Rockies 2017 - Week #15

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Figure 1: Rockies send four to 2017 MLB All-Star game: Nolan Arenado, Charlie Blackmon, D.J. LeMahieu and Greg Holland.

"He hits from both sides of the plate. He's amphibious." – Yogi Berra

Table 1: NL West Standings

Tm	W	L	W-L%	GB
Los Angeles Dodgers	64	29	.688	–
Arizona Diamondbacks	53	39	.576	10.5
Colorado Rockies	53	41	.564	11.5
San Diego Padres	40	51	.440	23.0
San Francisco Giants	35	58	.376	29.0

Table 2: Current Rockies Results as of 2017-07-17

Wins	Losses	Win.Pct	Runs	Runs.Ag	Predicted Season Wins
53	41	56.383	479	446	87

Week #15

This being the week of the all-star break, the Rockies have only played three games since July 9 of which they are 1 and 2.

We will continue to delve into the relationship between team WAR and payroll this week. We will develop a linear regression model.

One of the suggestions I received this week regards our participation in the All-Star Game. How do our Rockies' WAR ratings compare to the other players and teams. I'll endeavor to explore that this week and have something to report next week.

Here is a synopsis of what is included in this week's newsletter.

- **Featured Article**
  - Regression Model of WAR versus Team Payroll
- Colorado Rockies Dashboard
  - 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

Regression Model of WAR versus Team Payroll

Last week we presented the Team Combined WAR values (FanGraphs) and payroll for the thirty MLB teams. The question was, "By looking at the data, can you tell if there is a relationship between the WAR ratings and payroll?" In mathematics this sort of analysis is called linear regression. Regression is a fancy way of saying "relationship." In the context of our analysis, "Are payroll and WAR values related?" Does an increase in Payroll have a positive or negative effect on the WAR value of a team?

Looking way back, can you recall the formula for a line?

$$y = mx + b$$

Where,

- y is the dependent variable,
- x is is the independent variable,
- m is the slope of the line, and
- b is the y-intercept

In terms of our variables, this becomes:

$$WAR = m * Payroll + b$$

You probably would not surprised to find out there is a positive correlation between WAR and Payroll. By positive, I mean that for an increase in team Payroll, there is an increase in WAR. However, although the relationship is positive, it is not as strong as we might guess.

Table 3: FANGRAPHS Leaderboard Team Combined WAR Rankings

Rk	Team	C	1B	2B	SS	3B	LF	CF	RF	DH	SP	RP	Bat	Pit	WAR
1	Dodgers	1.6	0.6	1.0	2.2	2.1	0.9	1.2	1.4	0.3	8.7	2.6	11.3	11.4	22.7
2	Indians	0.9	1.3	1.1	2.2	1.9	1.0	1.1	0.7	1.2	7.9	2.6	11.4	10.5	21.9
3	Cubs	1.3	2.2	1.0	1.4	2.4	0.8	0.5	1.1	0.4	7.6	2.4	11.1	10.0	21.0
4	Astros	1.4	0.7	2.2	2.5	1.3	0.6	1.6	1.5	0.3	6.4	2.1	12.1	8.5	20.6
5	Red Sox	0.7	0.6	1.3	1.5	0.0	0.8	1.6	2.5	0.6	8.6	1.8	9.5	10.4	19.9
6	Nationals	0.5	0.5	1.5	0.9	2.1	0.1	0.5	2.6	0.2	7.2	2.0	8.8	9.2	18.0
7	Yankees	1.6	0.3	0.8	1.2	0.9	0.9	1.0	1.7	0.7	5.8	2.6	9.3	8.4	17.7
8	Blue Jays	1.5	0.9	0.0	1.2	2.6	0.5	1.2	1.2	0.5	6.0	1.7	9.7	7.7	17.4
9	Mets	0.9	0.9	0.8	0.4	0.7	1.5	1.2	0.9	0.4	6.9	1.6	7.8	8.6	16.4
10	Cardinals	1.1	1.1	1.0	0.8	1.2	0.8	1.0	0.7	0.3	6.4	1.9	8.0	8.2	16.3
11	Mariners	1.0	0.3	1.5	1.1	1.6	0.4	1.3	0.9	1.2	4.4	1.8	9.4	6.2	15.6
12	Tigers	1.5	1.5	1.4	0.8	0.6	1.3	0.3	1.1	0.4	5.7	0.8	8.9	6.5	15.4
13	Rangers	1.5	0.5	0.8	0.9	1.9	0.5	1.1	0.8	0.4	4.9	1.5	8.4	6.4	14.8
14	Angels	0.9	0.3	0.3	1.6	0.8	0.4	3.5	1.1	0.2	4.2	1.5	9.1	5.7	14.8
15	Pirates	0.8	0.5	0.7	0.7	0.8	0.9	1.9	0.7	0.2	5.9	1.4	7.3	7.3	14.5
16	Giants	2.0	1.4	1.1	1.2	0.5	0.0	0.6	0.6	0.1	5.7	1.2	7.5	6.9	14.4
17	Rays	0.9	0.8	0.8	0.3	1.5	0.4	0.9	1.0	0.4	5.8	1.1	7.1	7.0	14.1
18	Orioles	0.9	1.1	1.2	-0.1	2.4	0.6	0.9	0.7	0.7	3.8	1.9	8.3	5.8	14.1
19	Diamondbacks	0.2	2.1	0.4	0.4	1.0	-0.2	1.2	0.6	0.1	6.6	1.1	5.8	7.7	13.5
20	Royals	1.3	0.9	0.6	0.2	1.3	0.7	1.6	0.1	0.0	4.6	1.4	6.7	6.0	12.7
21	Marlins	1.2	0.6	0.7	0.1	0.8	1.1	1.7	1.8	0.1	3.4	1.2	8.0	4.7	12.7
22	Athletics	1.0	0.8	0.6	0.9	0.9	0.9	0.1	0.6	0.3	4.9	1.2	6.1	6.1	12.2

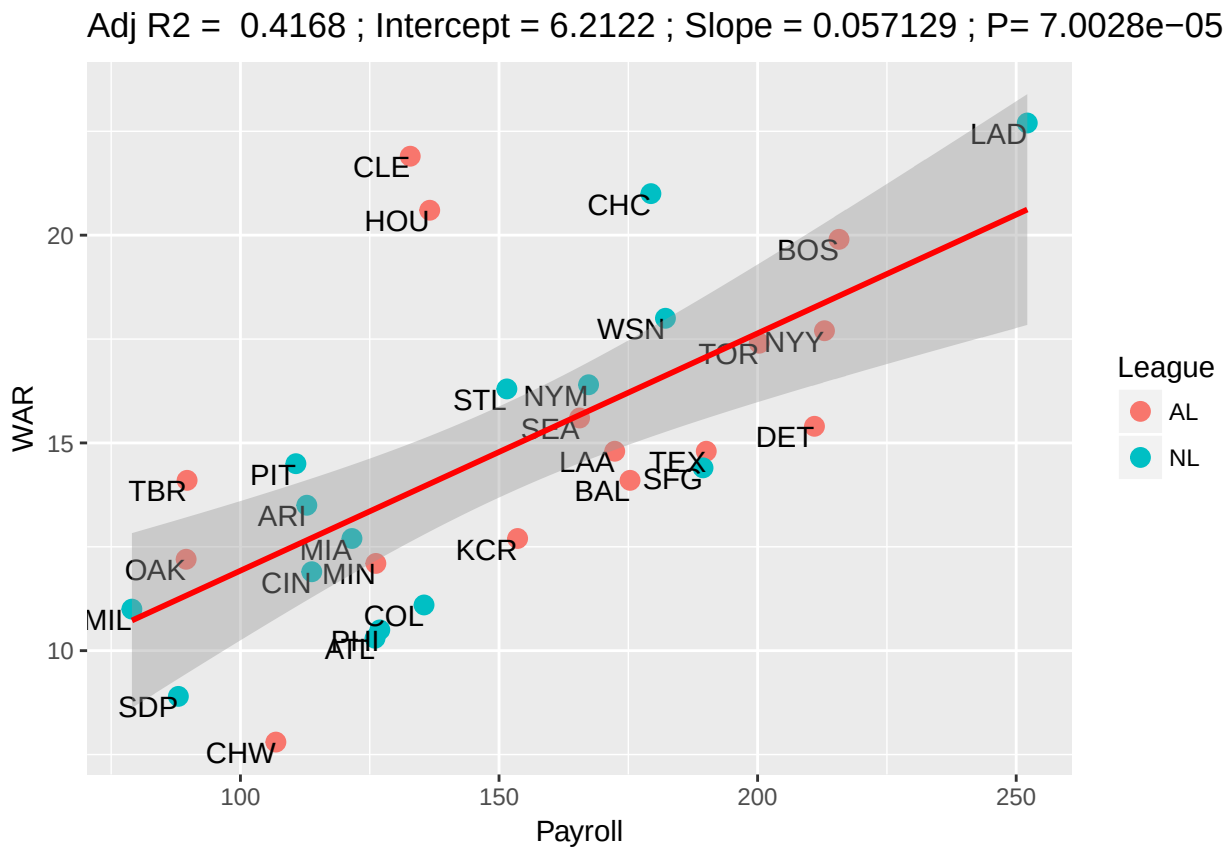
Rk	Team	C	1B	2B	SS	3B	LF	CF	RF	DH	SP	RP	Bat	Pit	WAR
23	Twins	0.9	0.6	1.4	0.5	1.3	0.4	1.0	0.8	0.4	3.6	1.0	7.5	4.6	12.1
24	Reds	0.9	2.2	0.2	1.3	0.9	0.6	0.8	0.5	0.1	3.5	1.1	7.3	4.6	11.9
25	Rockies	0.1	0.3	0.6	0.5	1.9	0.2	1.0	0.3	-0.1	4.8	1.5	4.8	6.3	11.1
26	Brewers	0.7	0.8	0.2	0.2	1.0	0.7	0.3	0.5	0.2	4.6	1.7	4.7	6.3	11.0
27	Phillies	0.5	0.4	0.7	0.5	0.8	-0.1	1.1	0.4	0.1	4.9	1.2	4.4	6.1	10.5
28	Braves	0.7	0.7	0.5	0.5	1.8	0.1	1.2	0.0	0.0	3.8	1.0	5.5	4.7	10.3
29	Padres	0.6	0.9	0.8	-0.1	0.5	0.1	0.4	0.0	0.1	4.1	1.6	3.2	5.7	8.9
30	White Sox	0.4	1.1	0.3	0.3	1.2	0.4	0.0	0.5	-0.5	2.6	1.6	3.6	4.2	7.8
31	Free Agents	1.1	-0.6	-0.5	-0.3	0.9	-0.3	0.1	-0.5	0.2	3.2	-1.0	0.0	2.2	2.2

As we showed last week, following is a table listing team WAR and Payroll values. A couple of notes:

1. The WAR values are calculated frequently by FanGraphs. The values depicted here are different from the ones displayed last week.
2. Payroll is displayed in units of millions of dollars.

Table 4: MLB Teams Team Combined WAR and 2017 Payroll (Million)

Tm	Div	League	WAR	Payroll
LAD	West	NL	22.7	252.14
CLE	Central	AL	21.9	132.83
CHC	Central	NL	21.0	179.37
HOU	West	AL	20.6	136.60
BOS	East	AL	19.9	215.74
WSN	East	NL	18.0	182.18
NYY	East	AL	17.7	212.93
TOR	East	AL	17.4	200.32
NYM	East	NL	16.4	167.32
STL	Central	NL	16.3	151.52
SEA	West	AL	15.6	165.58
DET	Central	AL	15.4	210.99
LAA	West	AL	14.8	172.37
TEX	West	AL	14.8	190.07
PIT	Central	NL	14.5	110.73
SFG	West	NL	14.4	189.45
BAL	East	AL	14.1	175.33
TBR	East	AL	14.1	89.68
ARI	West	NL	13.5	112.83
KCR	Central	AL	12.7	153.59
MIA	East	NL	12.7	121.57
OAK	West	AL	12.2	89.50
MIN	Central	AL	12.1	126.18
CIN	Central	NL	11.9	113.79
COL	West	NL	11.1	135.50
MIL	Central	NL	11.0	79.01
PHI	East	NL	10.5	126.95
ATL	East	NL	10.3	126.03
SDP	West	NL	8.9	88.00
CHW	Central	AL	7.8	106.85



The graph above shows each MLB team's Payroll (x-axis) and Team Combined WAR (y-axis). The red line is the linear regression model that best fits these data. Many of the teams fall inside the 95th percentile confidence interval depicted by the shaded area. However, many teams fall outside this confidence interval. Most notable is the Cleveland Indians whose WAR rating is second in MLB, yet their Payroll is a **$120M less** than that of the Dodgers.

Clearly the model is not perfect, but it does show a **relationship** between WAR and Payroll. Generally, when we increase payroll, WAR values are positively affected.

Substituting the values of the slope and intercept into our line formula, we yield the following:

$$WAR = 0.058463 * Payroll + 6.6403$$

To answer our earlier question about the impact of adding $10 million dollars to the payroll, we can expect a Team Combined WAR increase of 0.58, a small number to be sure. If the Rockies could add $100 million dollars to their payroll, we could expect an an increase of 5.8 in their Team Combined WAR. That is an increase of 48.7 percent over their current WAR.

There are many factors that go into creating a winning baseball team: good coaching, great front office, and team synergy. Money helps, but it is expensive.

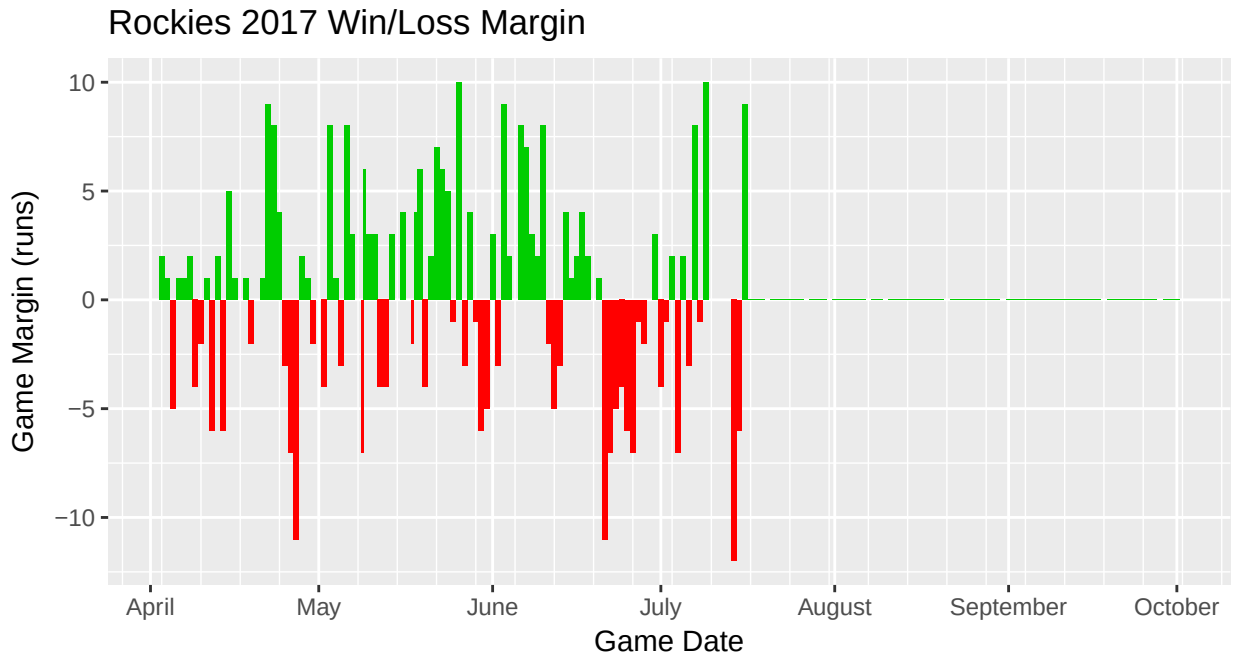
Your comments welcome.

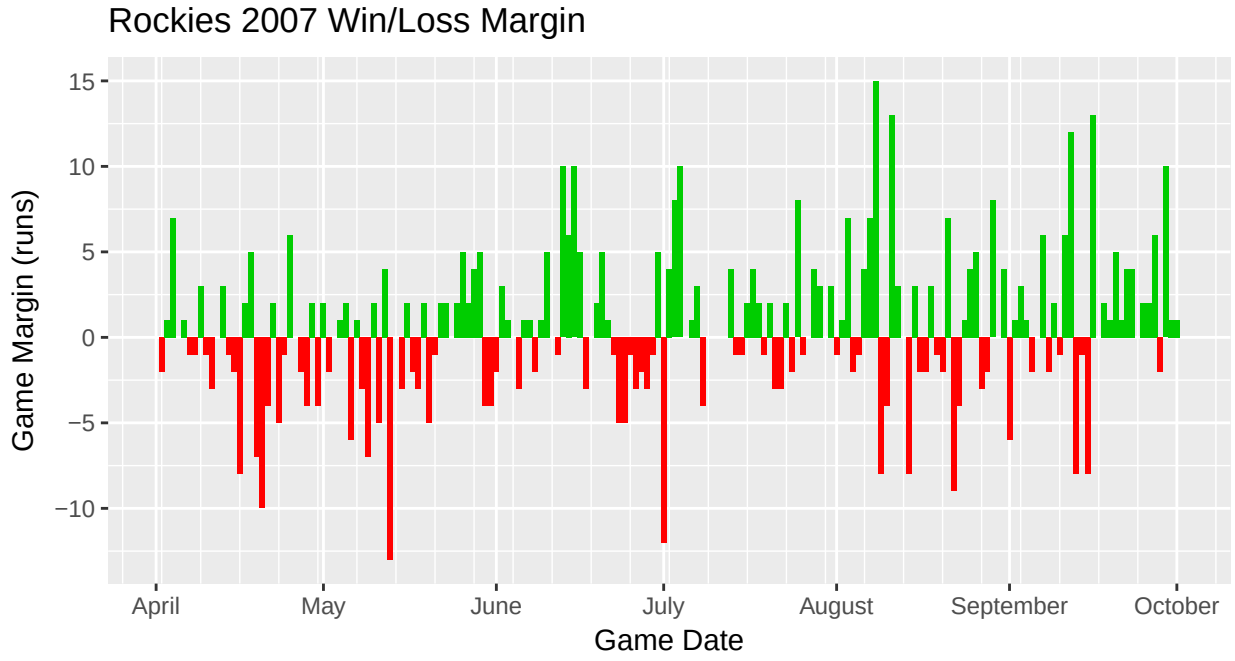
Colorado Rockies Dashboard

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 in green (above the zero) and losses in 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 5: NL East Standings

Tm	W	L	W-L%	GB
Washington Nationals	55	36	.604	–
Atlanta Braves	45	45	.500	9.5
New York Mets	41	48	.461	13.0
Miami Marlins	41	49	.456	13.5
Philadelphia Phillies	30	60	.333	24.5

Table 6: NL Central Standings

Tm	W	L	W-L%	GB
Milwaukee Brewers	52	42	.553	–
Chicago Cubs	46	45	.505	4.5
St. Louis Cardinals	44	47	.484	6.5
Pittsburgh Pirates	44	48	.478	7.0
Cincinnati Reds	39	52	.429	11.5

Table 7: NL West Standings

Tm	W	L	W-L%	GB
Los Angeles Dodgers	64	29	.688	–
Arizona Diamondbacks	53	39	.576	10.5
Colorado Rockies	53	41	.564	11.5
San Diego Padres	40	51	.440	23.0
San Francisco Giants	35	58	.376	29.0

American League Standings

Table 8: AL East Standings

Tm	W	L	W-L%	GB
Boston Red Sox	52	41	.559	–
Tampa Bay Rays	49	44	.527	3.0
New York Yankees	47	43	.522	3.5
Baltimore Orioles	42	49	.462	9.0
Toronto Blue Jays	42	49	.462	9.0

Table 9: AL Central Standings

Tm	W	L	W-L%	GB
Cleveland Indians	47	43	.522	–
Minnesota Twins	46	45	.505	1.5
Kansas City Royals	45	45	.500	2.0
Detroit Tigers	41	49	.456	6.0
Chicago White Sox	38	52	.422	9.0

Table 10: AL West Standings

Tm	W	L	W-L%	GB
Houston Astros	62	30	.674	–
Seattle Mariners	46	47	.495	16.5
Texas Rangers	45	46	.495	16.5
Los Angeles Angels of Anaheim	46	49	.484	17.5
Oakland Athletics	42	50	.457	20.0

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	+
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	++
60	Tue	Jun 6	H	CLE	W	11	3	Senzatela	Clevinger		N	+++
61	Wed	Jun 7	H	CLE	W	8	1	Freeland	Bauer		D	++++
62	Thu	Jun 8	A	CHC	W	4	1	Chatwood	Lester	Holland	N	+++++
63	Fri	Jun 9	A	CHC	W	5	3	Rusin	Frankoff	Holland	D	+++++
64	Sat	Jun 10	A	CHC	W	9	1	Hoffman	Butler		D	+++++
65	Sun	Jun 11	A	CHC	L	5	7	Edwards	Lyles	Davis	D	-
66	Mon	Jun 12	A	PIT	L	2	7	Taillon	Freeland		N	–
67	Tue	Jun 13	A	PIT	L	2	5	Cole	Ottavino		N	—
68	Wed	Jun 14	A	PIT	W	5	1	Marquez	Kuhl		N	+
69	Thu	Jun 15	H	SFG	W-wo	10	9	Holland	Strickland		N	++
70	Fri	Jun 16	H	SFG	W	10	8	Senzatela	Samardzija	Holland	N	+++
71	Sat	Jun 17	H	SFG	W	5	1	Freeland	Cain		D	++++
72	Sun	Jun 18	H	SFG	W-wo	7	5	Estevez	Melancon		D	+++++
73	Tue	Jun 20	H	ARI	W	4	3	Ottavino	Greinke	Holland	N	+++++
74	Wed	Jun 21	H	ARI	L	5	16	Walker	Hoffman		N	-
75	Thu	Jun 22	H	ARI	L	3	10	Godley	Senzatela		D	–
76	Fri	Jun 23	A	LAD	L	1	6	Wood	Freeland		N	—
77	Sat	Jun 24	A	LAD	L	0	4	Kershaw	Chatwood		N	—-
78	Sun	Jun 25	A	LAD	L	6	12	Baez	Ottavino	Jansen	D	——
79	Mon	Jun 26	A	SFG	L	2	9	Samardzija	Marquez		N	———
80	Tue	Jun 27	A	SFG	L-wo	3	4	Gearrin	Qualls		N	———-
81	Wed	Jun 28	A	SFG	L	3	5	Blach	Freeland	Strickland	D	————
82	Fri	Jun 30	A	ARI	W	6	3	Gray	Ray	Holland	N	+
83	Sat	Jul 1	A	ARI	L	2	6	Greinke	Chatwood	Rodney	N	-
84	Sun	Jul 2	A	ARI	L-wo	3	4	Rodney	Ottavino		D	–
85	Mon	Jul 3	H	CIN	W	5	3	Hoffman	Castillo	Holland	N	+
86	Tue	Jul 4	H	CIN	L	1	8	Bailey	Freeland		N	-
87	Wed	Jul 5	H	CIN	W	5	3	Gray	Feldman	Holland	N	+
88	Thu	Jul 6	H	CIN	L	3	6	Romano	Chatwood		D	-
89	Fri	Jul 7	H	CHW	W	12	4	Marquez	Holland		N	+
90	Sat	Jul 8	H	CHW	L	4	5	Kahnle	Holland	Robertson	N	-
91	Sun	Jul 9	H	CHW	W	10	0	Freeland	Rodon		D	+
92	Fri	Jul 14	A	NYM	L	2	14	deGrom	Gray		N	-
93	Sat	Jul 15	A	NYM	L	3	9	Lugo	Chatwood		N	–
94	Sun	Jul 16	A	NYM	W	13	4	Hoffman	Matz		D	+

The Rockies current record is 53 Wins and 41 Losses. So far, the Rockies have scored 479 runs and have had 446 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 12: Predicted Wins for Entire 2017 Season

Wins (k=1.81)	Wins (k=1.83)	Wins (k=2.00)
86	86	87

Batting Statistics (non-pitchers)

Table 13: 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	59	178	28	47	7	1	0	14	0	1	25
2	1B	Reynolds	33	88	317	55	91	12	1	19	62	1	1	46
3	2B	LeMahieu	28	89	352	52	111	16	1	4	41	5	4	29
4	SS	Story	24	78	266	34	60	13	0	11	37	3	0	28
5	3B	Arenado	26	92	364	58	111	30	5	18	73	2	1	27
6	LF	Desmond	31	58	222	32	64	7	1	5	28	10	4	11
7	CF	Blackmon*	30	92	381	75	122	19	11	21	64	8	6	29
8	RF	Gonzalez*	31	77	271	37	58	13	0	6	22	1	0	31
9	LF	Parra*	30	55	172	29	58	9	0	7	38	0	4	6
10	IF	Valaika	24	60	111	17	26	8	0	7	22	0	0	4
11	UT	Amarista*	28	55	112	15	28	7	0	2	16	1	0	4
12	OF	Tapia*	23	39	102	20	32	7	2	2	9	3	2	7
13	C	Garneau	29	22	68	5	14	7	0	1	6	0	0	4
14	C	Hanigan	36	19	63	4	14	0	0	2	9	0	0	5
15	OF	Cardullo	29	15	28	2	4	0	0	0	3	0	0	3
16	C	Murphy	26	8	20	1	1	1	0	0	1	0	0	2
17	IF	Adames#	25	12	13	1	0	0	0	0	0	0	0	1
18	OF	Tauchman*	26	7	9	0	2	0	0	0	1	0	0	3

Table 14: 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	39	.264	.361	.315	.676	70	56	9	2	1	0	7
2	1B	Reynolds	33	104	.287	.378	.511	.889	117	162	9	1	0	1	0
3	2B	LeMahieu	28	50	.315	.371	.401	.772	91	141	11	3	2	1	0
4	SS	Story	24	105	.226	.302	.398	.700	71	106	5	1	0	0	1
5	3B	Arenado	26	66	.305	.353	.563	.917	121	205	13	3	1	5	3
6	LF	Desmond	31	61	.288	.328	.396	.724	78	88	7	3	2	2	1
7	CF	Blackmon*	30	85	.320	.372	.593	.965	132	226	1	4	3	3	2
8	RF	Gonzalez*	31	68	.214	.293	.328	.622	53	89	2	1	0	4	3
9	LF	Parra*	30	29	.337	.357	.512	.868	111	88	4	2	0	5	0
10	IF	Valaika	24	30	.234	.259	.495	.754	79	55	0	0	2	1	0
11	UT	Amarista*	28	24	.250	.276	.366	.642	57	41	2	0	1	0	0
12	OF	Tapia*	23	22	.314	.369	.480	.850	108	49	0	2	1	0	1
13	C	Garneau	29	24	.206	.260	.353	.613	49	24	1	1	1	0	0
14	C	Hanigan	36	18	.222	.279	.317	.597	47	20	3	0	1	0	1
15	OF	Cardullo	29	7	.143	.250	.143	.393	2	4	0	1	0	0	0
16	C	Murphy	26	7	.050	.136	.100	.236	-40	2	0	0	0	0	1
17	IF	Adames#	25	6	.000	.071	.000	.071	-80	0	0	0	0	0	0
18	OF	Tauchman*	26	1	.222	.417	.222	.639	66	2	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 15: 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	Freeland*	24	9	7	.563	3.67	19	18	0	0	0	0	110.1	109	48
2	SP	Chatwood	27	6	11	.353	4.74	19	19	0	1	1	0	106.1	94	58
3	SP	Senzatela	22	9	3	.750	4.63	18	15	1	0	0	0	93.1	86	49
4	SP	Marquez	22	6	4	.600	4.36	14	14	0	0	0	0	76.1	81	38
5	SP	Anderson*	27	3	5	.375	6.11	13	12	1	0	0	0	63.1	75	45
6	SP	Hoffman	24	6	1	.857	4.33	11	10	1	0	0	0	62.1	56	30
7	CL	Holland	31	1	1	.500	1.62	35	0	34	0	0	28	33.1	18	6
8	RP	McGee*	30	0	0		2.63	39	0	8	0	0	1	37.2	28	11
9	RP	Oberg	27	0	1	.000	5.54	42	0	7	0	0	0	37.1	44	25
10	RP	Ottavino	31	1	3	.250	5.85	37	0	1	0	0	0	32.1	29	21
11	RP	Dunn*	32	2	1	.667	5.04	39	0	5	0	0	0	30.1	30	17
12		Rusin*	30	3	0	1.000	2.36	34	0	5	0	0	1	49.2	38	17
13		Lyles	26	0	2	.000	6.69	30	0	12	0	0	0	40.1	50	31
14		Gray	25	2	1	.667	6.23	6	6	0	0	0	0	26.0	35	19
15		Estevez	24	4	0	1.000	8.10	18	0	6	0	0	0	16.2	25	16
16		Qualls	38	1	1	.500	5.40	19	0	9	0	0	0	16.2	17	11
17		Rosscup*	29	0	0		3.00	2	0	1	0	0	0	3.0	4	1
18		Carle	25	0	0		0.00	1	0	1	0	0	0	1.0	0	0
19		Diaz	26	0	0		18.00	1	0	1	0	0	0	1.0	4	3

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

Rk	Pos	Name	ER	HR	BB	IBB	SO	HBP	BK	WP	BF	ERA+	FIP	WHIP
1	SP	Freeland*	45	12	42	2	69	8	1	0	474	136	4.67	1.369
2	SP	Chatwood	56	15	60	2	87	2	2	5	452	105	5.09	1.448
3	SP	Senzatela	48	15	30	0	68	4	2	1	386	108	4.87	1.243
4	SP	Marquez	37	8	26	2	67	5	0	3	334	115	3.97	1.402
5	SP	Anderson*	43	15	23	0	63	2	2	3	281	82	5.42	1.547
6	SP	Hoffman	30	7	17	1	53	3	0	0	259	116	3.86	1.171
7	CL	Holland	6	2	16	1	43	0	0	5	129	310	2.78	1.020
8	RP	McGee*	11	3	9	0	46	0	0	5	148	191	2.45	0.982
9	RP	Oberg	23	3	16	2	36	2	0	3	170	91	3.71	1.607
10	RP	Ottavino	21	7	23	1	40	3	0	7	148	86	5.90	1.608
11	RP	Dunn*	17	7	18	0	40	0	0	2	136	100	5.29	1.582
12		Rusin*	13	4	13	1	38	1	0	1	196	213	3.51	1.027
13		Lyles	30	9	9	0	29	2	0	1	177	75	5.42	1.463
14		Gray	18	2	12	0	25	0	0	1	123	81	3.60	1.808
15		Estevez	15	1	6	1	18	1	1	1	82	63	3.02	1.860
16		Qualls	10	3	5	0	11	0	0	0	72	94	5.06	1.320
17		Rosscup*	1	1	0	0	4	0	0	0	13	183	4.81	1.333
18		Carle	0	0	0	0	1	0	0	1	4		1.14	0.000
19		Diaz	2	0	0	0	2	0	0	0	8	36	-0.86	4.000

* - throws left-handed

National League Team Standard Batting

Table 17: 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	38	29.2	5.66	91	3594	3200	515	893	188	14	135	501	67	19	332	712
LAD	38	27.9	5.15	93	3580	3118	479	800	184	11	133	448	44	17	387	816
COL	37	28.2	5.10	94	3582	3231	479	873	161	22	107	460	34	23	267	833
ARI	35	28.2	4.95	92	3528	3163	455	817	179	23	114	432	67	20	306	822
MIL	41	27.2	4.95	94	3585	3203	465	813	170	15	143	446	78	24	310	904
NYM	41	29.7	4.87	89	3437	3053	433	767	164	15	136	420	23	8	307	682
CIN	40	27.3	4.78	91	3517	3143	435	812	158	26	126	418	77	18	290	738
ATL	38	29.4	4.71	90	3467	3125	424	826	174	9	93	410	37	15	253	680
CHC	39	26.9	4.68	91	3499	3068	426	747	155	17	127	403	28	14	346	766
LgAvg	38	28.1	4.64	91	3501	3126	424	796	162	17	113	406	48	18	298	760
MIA	39	28.4	4.63	90	3448	3119	417	836	150	11	104	400	49	12	241	706
STL	38	28.4	4.52	91	3483	3079	411	786	164	12	109	391	47	20	316	739
PIT	39	28.2	4.21	92	3535	3125	387	758	151	22	89	361	39	25	318	666
SFG	44	29.6	3.90	93	3561	3212	363	783	158	18	77	351	45	18	268	689
PHI	37	27.3	3.83	90	3374	3057	345	738	159	17	92	328	35	18	264	780
SDP	40	26.2	3.60	91	3329	2992	328	687	121	16	107	320	52	21	259	867

Table 18: 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	38	29.2	5.66	0	0.347	0.473	0.820	110	1514	68	14	22	26	36	654
LAD	38	27.9	5.15	0	0.343	0.451	0.793	108	1405	71	33	18	23	20	660
COL	37	28.2	5.10	0	0.328	0.433	0.761	86	1399	69	24	38	22	20	602
ARI	35	28.2	4.95	0	0.328	0.438	0.765	92	1384	55	27	20	12	25	631
MIL	41	27.2	4.95	0	0.325	0.450	0.775	99	1442	59	35	23	14	17	617
NYM	41	29.7	4.87	0	0.324	0.448	0.772	101	1369	68	32	21	24	19	604
CIN	40	27.3	4.78	0	0.326	0.445	0.772	98	1400	60	38	23	23	16	641
ATL	38	29.4	4.71	0	0.326	0.415	0.741	92	1297	85	42	29	18	37	608
CHC	39	26.9	4.68	0	0.328	0.429	0.757	98	1317	81	47	24	13	30	631
LgAvg	38	28.1	4.64	0	0.324	0.425	0.749	94	1330	69	33	24	21	22	622
MIA	39	28.4	4.63	0	0.327	0.423	0.750	99	1320	77	41	24	22	25	619
STL	38	28.4	4.52	0	0.328	0.423	0.751	96	1301	78	32	27	29	23	612
PIT	39	28.2	4.21	0	0.321	0.390	0.711	86	1220	71	51	24	16	23	664
SFG	44	29.6	3.90	0	0.304	0.376	0.680	81	1208	70	26	18	37	15	635
PHI	37	27.3	3.83	0	0.304	0.395	0.699	84	1207	71	20	14	19	15	577
SDP	40	26.2	3.60	0	0.296	0.388	0.684	79	1161	51	28	33	17	10	582

Current Injuries

	Name	Updated	Type	Details
1	Tyler Anderson	June 27 2017	Knee	Anderson has been designated for the 10-day disabled list as he will have arthroscopic left knee surgery and is expected to miss up to four weeks of action.
2	Chad Bettis	July 10 2017	Illness	Bettis is on the 60-day disabled list while recovering from testicular cancer but is expected to make his season debut sometime during the later part of July.
3	Tyler Chatwood	July 16 2017	Calf	Chatwood has been placed on the 10-day disabled list with a right calf strain and there is no timetable for return.
4	David Dahl	June 27 2017	Ribs	Dahl has been moved to the 60-day disabled list with a stress reaction of his sixth rib and it is unknown as to when he will be ready to join the lineup.

Table 19: 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 - There is much more to cover here. Perhaps we can rank some of the past greats based on their modern day WAR rating?
- What is the OPS+ statistic and how is it calculated.
- Survey MLB ticket prices.
- Are WAR ratings a good indicator of past season's playoff and World Series teams?
- 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 an 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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