

# Rockies 2017 - Week #4

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## Introduction

There was an article in the Friday Denver Post (April 21) titled **Rockies confident their strong start is sustainable**. You see, the Rockies have been in this position before, starting strong in April only to fall into a slump and finishing with fewer than 81 wins. The theory this year is that the Rockies are winning partially on the strength of their pitching; an ingredient we have not experienced before. Strangely, the Rockies bats have not been hot, yet. With the eventual warming-up of Story and Gonzalez and with the continued strength of the of the order, there may be reason to look forward to better than .500 season.

This week we will again continue to develop a Rockies Dashboard of performance and progress for the season. Presented here are the following:

- National and American League Standings
- Game-by-Game Results of the past week.
- Colorado Rockies batting statistics in rank order.
- Pythagorean Theorem prediction of the number of wins by end of the season based on the number of runs scored (R) and the number of runs allowed (RA).
- Colorado Rockies Pitching Statistics
- Rockies Fielding Statistics **New this week**

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 in at the end of the document if are unfamiliar with one or more of the statistic abbreviations in the tables.

# National League Standings

Table 1: NL East Standings

Tm	W	L	W-L%	GB
Washington Nationals	14	6	.700	–
Miami Marlins	10	8	.556	3.0
Philadelphia Phillies	9	9	.500	4.0
New York Mets	8	11	.421	5.5
Atlanta Braves	6	12	.333	7.0

Table 2: NL Central Standings

Tm	W	L	W-L%	GB
Chicago Cubs	12	8	.600	–
Milwaukee Brewers	11	11	.500	2.0
Cincinnati Reds	10	11	.476	2.5
St. Louis Cardinals	9	11	.450	3.0
Pittsburgh Pirates	8	12	.400	4.0

Table 3: NL West Standings

Tm	W	L	W-L%	GB
Colorado Rockies	14	7	.667	–
Arizona Diamondbacks	14	8	.636	0.5
Los Angeles Dodgers	10	11	.476	4.0
San Diego Padres	8	14	.364	6.5
San Francisco Giants	7	14	.333	7.0

## American League Standings

Table 4: AL East Standings

Tm	W	L	W-L%	GB
Baltimore Orioles	13	6	.684	–
New York Yankees	11	7	.611	1.5
Boston Red Sox	11	8	.579	2.0
Tampa Bay Rays	11	11	.500	3.5
Toronto Blue Jays	6	14	.300	7.5

Table 5: AL Central Standings

Tm	W	L	W-L%	GB
Detroit Tigers	11	8	.579	–
Chicago White Sox	10	9	.526	1.0
Cleveland Indians	10	9	.526	1.0
Minnesota Twins	10	10	.500	1.5
Kansas City Royals	7	13	.350	4.5

Table 6: AL West Standings

Tm	W	L	W-L%	GB
Houston Astros	14	6	.700	–
Oakland Athletics	10	10	.500	4.0
Los Angeles Angels of Anaheim	10	12	.455	5.0
Texas Rangers	9	12	.429	5.5
Seattle Mariners	8	13	.381	6.5

## Rockies Game-by-Game Schedule/Results

Gm#	Day	Date	H/A	Opp	W/L	R	RA	Win	Loss	Save	D/N
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
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## 2016 Win Loss

```
GBG16 <- getRockiesGBG(2016)
```

```
## Warning in asMethod(object): NAs introduced by coercion
```

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## Warning in asMethod(object): NAs introduced by coercion
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```
knitr::kable(GBG16)
```

Gm#	Day	Date	H/A	Opp	W/L	R	RA	Win	Loss	Save	D/N	Str
1	Mon	Apr 4	A	ARI	W	10	5	Miller	Greinke		N	+
2	Tue	Apr 5	A	ARI	L	6	11	Clippard	Bergman		N	-
3	Wed	Apr 6	A	ARI	W	4	3	Chatwood	Corbin	McGee	D	+
4	Fri	Apr 8	H	SDP	L	6	13	Erlin	Lyles		D	-
5	Sat	Apr 9	H	SDP	L	3	16	Pomeranz	DeÂ LaÂ Rosa		N	-
6	Sun	Apr 10	H	SDP	W	6	3	Bettis	Shields	McGee	D	+
7	Tue	Apr 12	H	SFG	L	2	7	Samardzija	Chatwood		N	-
8	Wed	Apr 13	H	SFG	W	10	6	Rusin	Peavy		N	+
9	Thu	Apr 14	H	SFG	W	11	6	DeÂ LaÂ Rosa	Cain		D	++
10	Fri	Apr 15	A	CHC	W	6	1	Bettis	Hendricks		D	++
11	Sat	Apr 16	A	CHC	L	2	6	Arrieta	Bergman		D	-
12	Sun	Apr 17	A	CHC	W	2	0	Chatwood	Lester	McGee	D	+
13	Mon	Apr 18	A	CIN	W	5	1	Lyles	Ohlendorf		N	++
14	Tue	Apr 19	A	CIN	L	3	4	Stephenson	DeÂ LaÂ Rosa		N	-
15	Wed	Apr 20	A	CIN	L-wo	5	6	Ohlendorf	Bergman		D	-
16	Fri	Apr 22	H	LAD	W	7	5	Qualls	Hatcher	McGee	N	+
17	Sat	Apr 23	H	LAD	L	1	4	Maeda	Chatwood	Jansen	N	-
18	Sun	Apr 24	H	LAD	L	10	12	Blanton	McGee	Jansen	D	-
19	Mon	Apr 25	H	PIT	L	1	6	Locke	Bettis	Schugel	N	—
20	Tue	Apr 26	H	PIT	L	4	9	Cole	DeÂ LaÂ Rosa		N	—
21	Wed	Apr 27	H	PIT	L	8	9	Lobstein	Estevez	Melancon	N	—
22	Fri	Apr 29	A	ARI	W	9	0	Chatwood	Ray		N	+
23	Sat	Apr 30	A	ARI	W	5	2	Qualls	Ziegler	McGee	N	++
24	Sun	May 1	A	ARI	W	6	3	Bettis	Miller	McGee	D	++
25	Mon	May 2	A	SDP	L	1	2	Shields	Gray	Rodney	N	-
26	Tue	May 3	A	SDP	L	3	6	Cashner	Butler	Rodney	N	-
27	Wed	May 4	A	SDP	W	2	0	Chatwood	Vargas	McGee	D	+
28	Thu	May 5	A	SFG	W	17	7	Bergman	Cain		N	++
29	Fri	May 6	A	SFG	L	4	6	Bumgarner	Bettis	Casilla	N	-
30	Sat	May 7	A	SFG	L-wo	1	2	Law	Miller		D	-
31	Sun	May 8	A	SFG	W	2	0	Butler	Samardzija	McGee	D	+
32	Mon	May 9	H	ARI	L	5	10	Bradley	Chatwood		N	-

Gm#	Day	Date	H/A	Opp	W/L	R	RA	Win	Loss	Save	D/N	Str
33	Tue	May 10	H	ARI	L	1	5	DeÂ LaÂ Rosa	Rusin		N	-
34	Wed	May 11	H	ARI	W	8	7	Germen	Clippard	McGee	D	+
35	Fri	May 13	H	NYM	W	5	2	Gray	Harvey	McGee	N	++
36	Sat	May 14	H	NYM	W	7	4	Butler	Verrett	McGee	N	++
37	Sun	May 15	H	NYM	W	4	3	Chatwood	Henderson	McGee	D	++
38	Tue	May 17	A	STL	W	3	1	Bettis	Garcia	McGee	N	++
39	Wed	May 18	A	STL	L	0	2	Wainwright	Rusin	Rosenthal	N	-
40	Thu	May 19	A	STL	L	7	13	Lyons	Gray		N	-
41	Fri	May 20	A	PIT	L	1	2	Cole	Butler	Melancon	N	—
42	Sat	May 21	A	PIT	W	5	1	Estevez	Melancon		D	+
43	Mon	May 23	A	PIT	L	3	6	Boscan	Lyles	Melancon	D	-
44	Tue	May 24	A	BOS	L	3	8	Price	DeÂ LaÂ Rosa		N	-
45	Wed	May 25	A	BOS	L	3	10	Wright	Bettis		N	—
46	Thu	May 26	A	BOS	W	8	2	Gray	Buchholz		N	+
47	Fri	May 27	H	SFG	W	5	2	Chatwood	Suarez	McGee	N	++
48	Sat	May 28	H	SFG	L	5	10	Gearrin	Estevez		D	-
49	Sun	May 29	H	SFG	L	3	8	Cueto	Rusin		D	-
50	Mon	May 30	H	CIN	L	8	11	Straily	Bettis	Ramirez	D	—
51	Tue	May 31	H	CIN	W	17	4	Gray	Moscot		N	+
52	Wed	Jun 1	H	CIN	L	2	7	Lamb	Chatwood		N	-
53	Thu	Jun 2	H	CIN	L	4	11	Simon	Butler		N	-
54	Fri	Jun 3	A	SDP	L	0	4	Pomeranz	Rusin		N	—
55	Sat	Jun 4	A	SDP	L	3	4	Cashner	Bettis	Rodney	N	—
56	Sun	Jun 5	A	SDP	W	10	3	Gray	Perdomo		N	+
57	Mon	Jun 6	A	LAD	W	6	1	Chatwood	Bolsinger		N	++
58	Tue	Jun 7	A	LAD	L-wo	3	4	Jansen	Estevez		N	-
59	Wed	Jun 8	A	LAD	W	1	0	Rusin	Maeda	McGee	N	+
60	Thu	Jun 9	H	PIT	W	11	5	DeÂ LaÂ Rosa	Locke		D	++
61	Fri	Jun 10	H	SDP	L	5	7	Quackenbush	McGee	Rodney	N	-
62	Sat	Jun 11	H	SDP	W	5	3	Chatwood	Johnson	Estevez	D	+
63	Sun	Jun 12	H	SDP	W	2	1	Germen	Quackenbush	Logan	D	++
64	Tue	Jun 14	H	NYN	W	13	10	DeÂ LaÂ Rosa	Eovaldi	Estevez	N	++
65	Wed	Jun 15	H	NYN	W	6	3	Bettis	Nova	Estevez	D	++
66	Fri	Jun 17	A	MIA	L	1	5	Wittgren	Gray		N	-
67	Sat	Jun 18	A	MIA	L	6	9	McGowan	Butler	Ramos	D	-
68	Sun	Jun 19	A	MIA	L	0	3	Koehler	Anderson	Ramos	D	—
69	Mon	Jun 20	A	MIA	W	5	3	DeÂ LaÂ Rosa	Ellington	Estevez	N	+
70	Tue	Jun 21	A	NYN	W	8	4	Bettis	Nova		N	++
71	Wed	Jun 22	A	NYN	L-wo	8	9	Chapman	Motte		D	-
72	Thu	Jun 23	H	ARI	L	6	7	Ziegler	Estevez		N	-
73	Fri	Jun 24	H	ARI	L	9	10	Collmenter	Estevez	Ziegler	N	—
74	Sat	Jun 25	H	ARI	W	11	6	DeÂ LaÂ Rosa	Miller	Germen	D	+
75	Sun	Jun 26	H	ARI	W-wo	9	7	Estevez	Bracho		D	++
76	Mon	Jun 27	H	TOR	W	9	5	Gray	Storen		N	++
77	Tue	Jun 28	H	TOR	L	9	14	Happ	Butler		N	-
78	Wed	Jun 29	H	TOR	L	3	5	Sanchez	Anderson		D	-
79	Fri	Jul 1	A	LAD	L	0	5	Norris	DeÂ LaÂ Rosa		N	—
80	Sat	Jul 2	A	LAD	L	1	6	Kazmir	Bettis		N	—
81	Sun	Jul 3	A	LAD	L	1	4	McCarthy	Gray	Jansen	D	—
82	Mon	Jul 4	A	SFG	L	1	3	Peavy	Anderson	Casilla	D	—
83	Tue	Jul 5	A	SFG	W	7	3	Lyles	Gearrin		N	+
84	Wed	Jul 6	A	SFG	L	1	5	Cueto	DeÂ LaÂ Rosa		N	-

Gm#	Day	Date	H/A	Opp	W/L	R	RA	Win	Loss	Save	D/N	Str
85	Thu	Jul 7	H	PHI	W	11	2	Bettis	Morgan		N	+
86	Fri	Jul 8	H	PHI	L	3	5	Velasquez	McGee	Gomez	N	-
87	Sat	Jul 9	H	PHI	W	8	3	Anderson	Eickhoff	Lyles	N	+
88	Sun	Jul 10	H	PHI	L	3	10	Efflin	Chatwood		D	-
89	Fri	Jul 15	A	ATL	W	11	2	DeÂ LaÂ Rosa	Harrell		N	+
90	Sat	Jul 16	A	ATL	W	4	3	Logan	Johnson	Estevez	N	++
91	Sun	Jul 17	A	ATL	L-wo	0	1	Johnson	Germen		D	-
92	Mon	Jul 18	H	TBR	W	7	4	Anderson	Smyly	Estevez	N	+
93	Tue	Jul 19	H	TBR	L	1	10	Snell	Chatwood	Andriese	N	-
94	Wed	Jul 20	H	TBR	L	3	11	Archer	DeÂ LaÂ Rosa		D	-
95	Thu	Jul 21	H	ATL	W	7	3	Bettis	Foltynewicz	Estevez	N	+
96	Fri	Jul 22	H	ATL	W	4	3	Gray	DeÂ LaÂ Cruz	Estevez	N	++
97	Sat	Jul 23	H	ATL	W	8	4	Anderson	Wisler		N	++
98	Sun	Jul 24	H	ATL	W	7	2	Chatwood	Jenkins		D	++
99	Mon	Jul 25	A	BAL	L-wo	2	3	Roe	Lyles		N	-
100	Tue	Jul 26	A	BAL	W	6	3	Bettis	Tillman	Estevez	N	+
101	Wed	Jul 27	A	BAL	W	3	1	Gray	Bundy	Estevez	N	++
102	Thu	Jul 28	A	NYM	W	2	1	Lyles	Familia	Estevez	D	++
103	Fri	Jul 29	A	NYM	W	6	1	Chatwood	Matz		N	++
104	Sat	Jul 30	A	NYM	W	7	2	DeÂ LaÂ Rosa	Colon		N	++
105	Sun	Jul 31	A	NYM	L	4	6	Blevins	Logan	Familia	D	-
106	Tue	Aug 2	H	LAD	W	7	3	Gray	McCarthy		N	+
107	Wed	Aug 3	H	LAD	W	12	2	Anderson	Stewart		N	++
108	Thu	Aug 4	H	LAD	L	2	4	Maeda	Chatwood	Jansen	N	-
109	Fri	Aug 5	H	MIA	L	3	5	Ellington	Estevez	Ramos	N	-
110	Sat	Aug 6	H	MIA	W	12	6	Bettis	Cashner		N	+
111	Sun	Aug 7	H	MIA	L	7	10	Conley	Gray	Rodney	D	-
112	Mon	Aug 8	H	TEX	L	3	4	Kela	Estevez	Diekman	N	-
113	Tue	Aug 9	H	TEX	L	5	7	Claudio	Oberg	Dyson	D	—
114	Wed	Aug 10	A	TEX	L	4	5	Diekman	Logan	Bush	N	—
115	Thu	Aug 11	A	TEX	W	12	9	Oberg	Diekman	Ottavino	D	+
116	Fri	Aug 12	A	PHI	L	6	10	Thompson	Gray		N	-
117	Sat	Aug 13	A	PHI	L	3	6	Eickhoff	Anderson	Gomez	N	-
118	Sun	Aug 14	A	PHI	L	6	7	Gonzalez	Chatwood	Gomez	D	—
119	Mon	Aug 15	H	WSN	L	4	5	Solis	Lyles	Melancon	N	—
120	Tue	Aug 16	H	WSN	W	6	2	Rusin	Petit		N	+
121	Wed	Aug 17	H	WSN	W	12	10	Logan	Strasburg	Oberg	D	++
122	Fri	Aug 19	H	CHC	W-wo	7	6	Carasiti	Chapman		N	++
123	Sat	Aug 20	H	CHC	L	2	9	Cahill	Hoffman		N	-
124	Sun	Aug 21	H	CHC	W	11	4	DeÂ LaÂ Rosa	Hammel		D	+
125	Mon	Aug 22	A	MIL	L	2	4	Nelson	Bettis	Thornburg	N	-
126	Tue	Aug 23	A	MIL	L	4	6	Suter	Logan	Knebel	N	-
127	Wed	Aug 24	A	MIL	L	1	7	Davies	Anderson		D	—
128	Fri	Aug 26	A	WSN	L	5	8	Gonzalez	Hoffman		N	—
129	Sat	Aug 27	A	WSN	W	9	4	McGee	Petit		D	+
130	Sun	Aug 28	A	WSN	W	5	3	Bettis	Giolito	Ottavino	D	++
131	Mon	Aug 29	H	LAD	W	8	1	Gray	Maeda		N	++
132	Wed	Aug 31 (1)	H	LAD	W	7	0	Anderson	Stripling		D	++
133	Wed	Aug 31 (2)	H	LAD	L	8	10	Avilan	Ottavino	Jansen	N	-
134	Fri	Sep 2	H	ARI	W	14	7	Estevez	Burgos		N	+
135	Sat	Sep 3	H	ARI	L	4	9	Shipley	Chatwood		N	-
136	Sun	Sep 4	H	ARI	L	5	8	Bradley	Gray		D	-

Gm#	Day	Date	H/A	Opp	W/L	R	RA	Win	Loss	Save	D/N	Str
137	Mon	Sep 5	H	SFG	W	6	0	Bettis	Moore		D	+
138	Tue	Sep 6	H	SFG	L	2	3	Lopez	Ottavino	Casilla	N	-
139	Wed	Sep 7	H	SFG	W-wo	6	5	Lyles	Osich		N	+
140	Thu	Sep 8	A	SDP	L	1	14	Richard	Hoffman		N	-
141	Fri	Sep 9	A	SDP	W	4	1	Chatwood	Perdomo	Ottavino	N	+
142	Sat	Sep 10	A	SDP	L	3	6	Friedrich	Gray	Maurer	N	-
143	Sun	Sep 11	A	SDP	W	3	2	McGee	Quackenbush	Ottavino	D	+
144	Mon	Sep 12	A	ARI	L	9	12	Delgado	Lyles	Hudson	N	-
145	Tue	Sep 13	A	ARI	L	4	11	Ray	DeÂ LaÂ Rosa	Koch	N	-
146	Wed	Sep 14	A	ARI	L	6	11	Shipley	Hoffman		N	—
147	Fri	Sep 16	H	SDP	W-wo	8	7	Ottavino	Maurer		N	+
148	Sat	Sep 17	H	SDP	W	8	0	Gray	Jackson		N	++
149	Sun	Sep 18	H	SDP	W	6	3	Bettis	Cosart	Ottavino	D	++
150	Mon	Sep 19	H	STL	L	3	5	Martinez	Anderson	Siegrist	N	-
151	Tue	Sep 20	H	STL	L	5	10	Wainwright	DeÂ LaÂ Rosa		N	-
152	Wed	Sep 21	H	STL	W	11	1	Marquez	Weaver		D	+
153	Thu	Sep 22	A	LAD	L	4	7	Avilan	Logan	Jansen	N	-
154	Fri	Sep 23	A	LAD	L	2	5	Stripling	Gray	Jansen	N	-
155	Sat	Sep 24	A	LAD	L	1	14	Kershaw	Bettis		N	—
156	Sun	Sep 25	A	LAD	L-wo	3	4	Blanton	Logan		D	—
157	Tue	Sep 27	A	SFG	L	3	12	Moore	Marquez		N	—
158	Wed	Sep 28	A	SFG	W	2	0	Chatwood	Samardzija	Ottavino	N	+
159	Thu	Sep 29	A	SFG	L	2	7	Cueto	Gray		N	-
160	Fri	Sep 30	H	MIL	W	4	1	Bettis	Suter	Ottavino	N	+
161	Sat	Oct 1	H	MIL	L	3	4	Thornburg	Ottavino	Barnes	N	-
162	Sun	Oct 2	H	MIL	L	4	6	Thornburg	Rusin	Knebel	D	-

```
# Produce Win/Loss Margin Plot
```

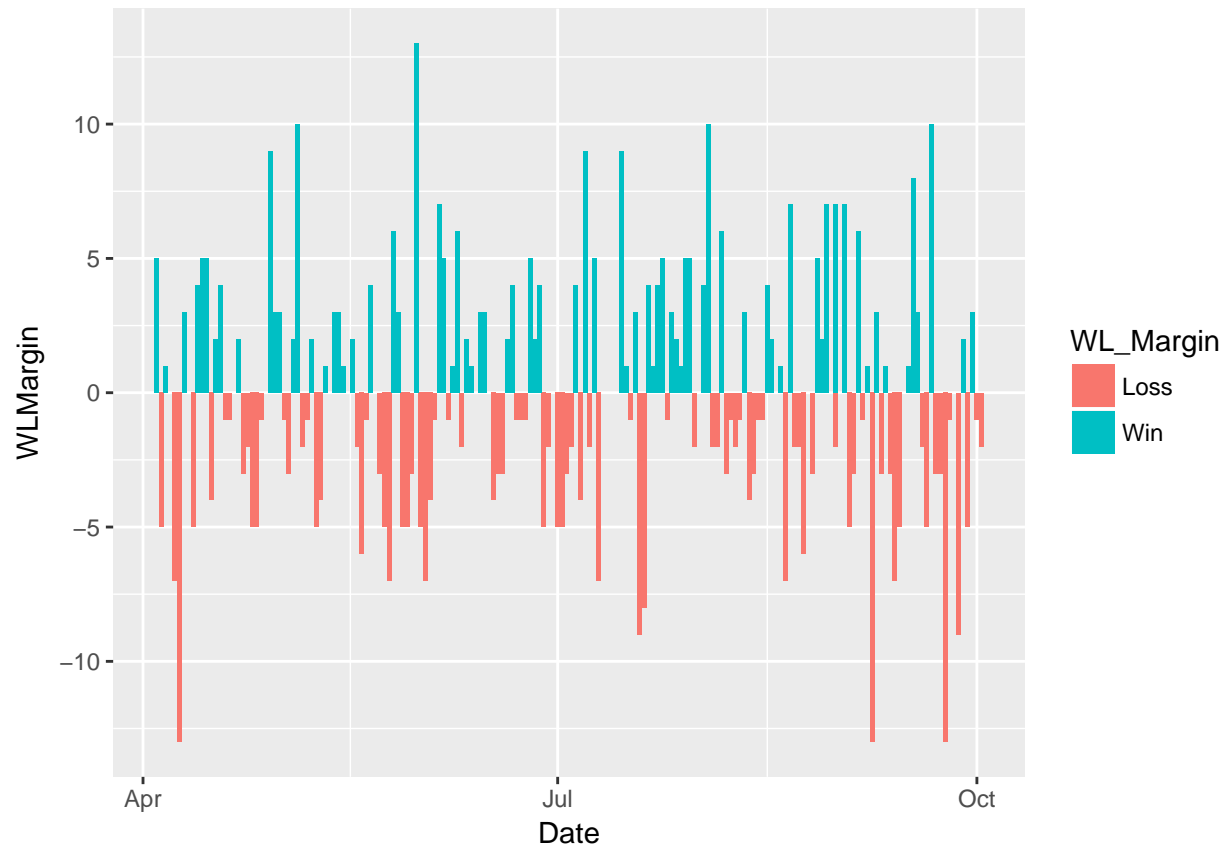
```
GBG16$Date <- trimws(GBG16$Date)
D <- tibble(Date = GBG16$Date, Year = 2016, WLMargin = GBG16$R - GBG16$RA,
            DN = GBG16$`D/N`, HA = GBG16$`H/A`)
D <- D %>% separate(Date, into = c("Month", "Day"), sep = " ")
```

```
## Warning: Too many values at 2 locations: 132, 133
```

```
D <- mutate(D, WL_Margin <- ifelse(D$WLMargin < 0, "Loss", "Win"))
D$Month <- match(tolower(D$Month), tolower(month.abb))
D$Date <- with(D, as.Date(paste(Year, Month, Day, sep = "/")))

ggplot(D, aes(Date, WLMargin, fill = WL_Margin)) +
  geom_bar(stat = "identity")
```





The Rockies current record is 14 Wins and 7 Losses. So far, the Rockies have scored 100 runs and have had 89 runs scored against them.

## 2017 Colorado Rockies Batting Statistics (non-pitchers)

Table 9: 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	13	41	10	15	3	0	0	3	0	0	3
2	1B	Reynolds	33	21	74	14	24	5	0	7	20	0	1	8
3	2B	LeMahieu	28	21	78	10	23	4	1	1	4	1	0	9
4	SS	Story	24	21	74	12	14	4	0	4	11	1	0	9
5	3B	Arenado	26	21	77	14	25	7	1	6	14	1	0	6
6	LF	Parra*	30	17	57	9	18	1	0	3	11	0	1	2
7	CF	Blackmon*	30	21	84	14	24	3	3	7	21	1	2	6
8	RF	Gonzalez*	31	20	73	9	16	4	0	2	5	0	0	6
9	C	Garneau	29	12	34	2	5	3	0	1	3	0	0	2
10	OF	Cardullo	29	15	28	2	4	0	0	0	3	0	0	3
11	UT	Amarista*	28	8	13	2	3	2	0	0	3	0	0	0
12	SS	Adames#	25	9	11	0	0	0	0	0	0	0	0	0
13	LF	Tapia*	23	2	7	0	0	0	0	0	0	0	0	0
14	UT	Valaika	24	3	4	2	2	2	0	0	0	0	0	0

Table 10: 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	8	.366	.422	.439	.861	121	18	2	1	0	0	1
2	1B	Reynolds	33	17	.324	.386	.676	1.061	162	50	2	0	0	1	0
3	2B	LeMahieu	28	11	.295	.375	.410	.785	101	32	2	1	0	0	0
4	SS	Story	24	30	.189	.277	.405	.683	71	30	1	0	0	0	0
5	3B	Arenado	26	12	.325	.384	.675	1.059	162	52	2	2	0	1	0
6	LF	Parra*	30	10	.316	.350	.491	.841	111	28	1	1	0	0	0
7	CF	Blackmon*	30	16	.286	.330	.643	.973	139	54	0	0	2	1	0
8	RF	Gonzalez*	31	14	.219	.272	.356	.628	58	26	1	0	0	2	0
9	C	Garneau	29	16	.147	.216	.324	.540	35	11	0	1	0	0	0
10	OF	Cardullo	29	7	.143	.250	.143	.393	5	4	0	1	0	0	0
11	UT	Amarista*	28	5	.231	.231	.385	.615	53	5	0	0	0	0	0
12	SS	Adames#	25	5	.000	.000	.000	.000	-100	0	0	0	0	0	0
13	LF	Tapia*	23	1	.000	.000	.000	.000	-100	0	0	0	0	0	0
14	UT	Valaika	24	0	.500	.500	1.000	1.500	268	4	0	0	0	0	0

## Pythagorean Win-Loss Theorem

The Pythagorean Win-Loss Theorem of Baseball is a creation of Bill James which relates the number of runs a team has scored (R) and surrendered (RA) to its actual winning percentage, based on the idea that runs scored compared to runs allowed is a better indicator of a team's (future) performance than a team's actual winning percentage. Feb 20, 2015

James put this formula forward with exponent of 2, thus the similarity to the actual Pythagorean Theorem. Statisticians have postulated that an exponent of 1.81 or 1.83 better fits historical data. Here is the generalized formula:

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

## Rockies Predicted Season Wins using Bill James' "Pythagorean" Formula

So, using the commonly used values of k, the Rockies predicted wins for the 2017 season look good but not as good as it could be. As the season progresses and more R/RA history is generated, we will keep an eye on these numbers.

Table 11: Predicted Wins for Entire 2017 Season

Wins (k=1.81)	Wins (k=1.83)	Wins (k=2.00)
90	90	90

## Rockies Pitching

Table 12: 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	2	2	.500	4.10	4	4	0	1	1	0	26.1	23	12
2	SP	Senzatela	22	3	0	1.000	2.08	4	4	0	0	0	0	26.0	18	6
3	SP	Anderson*	27	1	3	.250	7.11	5	5	0	0	0	0	25.1	30	22
4	SP	Freeland*	24	2	1	.667	3.32	4	4	0	0	0	0	21.2	22	8
5	SP	Gray	25	0	0		4.38	3	3	0	0	0	0	12.1	11	6
6	CL	Holland	31	0	0		1.80	10	0	10	0	0	9	10.0	6	2
7	RP	Oberg	27	0	0		4.50	10	0	2	0	0	0	10.0	6	7
8	RP	Ottavino	31	0	0		1.93	10	0	0	0	0	0	9.1	8	2
9	RP	Estevez	24	2	0	1.000	3.12	10	0	2	0	0	0	8.2	8	3
10	RP	Dunn*	32	2	0	1.000	1.17	10	0	0	0	0	0	7.2	5	1
11		Lyles	26	0	0		6.75	6	0	2	0	0	0	9.1	11	7
12		Rusin*	30	2	0	1.000	1.17	4	0	2	0	0	0	7.2	6	2
13		McGee*	30	0	0		4.05	8	0	1	0	0	1	6.2	4	3
14		Marquez	22	0	1	.000	18.00	1	1	0	0	0	0	4.0	9	8
15		Carle	25	0	0		0.00	1	0	1	0	0	0	1.0	0	0

Table 13: Rockies pitching statistics (2 of 2).

Rk	Pos	Name	ER	HR	BB	IBB	SO	HBP	BK	WP	BF	ERA+	FIP	WHIP
1	SP	Chatwood	12	5	8	0	18	0	2	1	104	117	4.96	1.177
2	SP	Senzatela	6	2	4	0	17	2	0	0	99	232	3.33	0.846
3	SP	Anderson*	20	6	8	0	22	0	2	1	112	68	5.23	1.500
4	SP	Freeland*	8	1	10	1	14	2	0	0	96	145	3.91	1.477
5	SP	Gray	6	1	7	0	9	0	0	1	53	112	4.24	1.459
6	CL	Holland	2	0	5	0	11	0	0	1	39	273	2.24	1.100
7	RP	Oberg	5	0	5	0	9	1	0	0	40	109	2.94	1.100
8	RP	Ottavino	2	1	4	0	12	0	0	1	39	255	3.05	1.286
9	RP	Estevez	3	0	1	0	8	0	1	1	33	158	1.44	1.038
10	RP	Dunn*	1	0	2	0	10	0	0	0	29	422	1.12	0.913
11		Lyles	7	2	1	0	10	1	0	1	39	73	4.23	1.286
12		Rusin*	1	0	1	0	5	0	0	0	30	422	2.03	0.913
13		McGee*	3	0	4	0	9	0	0	0	28	123	2.04	1.200
14		Marquez	8	0	3	0	2	0	0	0	24	29	4.19	3.000
15		Carle	0	0	0	0	1	0	0	1	4		0.94	0.000

## Team Fielding – Totals

Table 14: Rockies fielding statistics (1 of 2).

Name	Age	G	GS	CG	Inn	Ch	PO	A	E	DP	FldPct	Rtot	RtotperYr	Rdrs
Adames	25	1	1	0	7.0	2	1	1	0	0	1.000	0	-14	0
Amarista	28	3	2	0	14.2	1	1	0	0	0	1.000	-1	-70	-2
Anderson	27	4	4	0	19.2	2	0	1	1	0	0.500	0	0	-1
Arenado	26	19	19	19	168.0	40	7	33	0	6	1.000	2	17	2
Blackmon	30	19	19	19	168.0	36	34	1	1	1	0.972	1	8	-2
Cardullo	29	8	6	3	55.1	13	13	0	0	0	1.000	2	41	1
Carle	25	1	0	0	1.0	0	0	0	0	0	0.000	0	0	0
Chatwood	27	4	4	1	26.1	8	1	7	0	0	1.000	0	0	3
Dunn	32	10	0	0	7.2	0	0	0	0	0	0.000	0	0	0
Estevez	24	8	0	0	6.1	0	0	0	0	0	0.000	0	0	0
Freeland	24	4	4	0	21.2	7	0	7	0	0	1.000	0	0	0
Garneau	29	11	9	9	84.0	69	66	3	0	0	1.000	1	12	2
Gonzalez	31	18	18	17	154.0	32	31	1	0	1	1.000	-3	-25	1
Gray	25	3	3	0	12.1	3	1	2	0	0	1.000	0	0	0
Holland	31	9	0	0	9.0	1	1	0	0	0	1.000	0	0	-1
LeMahieu	28	19	18	18	162.0	106	28	78	0	16	1.000	5	40	4
Lyles	26	5	0	0	7.1	0	0	0	0	0	0.000	0	0	0
McGee	30	7	0	0	5.2	0	0	0	0	0	0.000	0	0	0
Oberg	27	9	0	0	9.0	1	0	1	0	0	1.000	0	0	0
Ottavino	31	9	0	0	8.1	1	0	1	0	0	1.000	0	0	1
Parra	30	14	12	12	110.0	31	30	1	0	3	1.000	-1	-14	3
Reynolds	33	18	18	18	159.0	177	171	6	0	18	1.000	0	1	0
Rusin	30	4	0	0	7.2	2	0	2	0	1	1.000	0	0	1
Senzatela	22	4	4	0	26.0	3	1	2	0	0	1.000	0	0	-1
Story	24	19	18	18	161.0	89	33	54	2	16	0.978	1	5	0
Tapia	23	2	2	2	17.0	4	4	0	0	0	1.000	0	-26	0
Wolters	25	10	10	8	84.0	86	81	4	1	3	0.988	0	-3	-3

## Team Fielding – Totals (continued)

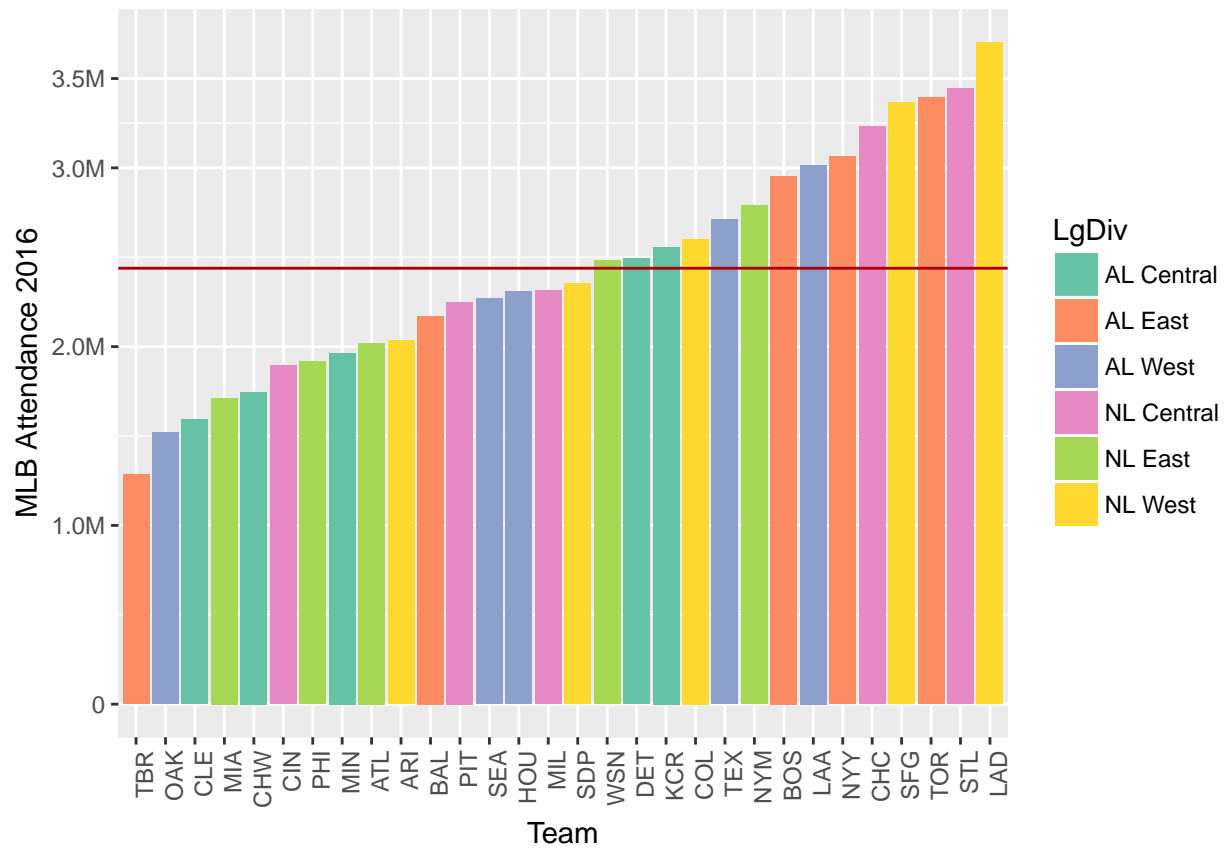
Table 15: Rockies fielding statistics (2 of 2).

Name	Age	G	RdrsPerYr	RFPPer9	RFPPerG	PB	WP	SB	CS	CS%	lgCSct	Pos.Summary
Adames	25	1	0	2.57	2.00	0	0	0	0	0	0	SS
Amarista	28	3	-155	0.61	0.33	0	0	0	0	0	0	LF-2B
Anderson	27	4	-10	0.46	0.25	0	0	0	0	0	0	P
Arenado	26	19	14	2.14	2.11	0	0	0	0	0	0	3B
Blackmon	30	19	-14	1.88	1.84	0	0	0	0	0	0	CF
Cardullo	29	8	24	2.11	1.63	0	0	0	0	0	0	LF-RF
Carle	25	1	0	0.00	0.00	0	0	0	0	0	0	P
Chatwood	27	4	23	2.73	2.00	0	0	0	2	100%	29%	P
Dunn	32	10	0	0.00	0.00	0	0	0	1	100%	29%	P
Estevez	24	8	0	0.00	0.00	0	0	0	0	0	0	P
Freeland	24	4	0	2.91	1.75	0	0	0	0	0	0	P
Garneau	29	11	30	7.39	6.27	0	2	0	1	100%	29%	C
Gonzalez	31	18	8	1.87	1.78	0	0	0	0	0	0	RF
Gray	25	3	0	2.19	1.00	0	0	0	0	0	0	P
Holland	31	9	-22	1.00	0.11	0	0	0	0	0	0	P
LeMahieu	28	19	30	5.89	5.58	0	0	0	0	0	0	2B
Lyles	26	5	0	0.00	0.00	0	0	1	0	0%	29%	P
McGee	30	7	0	0.00	0.00	0	0	0	0	0	0	P
Oberg	27	9	0	1.00	0.11	0	0	0	0	0	0	P
Ottavino	31	9	24	1.08	0.11	0	0	3	1	25%	29%	P
Parra	30	14	34	2.54	2.21	0	0	0	0	0	0	LF-1B
Reynolds	33	18	0	10.02	9.83	0	0	0	0	0	0	1B
Rusin	30	4	26	2.35	0.50	0	0	0	0	0	0	P
Senzatela	22	4	-8	1.04	0.75	0	0	0	0	0	0	P
Story	24	19	0	4.86	4.58	0	0	0	0	0	0	SS
Tapia	23	2	0	2.12	2.00	0	0	0	0	0	0	LF
Wolters	25	10	-41	9.11	8.50	1	6	4	3	43%	29%	C

## MLB Attendance for 2016 (work in progress)

Rk	League	Division	TeamName	Attendance	Attend.G
1	NL	West	Los Angeles Dodgers	3,703,312	45,720
2	NL	Central	St. Louis Cardinals	3,444,490	42,525
3	AL	East	Toronto Blue Jays	3,392,099	41,878
4	NL	West	San Francisco Giants	3,365,256	41,546
5	NL	Central	Chicago Cubs	3,232,420	39,906
6	AL	East	New York Yankees	3,063,405	37,820
7	AL	West	Los Angeles Angels of Anaheim	3,016,142	37,236
8	AL	East	Boston Red Sox	2,955,434	36,487
9	NL	East	New York Mets	2,789,602	34,440
10	AL	West	Texas Rangers	2,710,402	33,462
11	NL	West	Colorado Rockies	2,602,524	32,130
12	AL	Central	Kansas City Royals	2,557,712	31,577
13	AL	Central	Detroit Tigers	2,493,859	31,173
14	NL	East	Washington Nationals	2,481,938	30,641
15	NL	West	San Diego Padres	2,351,422	29,030
16	NL	Central	Milwaukee Brewers	2,314,614	28,575
17	AL	West	Houston Astros	2,306,623	28,477
18	AL	West	Seattle Mariners	2,267,928	27,999
19	NL	Central	Pittsburgh Pirates	2,249,201	27,768
20	AL	East	Baltimore Orioles	2,172,344	26,819
21	NL	West	Arizona Diamondbacks	2,036,216	25,138
22	NL	East	Atlanta Braves	2,020,914	24,950
23	AL	Central	Minnesota Twins	1,963,912	24,246
24	NL	East	Philadelphia Phillies	1,915,144	23,644
25	NL	Central	Cincinnati Reds	1,894,085	23,384
26	AL	Central	Chicago White Sox	1,746,293	21,559
27	NL	East	Miami Marlins	1,712,417	21,405
28	AL	Central	Cleveland Indians	1,591,667	19,650
29	AL	West	Oakland Athletics	1,521,506	18,784
30	AL	East	Tampa Bay Rays	1,286,163	15,879

## MLB Attendance 2016



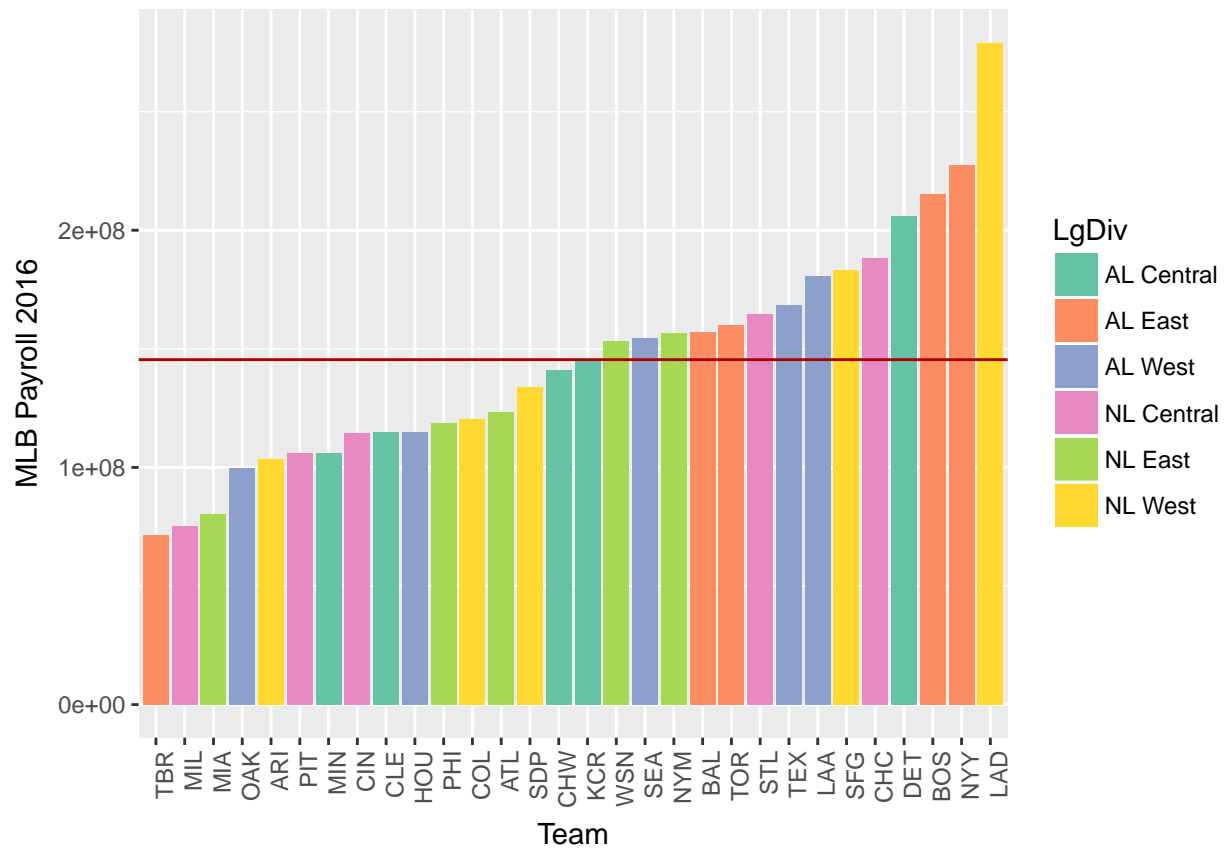


## MLB Payrolls 2016

Colorado ranked 19th out of 30 with a total payroll of \$121M in 2016. Compare this with the Rockies' ranking in season attendance of 11 (2.602M attendance in 2016). Perhaps there is revenue that can be leveraged to the player roster?

Rank	Team	Roster	Payroll	Average
1	Los Angeles Dodgers	40	279,107,794	6,977,695
2	New York Yankees	36	227,365,376	6,315,705
3	Boston Red Sox	35	215,416,336	6,154,753
4	Detroit Tigers	35	205,894,085	5,882,688
5	Chicago Cubs	36	188,402,394	5,233,400
6	San Francisco Giants	36	183,077,044	5,085,473
7	Los Angeles Angels of Anaheim	33	180,743,007	5,477,061
8	Texas Rangers	37	168,520,990	4,554,621
9	St. Louis Cardinals	36	164,516,170	4,569,894
10	Toronto Blue Jays	36	159,923,579	4,442,322
11	Baltimore Orioles	35	157,201,852	4,491,482
12	New York Mets	38	156,642,515	4,122,171
13	Seattle Mariners	35	154,718,253	4,420,522
14	Washington Nationals	35	153,078,852	4,373,682
15	Kansas City Royals	35	145,220,358	4,149,153
16	Chicago White Sox	35	141,208,186	4,034,520
17	San Diego Padres	35	133,681,702	3,819,477
18	Atlanta Braves	35	123,153,633	3,518,675
19	Colorado Rockies	37	120,586,480	3,259,094
20	Philadelphia Phillies	37	118,509,109	3,202,949
21	Houston Astros	34	114,738,542	3,374,663
22	Cleveland Indians	37	114,707,868	3,100,213
23	Cincinnati Reds	32	114,297,733	3,571,804
24	Minnesota Twins	31	106,235,357	3,426,947
25	Pittsburgh Pirates	34	105,866,836	3,113,731
26	Arizona Diamondbacks	35	103,372,186	2,953,491
27	Oakland Athletics	34	99,914,388	2,938,659
28	Miami Marlins	37	80,461,206	2,174,627
29	Milwaukee Brewers	35	75,244,791	2,149,851
30	Tampa Bay Rays	33	71,329,749	2,161,508

## MLB Payrolls for 2016 Bar Chart



## 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.

Here are a couple of suggestions my children came up with:

- Survey MLB team payroll budgets. This is a work-in-progress. The attendance and the salary data are accounted for. Need to get the average ticket prices and produce some interesting derived values.
- Survey MLB ticket prices. This goes with the previous topic. Ibid.

Let me know what you would like to see in future articles. Send me email at [jdreed@q.com](mailto:jdreed@q.com).

Yours truly,

Jim Reed

# Appendix

## Glossary

### Batting Statistics

Statistic Abbreviation	Definition
<i>G</i>	number of games (participated)
<i>PA</i>	plate appearances
<i>AB</i>	at bats
<i>R</i>	runs scored by player or team
<i>RA</i>	runs allowed
<i>H</i>	hits
<i>2B</i>	doubles
<i>3B</i>	triples
<i>HR</i>	home runs
<i>RBI</i>	runs batted in
<i>BA</i>	batting average
<i>OBP</i>	on-base percentage
<i>SLG</i>	slugging percentage
<i>OPS</i>	on-base percentage plus slugging percentage
<i>OPS+</i>	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
<i>Rk</i>	Rank This is a count of the rows from top to bottom. It is recalculated following the sorting of a column.
<i>Pos</i>	Position
<i>Name</i>	Player Name
<i>Age</i>	Player's age at midnight of June 30th of that year
<i>W</i>	Wins
<i>L</i>	Losses
<i>W-L%</i>	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.
<i>ERA</i>	$9 * ER / IP$
<i>G</i>	Games Played or Pitched
<i>GS</i>	Games Started
<i>GF</i>	Games Finished
<i>CG</i>	Complete Game
<i>SHO</i>	Shutouts No runs allowed and a complete game.
<i>SV</i>	Saves
<i>IP</i>	Innings Pitched
<i>H</i>	Hits/Hits Allowed
<i>R</i>	Runs Scored/Allowed
<i>ER</i>	Earned Runs Allowed
<i>HR</i>	Home Runs Hit/Allowed
<i>BB</i>	Bases on Balls/Walks
<i>IBB</i>	Intentional Bases on Balls First tracked in 1955.
<i>SO</i>	Strikeouts
<i>HBP</i>	Times Hit by a Pitch.
<i>BK</i>	Balks
<i>WP</i>	Wild Pitches
<i>BF</i>	Batters Faced
<i>ERA+</i>	$ERA+ 100*[lgERA/ERA]$ Adjusted to the player's ballpark(s).
<i>FIP</i>	Fielding Independent Pitching
<i>WHIP</i>	$(BB + H)/IP$ For recent years, leaders need 1 IP per team game played
<i>H9</i>	$9 \times H / IP$ For recent years, leaders need 1 IP per team game played
<i>HR9</i>	$9 \times HR / IP$ For recent years, leaders need 1 IP per team game played
<i>BB9</i>	$9 \times BB / IP$ For recent years, leaders need 1 IP per team game played
<i>SO9</i>	$9 \times SO / IP$ For recent years, leaders need 1 IP per team game played
<i>SO/W</i>	SO/W or SO/BB For recent years, pitching leaders need 1 IP per team game played.

## Fielding Statistics

Fielding Statistic	Definition
<i>Name</i>	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.
<i>Age</i>	Player's age at midnight of June 30th of that year
<i>G</i>	Games Played or Pitched
<i>GS</i>	– Games Started
<i>CG</i>	– Complete Game
<i>Inn</i>	– Innings Played in Field
<i>Ch</i>	– Defensive Chances Putouts + Assists + Errors
<i>PO</i>	– Putouts
<i>A</i>	– Assists
<i>E</i>	– Errors Committed
<i>DP</i>	– Double Plays Turned
<i>Fld%</i>	– Fielding Percentage (Putouts + Assists) / (Putouts + Assists + Errors)
<i>Rtot</i>	– 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
<i>Rtot/yr</i>	– 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
<i>Rdrs</i>	– 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
<i>Rdrs/yr</i>	– 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
<i>RF/9</i>	– Range Factor per 9 Inn $9 * (\text{Putouts} + \text{Assists}) / \text{Innings Played}$
<i>RF/G</i>	– Range Factor per Game $(\text{Putouts} + \text{Assists}) / \text{Games Played}$
<i>PB</i>	– Passed Balls
<i>WP</i>	– Wild Pitches
<i>SB</i>	– Stolen Bases
<i>CS</i>	– Caught Stealing

Fielding Statistic	Definition
<i>CS%</i>	– Caught Stealing Percentage $CS / (SB + CS)$
<i>lgCS%</i>	– League Caught Stealing Percentage League Expected $CS / \text{Players } SB + \text{Players } CS$
<i>PO</i>	– Pickoffs Runner picked off a base. May include cases they were safe on an error. Also includes Pickoff Caught Stealing plays.
<i>Pos</i>	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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