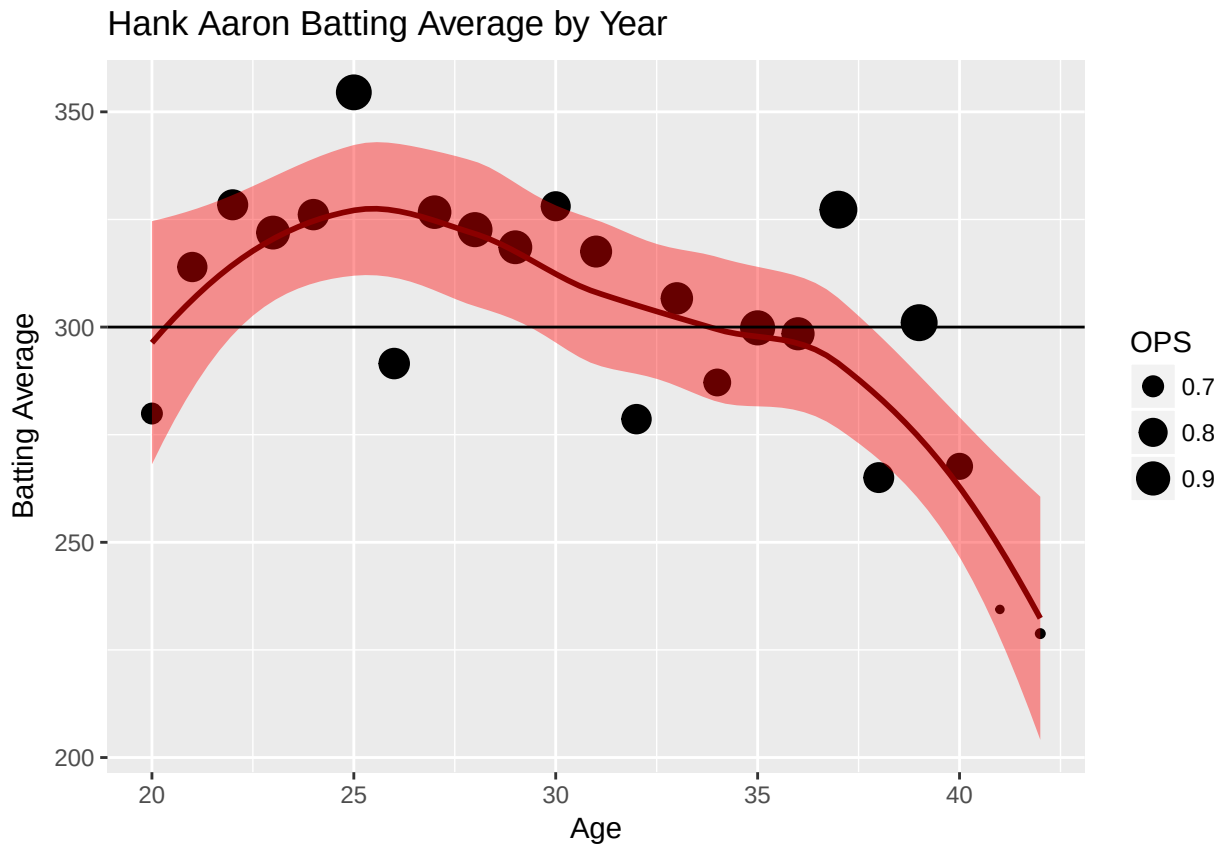


Figure 5: Hank Aaron - Batting Average by Year

Marchi & Albert Career Trajectory Models for Aaron and Bonds

As discussed above, Marchi and Albert describe a player's offensive career trajectory as a quadratic curve rising in the first part of the player's career. Reaching an apogee at about age thirty, the usual performance curve gradually declines. The graph below shows two very different players. While Hank Aaron's trajectory is more typical, Barry Bonds' generally improves over his entire career. Examining the graph below, if you mentally remove the data points from age 35-38, Bonds trajectory would be more like Aaron's.

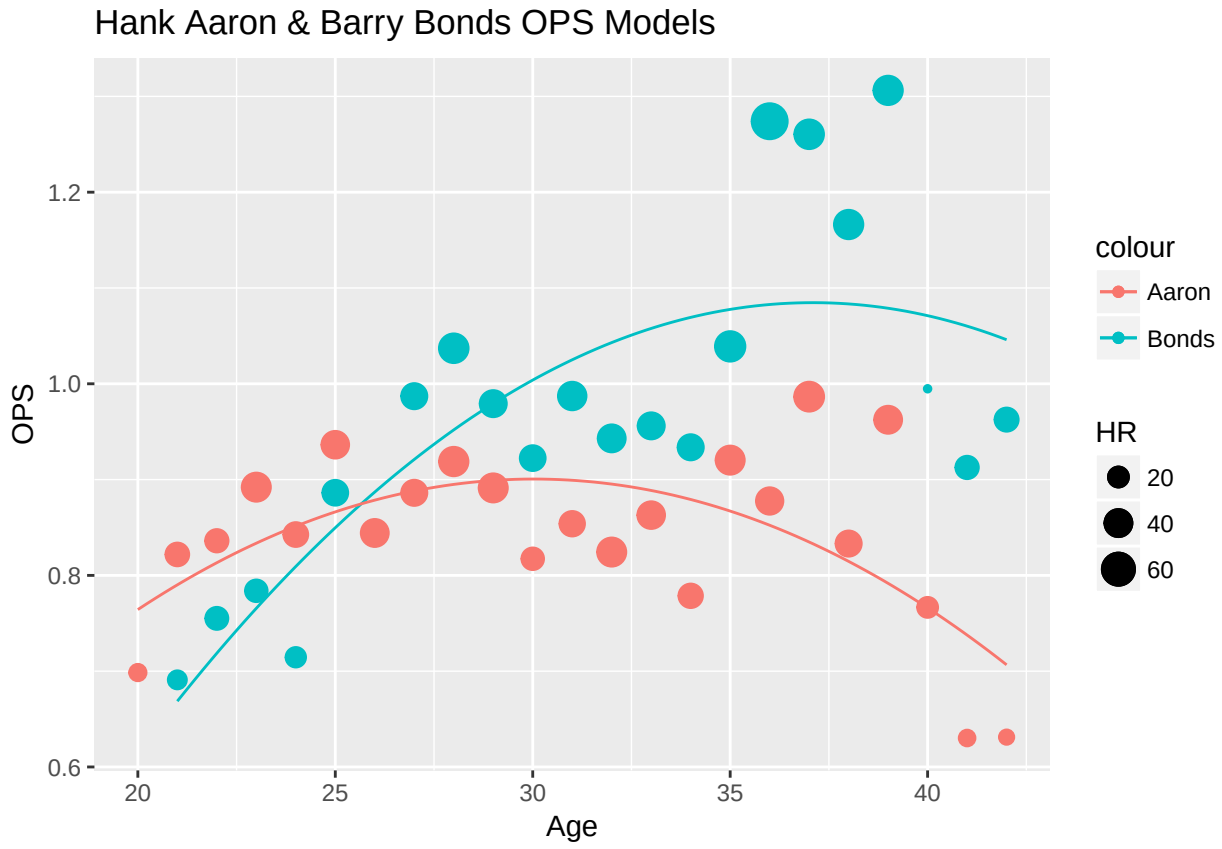


Figure 6: Bonds and Aaron Trajectory Models with OPS Values by Age.

Again, notice the general shape of Hank Aaron's cumulative batting average; it increases until about age 30 years and then gradually decreases. On the other hand, Bonds curve increases throughout his career, taking a maked improveed rate of change at age 35 years.

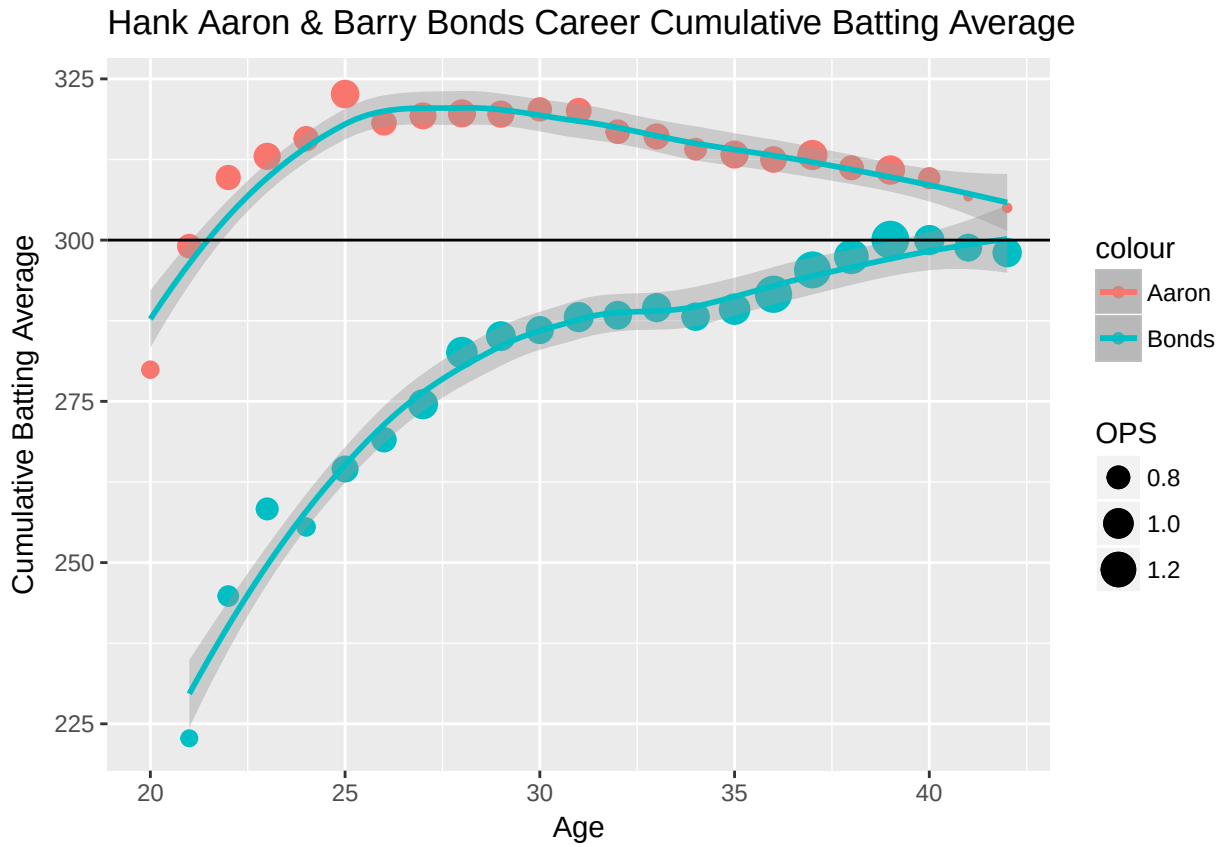


Figure 7: Hank Aaron & Barry Bonds - Lifetime Cumulative Batting Averages

Aaron & Bonds Cumulative Home Run Production

Hank Aaron does exceed Barry Bonds in cumulative home runs for most of his career when you look at their respcetive careers by age. Bonds begins to close the gap when he reaches the age of 35. He surpasses Aaron in total number of home runs in his last season, age 42. Bonds, of course, still holds the career home run record of 762. Before Bonds, Hank Aaron held the home run record for 33 years. The only other player to hit over 700 home runs is Babe Ruth whose total is 714. Ruth's record stood for 34 years.

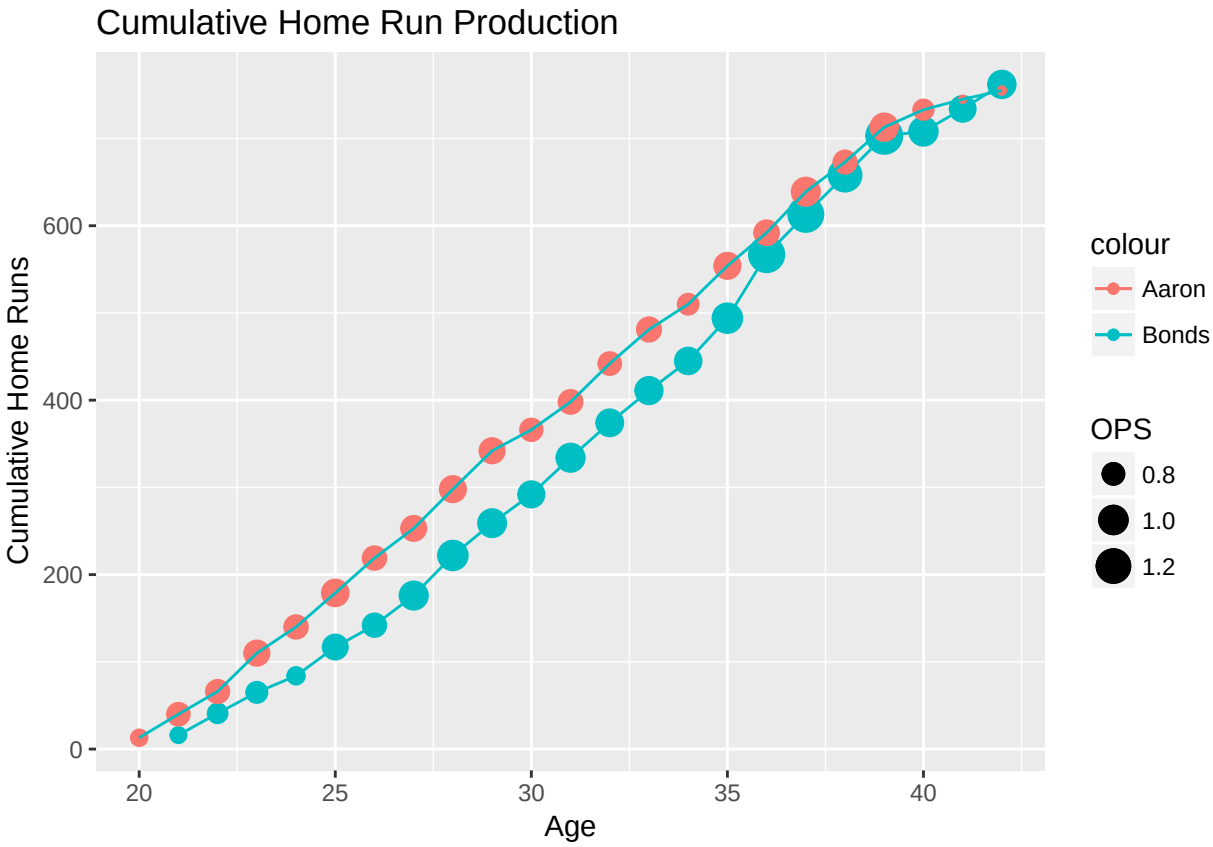


Figure 8: Aaron & Bonds Cumulative Home Run Production

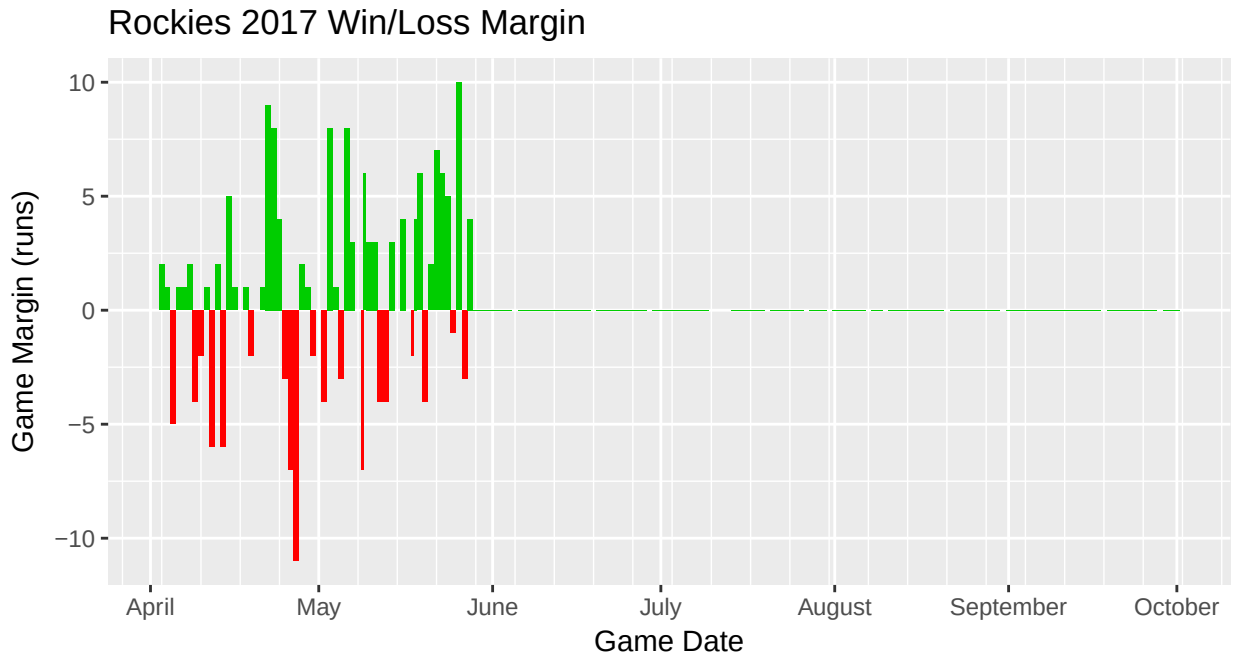
I hope you enjoyed this statistical journey through a small corner of baseball history. If you appreciate the power of statistical graphics applied to baseball, please let me know. You can reach me at jdreed@q.com. Please include "baseball" or "sabermetrics" in the subject line of your email.

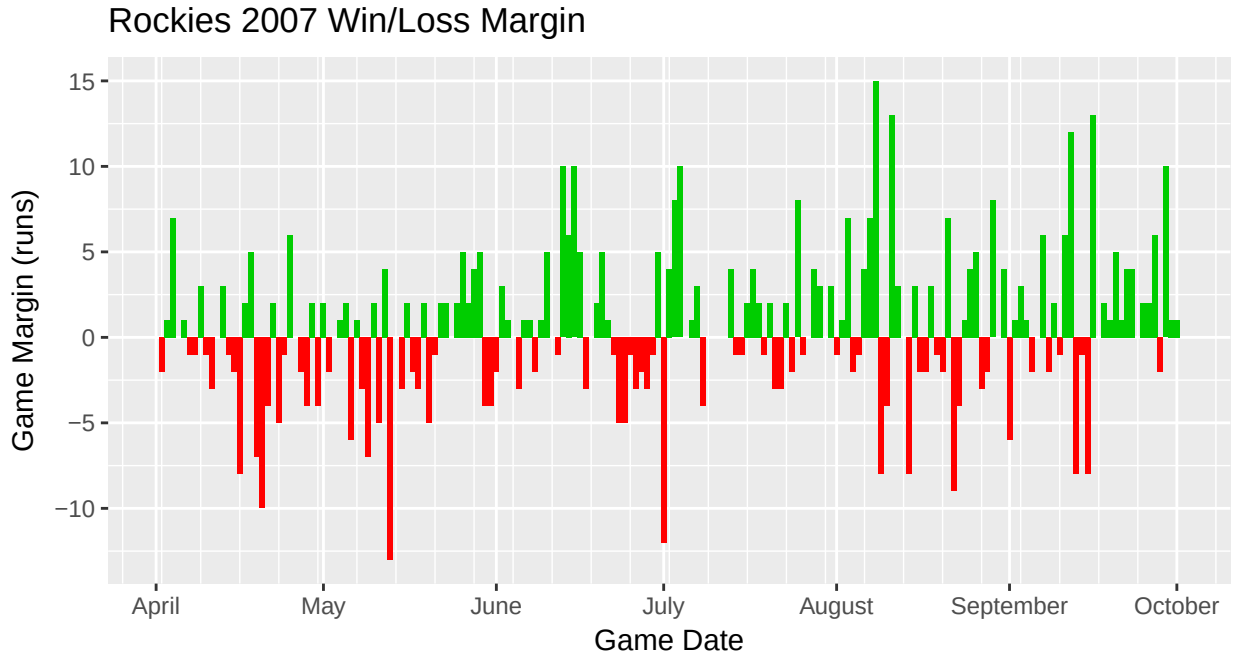
Rockies Dashboard

Win Loss Margin

One of the many ways to visualize a teams performance is to show wins and losses as the margin of the win (positive) or loss (negative). In the graphs below, we show the current season performance. For emphasis, wins are displayed as green (above the zero) and losses as red (below).

Following the current season's graph, I have included the Win/Loss margin chart for our benchmark season of 2007 when the Rockies won the National League pennant.





National League Standings

Table 6: NL East Standings

Tm	W	L	W-L%	GB
Washington Nationals	30	19	.612	–
Atlanta Braves	21	27	.438	8.5
New York Mets	21	27	.438	8.5
Miami Marlins	18	30	.375	11.5
Philadelphia Phillies	17	31	.354	12.5

Table 7: NL Central Standings

Tm	W	L	W-L%	GB
Milwaukee Brewers	27	23	.540	–
St. Louis Cardinals	24	23	.511	1.5
Chicago Cubs	25	24	.510	1.5
Cincinnati Reds	24	25	.490	2.5
Pittsburgh Pirates	23	28	.451	4.5

Table 8: NL West Standings

Tm	W	L	W-L%	GB
Colorado Rockies	33	19	.635	–
Los Angeles Dodgers	31	20	.608	1.5
Arizona Diamondbacks	31	21	.596	2.0
San Francisco Giants	22	30	.423	11.0
San Diego Padres	19	33	.365	14.0

American League Standings

Table 9: AL East Standings

Tm	W	L	W-L%	GB
New York Yankees	29	18	.617	–
Boston Red Sox	27	22	.551	3.0
Baltimore Orioles	25	23	.521	4.5
Tampa Bay Rays	27	26	.509	5.0
Toronto Blue Jays	23	27	.460	7.5

Table 10: AL Central Standings

Tm	W	L	W-L%	GB
Minnesota Twins	26	20	.565	–
Cleveland Indians	25	23	.521	2.0
Chicago White Sox	23	26	.469	4.5
Detroit Tigers	23	27	.460	5.0
Kansas City Royals	21	28	.429	6.5

Table 11: AL West Standings

Tm	W	L	W-L%	GB
Houston Astros	35	16	.686	–
Los Angeles Angels of Anaheim	26	27	.491	10.0
Texas Rangers	25	26	.490	10.0
Oakland Athletics	22	27	.449	12.0
Seattle Mariners	22	29	.431	13.0

Rockies Game-by-Game Schedule/Results

Gm#	Day	Date	H/A	Opp	W/L	R	RA	Win	Loss	Save	D/N	Streak
1	Mon	Apr 3	A	MIL	W	7	5	Estevez	Marinez	Holland	D	+
2	Tue	Apr 4	A	MIL	W	6	5	Anderson	Davies	Holland	N	++
3	Wed	Apr 5	A	MIL	L	1	6	Peralta	Chatwood	Feliz	N	-
4	Thu	Apr 6	A	MIL	W	2	1	Dunn	Feliz	Holland	D	+
5	Fri	Apr 7	H	LAD	W	2	1	Freeland	Ryu	McGee	D	++
6	Sat	Apr 8	H	LAD	W	4	2	Dunn	Kershaw	Holland	N	+++
7	Sun	Apr 9	H	LAD	L	6	10	Maeda	Anderson		D	-
8	Mon	Apr 10	H	SDP	L	3	5	Diaz	Chatwood		N	–
9	Tue	Apr 11	H	SDP	W	3	2	Senzatela	Diaz	Holland	N	+
10	Wed	Apr 12	H	SDP	L	0	6	Lee	Freeland		D	-
11	Thu	Apr 13	A	SFG	W	3	1	Rusin	Bumgarner	Holland	N	+
12	Fri	Apr 14	A	SFG	L	2	8	Cueto	Anderson		N	-
13	Sat	Apr 15	A	SFG	W	5	0	Chatwood	Moore		D	+
14	Sun	Apr 16	A	SFG	W	4	3	Senzatela	Samardzija	Holland	D	++
15	Tue	Apr 18	A	LAD	W	4	3	Rusin	Ryu	Holland	N	+++
16	Wed	Apr 19	A	LAD	L	2	4	Kershaw	Anderson	Jansen	N	-
17	Fri	Apr 21	H	SFG	W	6	5	Chatwood	Cueto	Holland	N	+
18	Sat	Apr 22	H	SFG	W	12	3	Senzatela	Moore		N	++
19	Sun	Apr 23	H	SFG	W	8	0	Freeland	Samardzija		D	+++
20	Mon	Apr 24	H	WSN	W	8	4	Estevez	Romero		N	++++
21	Tue	Apr 25	H	WSN	L	12	15	Romero	Marquez		N	-
22	Wed	Apr 26	H	WSN	L	4	11	Roark	Chatwood		N	–
23	Thu	Apr 27	H	WSN	L	5	16	Gonzalez	Senzatela		D	—
24	Fri	Apr 28	A	ARI	W	3	1	Freeland	Ray	Holland	N	+
25	Sat	Apr 29	A	ARI	W	7	6	Estevez	Rodney	Holland	N	++
26	Sun	Apr 30	A	ARI	L-wo	0	2	Delgado	Lyles		D	-
27	Tue	May 2	A	SDP	L	2	6	Cahill	Chatwood		N	–
28	Wed	May 3	A	SDP	W	11	3	Senzatela	Weaver		N	+
29	Thu	May 4	A	SDP	W	3	2	Qualls	Hand	Holland	D	++
30	Fri	May 5	H	ARI	L	3	6	Greinke	Marquez	Rodney	N	-
31	Sat	May 6	H	ARI	W	9	1	Anderson	Corbin	Rusin	N	+
32	Sun	May 7	H	ARI	W	5	2	Chatwood	Walker	Holland	D	++
33	Tue	May 9 (1)	H	CHC	W	10	4	Senzatela	Arrieta		D	+++
34	Tue	May 9 (2)	H	CHC	L	1	8	Lackey	Freeland		N	-
35	Wed	May 10	H	CHC	W	3	0	Marquez	Hendricks	Holland	D	+
36	Thu	May 11	H	LAD	W	10	7	Hoffman	Ryu	Holland	N	++
37	Fri	May 12	H	LAD	L	2	6	Kershaw	Chatwood		N	-
38	Sat	May 13	H	LAD	L	0	4	Wood	Anderson		N	–
39	Sun	May 14	H	LAD	W	9	6	Senzatela	Urias	Holland	D	+
40	Tue	May 16	A	MIN	W	7	3	Freeland	Hughes	Holland	N	++
41	Thu	May 18 (1)	A	MIN	W	5	1	Marquez	Santana	Holland	D	+++
42	Thu	May 18 (2)	A	MIN	L	0	2	Berrios	Chatwood	Kintzler	N	-
43	Fri	May 19	A	CIN	W	12	6	Anderson	Bonilla		N	+
44	Sat	May 20	A	CIN	L	8	12	Wojciechowski	Dunn		D	-
45	Sun	May 21	A	CIN	W	6	4	Freeland	Arroyo	Holland	D	+
46	Mon	May 22	A	PHI	W	8	1	Hoffman	Eickhoff		N	++
47	Tue	May 23	A	PHI	W	8	2	Marquez	Eflin		N	+++
48	Wed	May 24	A	PHI	W	7	2	Chatwood	Hellickson		N	++++
49	Thu	May 25	A	PHI	L-wo	1	2	Gomez	Oberg		D	-
50	Fri	May 26	H	STL	W	10	0	Senzatela	Martinez		N	+

Gm#	Day	Date	H/A	Opp	W/L	R	RA	Win	Loss	Save	D/N	Streak
51	Sat	May 27	H	STL	L	0	3	Wainwright	Freeland	Oh	N	-
52	Sun	May 28	H	STL	W	8	4	Marquez	Lynn		D	+

The Rockies current record is 33 Wins and 19 Losses. So far, the Rockies have scored 267 runs and have had 222 runs scored against them.

Pythagorean Win-Loss Theorem

$$predictedW\% = \frac{R^k}{R^k + RA^k}$$

Using the commonly used values of k, the Rockies predicted wins for the 2017 are shown in the table below. Remember this statistic will vary widely over the course of the season.

Table 13: Predicted Wins for Entire 2017 Season

Wins (k=1.81)	Wins (k=1.83)	Wins (k=2.00)
94	95	96

Batting Statistics (non-pitchers)

Table 14: Rockies Batting Statistics (1 of 2).

Rk	Pos	Name	Age	G	AB	R	H	2B	3B	HR	RBI	SB	CS	BB
1	C	Wolters*	25	28	81	22	25	5	1	0	7	0	0	12
2	1B	Reynolds	33	48	175	31	56	5	0	13	43	1	1	21
3	2B	LeMahieu	28	52	200	25	56	9	1	2	17	3	3	19
4	SS	Story	24	38	127	21	24	8	0	7	17	1	0	20
5	3B	Arenado	26	51	198	35	57	17	1	12	34	1	0	17
6	LF	Parra*	30	42	129	20	36	3	0	6	23	0	2	4
7	CF	Blackmon*	30	51	212	37	70	11	7	12	45	4	3	11
8	RF	Gonzalez*	31	47	176	22	43	11	0	4	17	0	0	18
9	LF	Desmond	31	26	106	16	30	4	1	2	10	2	2	2
10	C	Garneau	29	22	68	5	14	7	0	1	6	0	0	4
11	UT	Amarista*	28	27	66	12	23	6	0	2	14	0	0	1
12	UT	Valaika	24	28	55	10	14	5	0	4	10	0	0	2
13	C	Hanigan	36	10	35	3	9	0	0	1	6	0	0	1
14	OF	Cardullo	29	15	28	2	4	0	0	0	3	0	0	3
15	IF	Adames#	25	12	13	1	0	0	0	0	0	0	0	1
16	LF	Tapia*	23	6	12	0	0	0	0	0	0	0	0	1

Table 15: Rockies Batting Statistics (2 of 2).

Rk	Pos	Name	Age	SO	BA	OBP	SLG	OPS	OPS+	TB	GDP	HBP	SH	SF	IBB
1	C	Wolters*	25	18	.309	.411	.395	.806	102	32	3	2	0	0	3
2	1B	Reynolds	33	46	.320	.394	.571	.965	136	100	5	1	0	1	0
3	2B	LeMahieu	28	30	.280	.351	.365	.716	79	73	5	3	1	0	0
4	SS	Story	24	51	.189	.299	.417	.717	76	53	2	0	0	0	0
5	3B	Arenado	26	35	.288	.348	.566	.914	122	112	8	3	0	3	1
6	LF	Parra*	30	24	.279	.301	.442	.743	81	57	3	1	0	2	0
7	CF	Blackmon*	30	45	.330	.366	.618	.984	138	131	0	2	3	2	0
8	RF	Gonzalez*	31	42	.244	.308	.375	.683	69	66	2	0	0	4	2
9	LF	Desmond	31	29	.283	.306	.396	.703	73	42	4	2	0	1	1
10	C	Garneau	29	24	.206	.260	.353	.613	50	24	1	1	1	0	0
11	UT	Amarista*	28	15	.348	.358	.530	.889	117	35	1	0	0	0	0
12	UT	Valaika	24	15	.255	.281	.564	.844	102	31	0	0	2	0	0
13	C	Hanigan	36	9	.257	.278	.343	.621	53	12	0	0	0	0	0
14	OF	Cardullo	29	7	.143	.250	.143	.393	2	4	0	1	0	0	0
15	IF	Adames#	25	6	.000	.071	.000	.071	-80	0	0	0	0	0	0
16	LF	Tapia*	23	5	.000	.077	.000	.077	-78	0	0	0	0	0	0

- * - bats left-handed, # - bats both, else - bats right, ? - unknown; OPS_lg for OPS+ does not include pitchers.

Pitching Statistics

Table 16: Rockies pitching statistics (1 of 2).

Rk	Pos	Name	Age	W	L	W-L%	ERA	G	GS	GF	CG	SHO	SV	IP	H	R
1	SP	Senzatela	22	7	1	.875	3.19	10	10	0	0	0	0	62.0	53	23
2	SP	Chatwood	27	4	6	.400	4.50	10	10	0	1	1	0	60.0	49	30
3	SP	Freeland*	24	5	3	.625	3.43	10	10	0	0	0	0	57.2	53	25
4	SP	Anderson*	27	3	4	.429	5.40	10	10	0	0	0	0	55.0	58	35
5	SP	Marquez	22	4	2	.667	3.76	7	7	0	0	0	0	40.2	42	17
6	CL	Holland	31	0	0		1.37	21	0	21	0	0	19	19.2	10	3
7	RP	Ottavino	31	0	0		2.61	22	0	0	0	0	0	20.2	14	6
8	RP	Oberg	27	0	1	.000	5.49	23	0	5	0	0	0	19.2	21	14
9	RP	McGee*	30	0	0		1.89	20	0	6	0	0	1	19.0	13	4
10	RP	Dunn*	32	2	1	.667	5.52	20	0	0	0	0	0	14.2	15	9
11		Rusin*	30	2	0	1.000	2.25	18	0	3	0	0	1	28.0	19	8
12		Lyles	26	0	1	.000	7.59	15	0	6	0	0	0	21.1	29	19
13		Hoffman	24	2	0	1.000	3.29	3	2	1	0	0	0	13.2	10	5
14		Estevez	24	3	0	1.000	7.30	14	0	3	0	0	0	12.1	15	11
15		Gray	25	0	0		4.38	3	3	0	0	0	0	12.1	11	6
16		Qualls	38	1	0	1.000	5.06	11	0	5	0	0	0	10.2	9	7
17		Carle	25	0	0		0.00	1	0	1	0	0	0	1.0	0	0

Table 17: Rockies pitching statistics (2 of 2).

Rk	Pos	Name	ER	HR	BB	IBB	SO	HBP	BK	WP	BF	ERA+	FIP	WHIP
1	SP	Senzatela	22	7	18	0	37	4	1	0	251	156	4.36	1.145
2	SP	Chatwood	30	9	31	0	49	0	2	3	245	111	4.89	1.333
3	SP	Freeland*	22	5	26	1	36	3	1	0	247	145	4.41	1.370
4	SP	Anderson*	33	12	18	0	56	2	2	2	237	92	4.91	1.382
5	SP	Marquez	17	4	14	2	35	1	0	1	178	133	3.68	1.377
6	CL	Holland	3	1	6	0	28	0	0	2	72	367	1.75	0.814
7	RP	Ottavino	6	1	13	0	24	1	0	2	87	193	3.36	1.306
8	RP	Oberg	12	1	10	1	19	1	0	3	89	92	3.43	1.576
9	RP	McGee*	4	1	5	0	27	0	0	1	76	266	1.65	0.947
10	RP	Dunn*	9	3	10	0	20	0	0	0	67	92	5.00	1.705
11		Rusin*	7	2	5	0	24	1	0	0	108	223	2.88	0.857
12		Lyles	18	5	5	0	17	2	0	1	97	66	5.46	1.594
13		Hoffman	5	2	2	0	17	0	0	0	53	154	2.87	0.878
14		Estevez	10	0	5	1	13	0	1	1	58	70	2.13	1.622
15		Gray	6	1	7	0	9	0	0	1	53	116	4.32	1.459
16		Qualls	6	2	3	0	4	0	0	0	44	101	5.55	1.125
17		Carle	0	0	0	0	1	0	0	1	4		1.02	0.000

* - throws left-handed

Current Injuries

	Name	Updated	Type	Details
1	Chad Bettis	March 26 2017	Illness	Bettis has been designated for the 60-day disabled list as he has been diagnosed with testicular cancer but is expected to return at some point during season as he has started chemotherapy.
2	David Dahl	May 08 2017	Ribs	Dahl is on the 10-day disabled list with a stress reaction of his sixth rib and is without a timetable for return.
3	Jon Gray	May 18 2017	Toe	Gray has been placed on the 10-day disabled list with a stress fracture in his left foot and is expected to be sidelined until the middle of June.
4	Tom Murphy	May 02 2017	Wrist	Murphy is on the 10-day disabled list while he recovers from a hairline fracture in his wrist. He is expected to be sidelined until sometime in June.

Table 18: Current Injuries

Topics for Future Articles

Here are a few suggestions, but I would prefer to hear from you, dear reader, on what interests you.

- Player Value - I am personally just getting familiar with this concept. Work In Progress (WIP)
- What is the OPS+ statistic and how is it calculated.
- Survey MLB ticket prices.
- A suggestion from a work colleague that we investigate what budding talent we have in the Rockies farm system. I will look into this and see what I can find.

Let me know what you would like to see in future articles. Send me email at jdreed@q.com.

Yours truly,

Jim Reed

Appendix

Glossary

Batting Statistics

Statistic Abbreviation	Definition
G	number of games (participated)
PA	plate appearances
AB	at bats
R	runs scored by player or team
RA	runs allowed
H	hits
2B	doubles
3B	triples
HR	home runs
RBI	runs batted in
BA	batting average
OBP	on-base percentage
SLG	slugging percentage
OPS	on-base percentage plus slugging percentage
OPS+	This statistic normalizes a player's OPS. It adjusts for small variables that might affect OPS scores (e.g., park effects).

Pitching Statistics

Pitching Statistic	Definition
Rk	Rank This is a count of the rows from top to bottom. It is recalculated following the sorting of a column.
Pos	Position
Name	Player Name
Age	Player's age at midnight of June 30th of that year
W	Wins
L	Losses
W-L%	Win-Loss Percentage W / (W + L) For players, leaders need one decision for every ten team games. For managers, minimum to qualify for leading is 320 games.
ERA	9 * ER / IP
G	Games Played or Pitched
GS	Games Started
GF	Games Finished
CG	Complete Game
SHO	Shutouts No runs allowed and a complete game.
SV	Saves
IP	Innings Pitched
H	Hits/Hits Allowed
R	Runs Scored/Allowed
ER	Earned Runs Allowed
HR	Home Runs Hit/Allowed
BB	Bases on Balls/Walks
IBB	Intentional Bases on Balls First tracked in 1955.
SO	Strikeouts
HBP	Times Hit by a Pitch.
BK	Balks
WP	Wild Pitches
BF	Batters Faced
ERA+	ERA+ 100*[lgERA/ERA] Adjusted to the player's ballpark(s).
FIP	Fielding Independent Pitching
WHIP	(BB + H)/IP For recent years, leaders need 1 IP per team game played
H9	9 x H / IP For recent years, leaders need 1 IP per team game played
HR9	9 x HR / IP For recent years, leaders need 1 IP per team game played
BB9	9 x BB / IP For recent years, leaders need 1 IP per team game played
SO9	9 x SO / IP For recent years, leaders need 1 IP per team game played
SO/W	SO/W or SO/BB For recent years, pitching leaders need 1 IP per team game played.

Fielding Statistics

Fielding Statistic	Definition
Name	Player Name Bold can mean player is active for this team or player has appeared in MLB * means LHP or LHB, \# means switch hitter, + can mean HOFer.
Age	Player's age at midnight of June 30th of that year
G	Games Played or Pitched
GS	– Games Started
CG	– Complete Game
Inn	– Innings Played in Field
Ch	– Defensive Chances Putouts + Assists + Errors
PO	– Putouts
A	– Assists
E	– Errors Committed
DP	– Double Plays Turned
Fld%	– Fielding Percentage (Putouts + Assists) / (Putouts + Assists + Errors)
Rtot	– Total Zone Total Fielding Runs Above Avg The number of runs above or below average the player was worth based on the number of plays made. This number combines the Rtz, Rdp,Rof, Rcatch numbers into a total defensive contribution. See the glossary section for a more complete explanation. Provided by BaseballProjection.com
Rtot/yr	– Total Zone Total Fielding Runs Above Avg per 1,200 Inn The number of runs above or below average the fielder was worth per 1,200 Innings (approx 135 games). This number combines the Rtz, Rdp, Rof, Rcatch numbers into a total defensive contribution. See the glossary section for a more complete explanation. Provided by BaseballProjection.com
Rdrs	– BIS Defensive Runs Saved Above Avg The number of runs above or below average the player was worth based on the number of plays made. This number combines the Rpm, Rbdp, Rbof, Rbcatch numbers into a total defensive contribution. Provided by Baseball Info Solutions
Rdrs/yr	– BIS Defensive Runs Saved Above Avg per 1,200 Inn The number of runs above or below average the fielder was worth per 1,200 Innings (approx 135 games). This number combines the Rpm, Rbdp, Rbof, Rbcatch numbers into a total defensive contribution. For pitchers, this is set to 200 Innings. Provided by Baseball Info Solutions
RF/9	– Range Factor per 9 Inn 9 * (Putouts + Assists) / Innings Played
RF/G	– Range Factor per Game (Putouts + Assists) / Games Played
PB	– Passed Balls
WP	– Wild Pitches
SB	– Stolen Bases
CS	– Caught Stealing

Fielding Statistic	Definition
CS%	– Caught Stealing Percentage CS / (SB + CS)
lgCS%	– League Caught Stealing Percentage League Expected CS / Players SB + Players CS
PO	– Pickoffs Runner picked off a base. May include cases they were safe on an error. Also includes Pickoff Caught Stealing plays.
Pos	Summary – Positions Played The positions either followed by the games played at that position or in order of games or innings played. For a single season, * indicates they played at least 2/3rds of the team games there Positions after / indicate less than ten games played at those positions. For career, a + sign means more than 300 games at that position and a - sign means less than 30 games.

Run date time: 2017-05-29 10:38:09