Rockies 2017 - Week #9

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Figure 1: Harry Ralston "Bud" Black (born June 30, 1957): Manager, Colorado Rockies.

"You look at teams that win. From the pitching side, you have to be successful on the mound. In this day and age, you just can't outslug teams." – Bud Black

Table 1: NL West Standings

Tm	W	L	W-L%	GB
Colorado Rockies	36	23	.610	–
Los Angeles Dodgers	35	23	.603	0.5
Arizona Diamondbacks	34	25	.576	2.0
San Diego Padres	23	35	.397	12.5
San Francisco Giants	23	35	.397	12.5

Table 2: Current Rockies Results as of 2017-06-05

Wins	Losses	Win.Pct	Runs	Runs.Ag	Predicted Season Wins
36	23	61.017	300	256	94

Week #9

The Rockies won three of seven games this week. After falling to second in the NL West briefly, they are on top again, leading the LA Dodgers by half a game. The Seattle Mariners dominated the Rockies wining three of the four-game series. Rockies pitchers Freeland, Chatwood and Hoffman had the wins.

Note, I had a few comments about the Barry Bonds article last week. It was suggested that I include Babe Ruth in the statistics. See the updated article below. Hope you enjoy seeing the Sultan of Swat included.

Here is a synopsis of what is included this week.

- **Featured Article**
  - Career Statistics Comparison: Aaron, Bonds and Ruth **Updated**
- 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
  - National League Team Standard Batting **New**
  - Current Injuries **Updated**
- 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: Hank Aaron, Barry Bonds and Babe Ruth

Hank Aaron

Figure 2: 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 3: 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

Barry Lamar Bonds

Figure 3: Barry Bonds played in MLB 1986 to 2007.

Barry Lamar Bonds was born on July 24, 1964 in Riverside, California.

Bonds Batting Statistics by Year

Table 4: 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

Babe Ruth

Figure 4: George Herman "Babe" Ruth Jr. played twenty-two seasons from 1914 through 1935. The Babe is considered by many as the greatest player of all time.

George Herman "Babe" Ruth Jr. was born February 6, 1895 at 216 Emory Street in Pigtown, a working-class section of Baltimore, Maryland.

Top Ten in MLB history in the following categories:

- 3rd on home run list – 714
- 10th in batting average – .342
- 2nd on RBI list – 2,213
- 1st on all-time slugging % – .690
- 2nd on all-time on-base % – .474
- 1st on all-time OPS – 1.164
- 4th on all-time runs list – 2,174
- 6th on all-time total bases list – 5,793
- 3rd on all-time walks list – 2,062

Babe Ruth Batting Statistics by Year

Table 5: Ruth Batting Statistics by Year

Year	Age	G	AB	R	H	2B	3B	HR	RBI	SB	CS	BB	SO	Avg	SLG	OBP	OPS
1914	19	5	10	1	2	1	0	0	2	0	0	0	4	0.200	0.300	0.167	0.467
1915	20	42	92	16	29	10	1	4	21	0	0	9	23	0.315	0.576	0.292	0.868
1916	21	67	136	18	37	5	3	3	15	0	0	10	23	0.272	0.419	0.257	0.676
1917	22	52	123	14	40	6	3	2	12	0	0	12	18	0.325	0.472	0.297	0.769
1918	23	95	317	50	95	26	11	11	66	6	0	58	58	0.300	0.555	0.326	0.881
1919	24	130	432	103	139	34	12	29	114	7	0	101	58	0.322	0.657	0.357	1.015
1920	25	142	457	158	172	36	9	54	137	14	14	150	80	0.376	0.849	0.413	1.262
1921	26	152	540	177	204	44	16	59	171	17	13	145	81	0.378	0.846	0.393	1.239
1922	27	110	406	94	128	24	8	35	99	2	5	84	80	0.315	0.672	0.343	1.015
1923	28	152	522	151	205	45	13	41	131	17	21	170	93	0.393	0.764	0.418	1.182
1924	29	153	529	143	200	39	7	46	121	9	13	142	81	0.378	0.739	0.393	1.132
1925	30	98	359	61	104	12	2	25	66	2	4	59	68	0.290	0.543	0.312	0.855
1926	31	152	495	139	184	30	5	47	150	11	9	144	76	0.372	0.737	0.399	1.136
1927	32	151	540	158	192	29	8	60	164	7	6	137	89	0.356	0.772	0.379	1.151
1928	33	154	536	163	173	29	8	54	142	4	5	137	87	0.323	0.709	0.366	1.075
1929	34	135	499	121	172	26	6	46	154	5	3	72	60	0.345	0.697	0.328	1.026
1930	35	145	518	150	186	28	9	49	153	10	10	136	61	0.359	0.732	0.383	1.115
1931	36	145	534	149	199	31	3	46	163	5	4	128	51	0.373	0.700	0.380	1.080
1932	37	133	457	120	156	13	5	41	137	2	2	130	62	0.341	0.661	0.385	1.046
1933	38	137	459	97	138	21	3	34	103	4	5	114	90	0.301	0.582	0.354	0.936
1934	39	125	365	78	105	17	4	22	84	1	3	104	63	0.288	0.537	0.364	0.901
1935	40	28	72	13	13	0	0	6	12	0	0	20	24	0.181	0.431	0.314	0.745

Carreer Statistics for Aaron, Bonds & Ruth

Table 6: Aaron, Bonds & Ruth 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
Ruth	22	2503	8398	2174	2873	506	136	714	2217	2062	1330	123	0.342	0.690	0.370	1.060

Marchi & Albert Career Trajectory Models for Aaron,Bonds & Ruth

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 three very different players. While Hank Aaron's and Babe Ruth's trajectories are 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 and Ruth's.

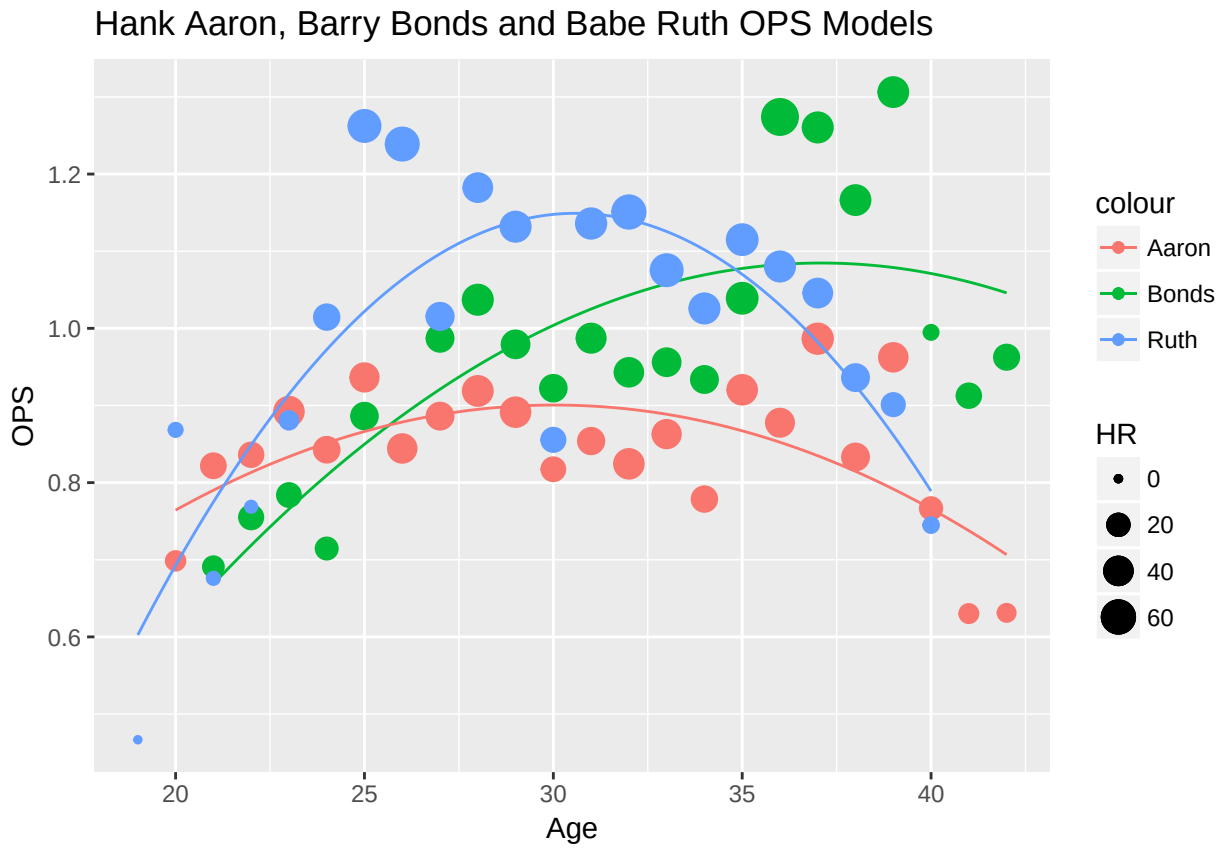


Figure 5: Bonds and Aaron Trajectory Models with OPS Values by Age.

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

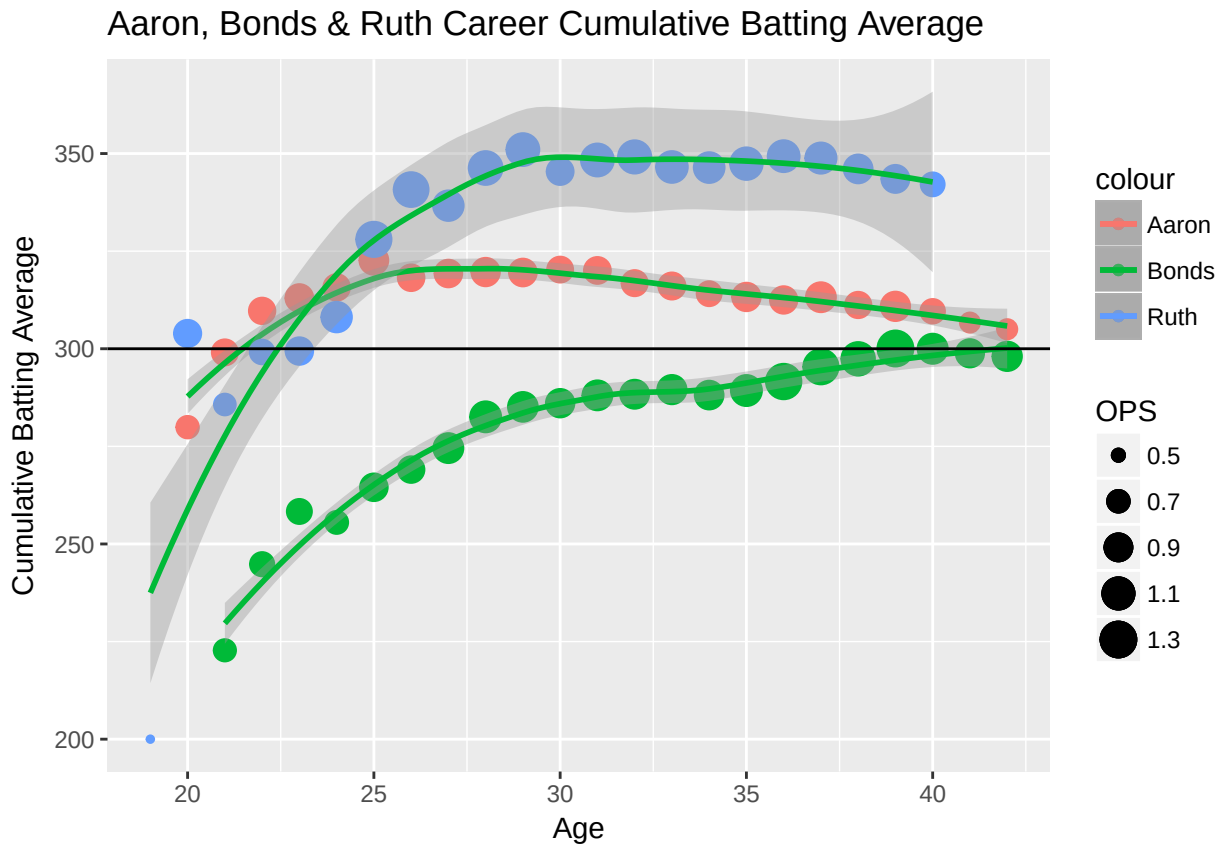


Figure 6: Aaron, Bonds & Ruth - Lifetime Cumulative Batting Averages

Aaron, Bonds & Ruth Cumulative Home Run Production

Hank Aaron exceeds Barry Bonds in cumulative home runs for most of his career when you look at their respective 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. Babe Ruth's HR curve here for context and completeness. Ruth's record stood for 34 years.

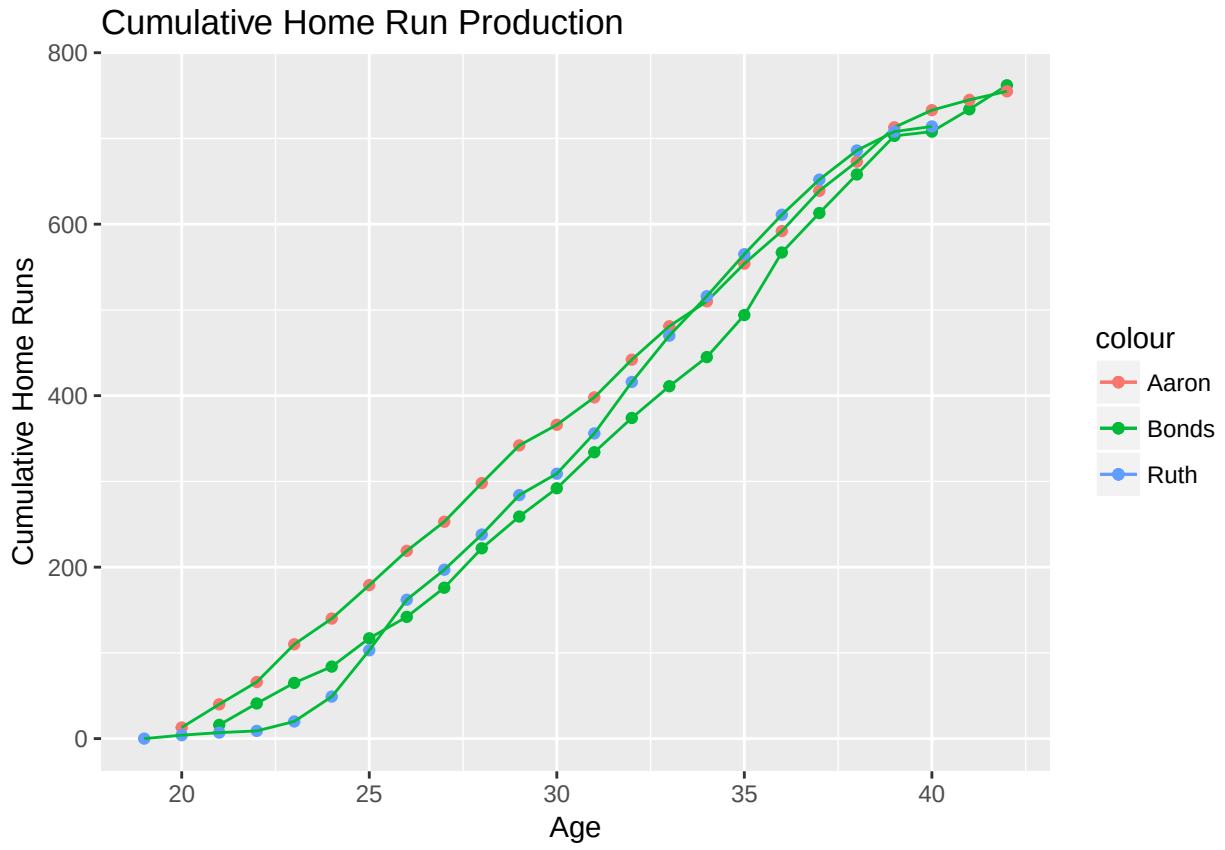


Figure 7: Aaron,Bonds & Ruth Cumulative Home Run Production

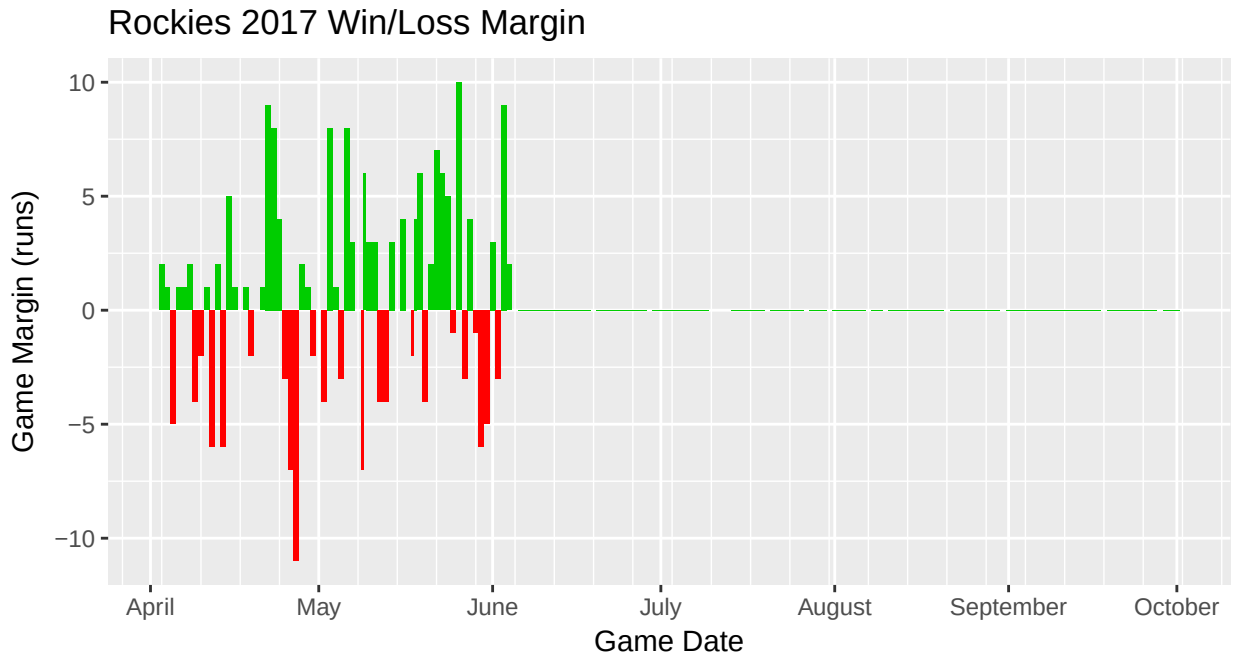
I hope you enjoyed this statistical journey through a small corner of baseball history. If you appreciate the power of statistical graphics applied to baseball, please let me know. You can reach me at jdreed@q.com. Please include "baseball" or "sabermetrics" in the subject line of your email.

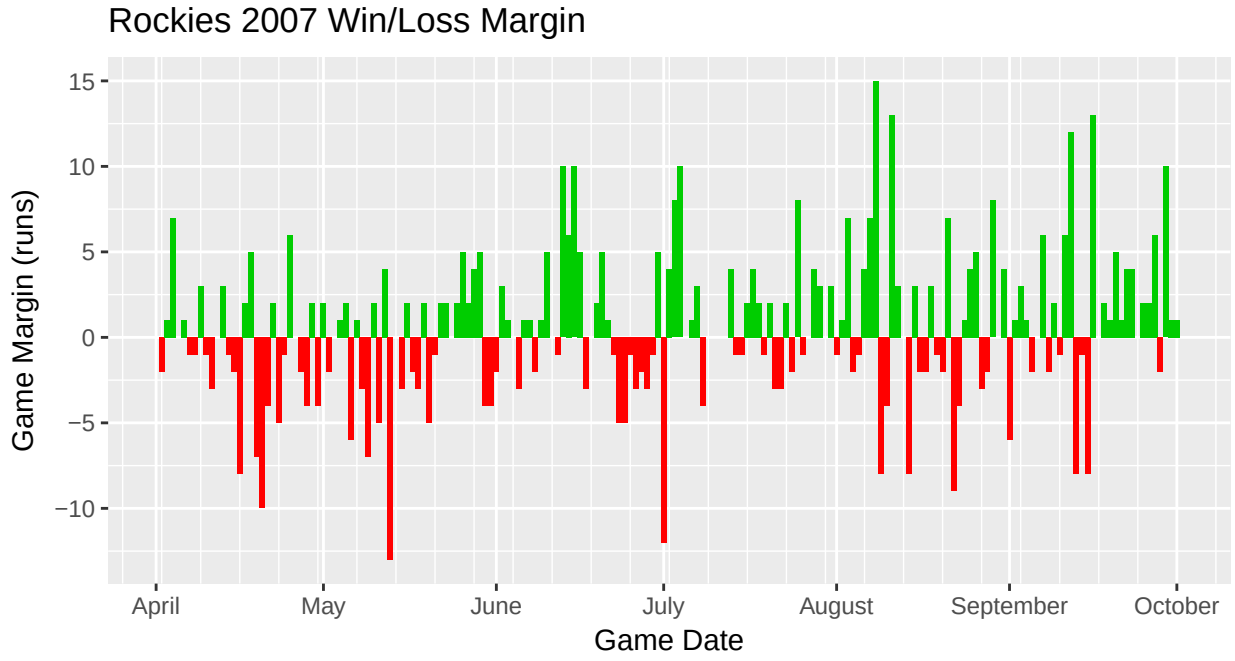
Rockies Dashboard

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 7: NL East Standings

Tm	W	L	W-L%	GB
Washington Nationals	35	20	.636	–
Atlanta Braves	24	30	.444	10.5
Miami Marlins	24	31	.436	11.0
New York Mets	24	31	.436	11.0
Philadelphia Phillies	19	35	.352	15.5

Table 8: NL Central Standings

Tm	W	L	W-L%	GB
Milwaukee Brewers	30	27	.526	–
Chicago Cubs	28	27	.509	1.0
St. Louis Cardinals	26	28	.481	2.5
Pittsburgh Pirates	26	31	.456	4.0
Cincinnati Reds	25	30	.455	4.0

Table 9: NL West Standings

Tm	W	L	W-L%	GB
Colorado Rockies	36	23	.610	–
Los Angeles Dodgers	35	23	.603	0.5
Arizona Diamondbacks	34	25	.576	2.0
San Diego Padres	23	35	.397	12.5
San Francisco Giants	23	35	.397	12.5

American League Standings

Table 10: AL East Standings

Tm	W	L	W-L%	GB
New York Yankees	32	22	.593	–
Boston Red Sox	31	25	.554	2.0
Baltimore Orioles	29	26	.527	3.5
Tampa Bay Rays	29	30	.492	5.5
Toronto Blue Jays	28	29	.491	5.5

Table 11: AL Central Standings

Tm	W	L	W-L%	GB
Minnesota Twins	29	24	.547	–
Cleveland Indians	29	26	.527	1.0
Detroit Tigers	28	28	.500	2.5
Chicago White Sox	24	31	.436	6.0
Kansas City Royals	24	31	.436	6.0

Table 12: AL West Standings

Tm	W	L	W-L%	GB
Houston Astros	41	16	.719	–
Los Angeles Angels of Anaheim	29	31	.483	13.5
Seattle Mariners	28	30	.483	13.5
Texas Rangers	26	31	.456	15.0
Oakland Athletics	24	32	.429	16.5

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	+
53	Mon	May 29	H	SEA	L	5	6	Gaviglio	Chatwood	Diaz	D	-
54	Tue	May 30	H	SEA	L	4	10	Miranda	Anderson		N	–
55	Wed	May 31	A	SEA	L	0	5	Paxton	Senzatela		N	—
56	Thu	Jun 1	A	SEA	W	6	3	Freeland	Gallardo	Holland	D	+
57	Fri	Jun 2	A	SDP	L	5	8	Richard	Marquez	Maurer	N	-
58	Sat	Jun 3	A	SDP	W	10	1	Chatwood	Chacin		D	+
59	Sun	Jun 4	A	SDP	W	3	1	Hoffman	Cosart	Holland	D	++

The Rockies current record is 36 Wins and 23 Losses. So far, the Rockies have scored 300 runs and have had 256 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 14: Predicted Wins for Entire 2017 Season

Wins (k=1.81)	Wins (k=1.83)	Wins (k=2.00)
93	93	94

Batting Statistics (non-pitchers)

Table 15: 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	35	103	22	31	5	1	0	8	0	1	16
2	1B	Reynolds	33	55	200	33	59	6	0	14	46	1	1	22
3	2B	LeMahieu	28	59	228	29	65	11	1	2	23	3	3	22
4	SS	Story	24	45	154	25	33	10	0	8	22	1	0	21
5	3B	Arenado	26	58	225	40	65	19	1	14	39	1	0	21
6	LF	Parra*	30	48	146	22	45	6	0	6	28	0	3	6
7	CF	Blackmon*	30	58	241	42	79	12	8	13	47	4	3	13
8	RF	Gonzalez*	31	53	197	28	46	12	0	4	17	1	0	23
9	LF	Desmond	31	32	128	18	34	4	1	3	15	2	2	4
10	C	Garneau	29	22	68	5	14	7	0	1	6	0	0	4
11	UT	Amarista*	28	30	68	12	23	6	0	2	14	0	0	1
12	UT	Valaika	24	34	61	11	14	5	0	4	10	0	0	3
13	C	Hanigan	36	11	37	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 16: 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	22	.301	.405	.369	.774	97	38	5	2	0	0	4
2	1B	Reynolds	33	55	.295	.366	.535	.901	122	107	6	1	0	1	0
3	2B	LeMahieu	28	35	.285	.356	.368	.724	82	84	5	3	2	0	0
4	SS	Story	24	58	.214	.309	.435	.744	83	67	3	0	0	0	0
5	3B	Arenado	26	40	.289	.352	.569	.921	125	128	10	3	0	4	2
6	LF	Parra*	30	27	.308	.340	.473	.812	101	69	4	2	0	2	0
7	CF	Blackmon*	30	52	.328	.365	.606	.971	137	146	0	3	3	3	0
8	RF	Gonzalez*	31	44	.234	.308	.355	.663	66	70	2	0	0	4	2
9	LF	Desmond	31	36	.266	.296	.383	.679	69	49	5	2	1	1	1
10	C	Garneau	29	24	.206	.260	.353	.613	52	24	1	1	1	0	0
11	UT	Amarista*	28	15	.338	.348	.515	.863	112	35	1	0	0	0	0
12	UT	Valaika	24	19	.230	.266	.508	.774	87	31	0	0	2	0	0
13	C	Hanigan	36	9	.243	.263	.324	.587	46	12	0	0	0	0	0
14	OF	Cardullo	29	7	.143	.250	.143	.393	3	4	0	1	0	0	0
15	IF	Adames#	25	6	.000	.071	.000	.071	-79	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 17: 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	Chatwood	27	5	7	.417	4.60	12	12	0	1	1	0	72.1	60	37
2	SP	Senzatela	22	7	2	.778	3.49	11	11	0	0	0	0	67.0	58	27
3	SP	Freeland*	24	6	3	.667	3.53	11	11	0	0	0	0	63.2	60	27
4	SP	Anderson*	27	3	5	.375	5.85	11	11	0	0	0	0	60.0	69	41
5	SP	Marquez	22	4	3	.571	4.53	8	8	0	0	0	0	45.2	50	23
6	CL	Holland	31	0	0		1.25	23	0	23	0	0	21	21.2	10	3
7	RP	McGee*	30	0	0		1.59	23	0	7	0	0	1	22.2	15	4
8	RP	Oberg	27	0	1	.000	5.32	26	0	5	0	0	0	22.0	25	15
9	RP	Ottavino	31	0	0		2.57	23	0	0	0	0	0	21.0	15	6
10	RP	Dunn*	32	2	1	.667	5.60	23	0	0	0	0	0	17.2	19	11
11		Rusin*	30	2	0	1.000	2.48	19	0	3	0	0	1	29.0	21	9
12		Lyles	26	0	1	.000	6.66	18	0	7	0	0	0	25.2	32	20
13		Hoffman	24	3	0	1.000	2.61	4	3	1	0	0	0	20.2	13	6
14		Estevez	24	3	0	1.000	8.16	16	0	5	0	0	0	14.1	22	14
15		Qualls	38	1	0	1.000	4.26	13	0	6	0	0	0	12.2	11	7
16		Gray	25	0	0		4.38	3	3	0	0	0	0	12.1	11	6
17		Carle	25	0	0		0.00	1	0	1	0	0	0	1.0	0	0

Table 18: Rockies pitching statistics (2 of 2).

Rk	Pos	Name	ER	HR	BB	IBB	SO	HBP	BK	WP	BF	ERA+	FIP	WHIP
1	SP	Chatwood	37	10	35	0	60	1	2	4	296	108	4.68	1.313
2	SP	Senzatela	26	7	20	0	44	4	2	1	273	142	4.17	1.164
3	SP	Freeland*	25	6	28	1	39	6	1	0	274	140	4.65	1.382
4	SP	Anderson*	39	13	20	0	59	2	2	2	263	85	5.00	1.483
5	SP	Marquez	23	6	15	2	44	1	0	2	201	110	3.88	1.423
6	CL	Holland	3	1	7	0	30	0	0	2	79	402	1.85	0.785
7	RP	McGee*	4	1	5	0	30	0	0	2	89	315	1.64	0.882
8	RP	Oberg	13	1	12	2	22	1	0	3	101	94	3.41	1.682
9	RP	Ottavino	6	1	15	1	24	1	0	3	91	195	3.67	1.429
10	RP	Dunn*	11	5	10	0	25	0	0	1	80	90	5.60	1.642
11		Rusin*	8	2	6	0	25	1	0	1	114	201	2.94	0.931
12		Lyles	19	5	5	0	18	2	0	1	112	75	5.00	1.442
13		Hoffman	6	3	2	0	26	0	0	0	77	192	2.71	0.726
14		Estevez	13	0	5	1	15	0	1	1	70	62	2.00	1.884
15		Qualls	6	2	4	0	6	0	0	0	53	119	5.10	1.184
16		Gray	6	1	7	0	9	0	0	1	53	116	4.35	1.459
17		Carle	0	0	0	0	1	0	0	1	4		1.05	0.000

* - throws left-handed

National League Team Standard Batting

Table 19: NL Team Batting statistics (1 of 2).

Tm	#Bat	BatAge	R/G	G	PA	AB	R	H	2B	3B	HR	RBI	SB	CS	BB	SO
WSN	34	29.3	5.71	55	2175	1941	314	541	112	11	86	307	34	13	201	427
COL	33	28.5	5.08	59	2242	2018	300	538	105	12	73	290	13	13	164	503
CIN	36	27.3	5.02	55	2165	1930	276	504	98	17	78	267	59	12	180	448
MIL	33	27.1	4.98	57	2191	1957	284	490	105	12	80	271	47	18	198	558
NYM	35	29.9	4.89	55	2144	1908	269	465	106	9	75	261	13	5	195	417
LAD	35	28.1	4.88	58	2221	1943	283	491	114	6	65	262	29	8	226	502
ARI	31	28.1	4.80	59	2255	2038	283	524	111	15	76	268	49	13	186	524
CHC	34	27.1	4.64	55	2148	1872	255	439	85	12	71	237	16	8	220	472
LgAvg	34	28.2	4.55	56	2156	1924	256	483	97	10	67	244	30	12	185	464
ATL	34	29.6	4.54	54	2104	1879	245	500	96	7	56	234	30	12	165	407
MIA	38	28.5	4.51	55	2113	1903	248	507	78	8	67	237	28	5	156	429
PIT	36	28.3	4.16	57	2186	1936	237	468	89	12	55	216	25	22	199	424
STL	31	28.6	4.13	54	2085	1842	223	459	97	9	55	210	33	15	189	439
PHI	33	27.3	4.06	54	2014	1820	219	442	99	10	58	212	20	13	160	452
SFG	38	29.6	3.50	58	2185	1969	203	455	92	7	44	194	28	9	167	435
SDP	37	26.3	3.45	58	2107	1901	200	420	68	9	67	195	31	13	163	528

Table 20: NL Team Batting statistics (2 of 2).

Tm	#Bat	BatAge	R/G	BA	OBP	SLG	OPS	OPS+	TB	GDP	HBP	SH	SF	IBB	LOB
WSN	34	29.3	5.71	0	0.348	0.481	0.828	117	933	42	9	15	9	24	395
COL	33	28.5	5.08	0	0.325	0.439	0.764	89	886	43	18	27	15	9	370
CIN	36	27.3	5.02	0	0.329	0.451	0.780	104	870	31	23	17	15	8	399
MIL	33	27.1	4.98	0	0.325	0.439	0.764	99	859	37	20	13	3	11	376
NYM	35	29.9	4.89	0	0.317	0.427	0.744	98	814	36	17	10	14	13	372
LAD	35	28.1	4.88	0	0.335	0.418	0.753	102	812	55	22	15	14	9	393
ARI	31	28.1	4.80	0	0.323	0.438	0.761	93	893	35	15	11	5	18	401
CHC	34	27.1	4.64	0	0.324	0.407	0.731	94	761	41	33	13	10	19	402
LgAvg	34	28.2	4.55	0	0.321	0.417	0.738	94	802	43	20	15	12	13	383
ATL	34	29.6	4.54	0	0.334	0.414	0.748	96	778	61	32	19	9	25	382
MIA	38	28.5	4.51	0	0.327	0.421	0.749	102	802	49	23	15	15	14	388
PIT	36	28.3	4.16	0	0.319	0.385	0.704	87	746	45	24	16	10	13	404
STL	31	28.6	4.13	0	0.323	0.401	0.724	93	739	46	19	17	18	12	377
PHI	33	27.3	4.06	0	0.308	0.404	0.712	90	735	48	16	6	12	9	336
SFG	38	29.6	3.50	0	0.293	0.352	0.645	73	693	43	14	12	23	6	390
SDP	37	26.3	3.45	0	0.286	0.372	0.658	75	707	37	14	17	12	7	356

Current Injuries

	Name	Updated	Type	Details
1	Tyler Anderson	June 03 2017	Knee	Anderson has been placed on the 10-day disabled list with knee inflammation it is unknown when he will rejoin the team.
2	Chad Bettis	June 03 2017	Illness	Bettis is on the 60-day disabled list while recovering from testicular cancer and it is unknown as to when he will be ready to rejoin the team.
3	David Dahl	May 29 2017	Ribs	Dahl is on the 10-day disabled list with a stress reaction of his sixth rib and is likely to remain sidelined until sometime in June.
4	Jon Gray	June 01 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 end of June.
5	Tom Murphy	May 30 2017	Wrist	Murphy is on the 10-day disabled list while he recovers from a hairline fracture in his wrist but is expected to return by the end of June.
6	Adam Ottavino	May 30 2017	Shoulder	Ottavino has been placed on the 10-day disabled list with a inflammation in his right shoulder and is without a timetable for return.

Table 21: 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.

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