

Do Spring Training Results Matter in Major League Baseball?

Michael R. Summers
Pepperdine University

Stakeholders involved in the success of a major league baseball team include owners, managers, players, fans, and fantasy league players. While the performance records of teams and individual players in spring training games have little direct significance to these stakeholders, might they provide some information that would be useful in predicting performance in the upcoming regular season? This study compares the performance of teams and individual players in spring training games and regular season games to determine whether there are any significant relationships that can be used in these stakeholders' decisions.

INTRODUCTION

Spring training records are meaningless, aren't they? Many people would share the opinion of Dave Cameron (Cameron, 2010), who gives examples of players in the previous year who had great preseasons but were much less successful in the regular season. He concludes:

"The games don't count, and the players know this. They're working on things. They're facing minor league players or guys trying to come back from injury. Half the teams play in a desert atmosphere that helps the ball travel like it's Colorado. I know it's easy to get sucked in by the story of a new swing, a new pitch, a winter full of hard work, and I'm sure some of that is true. But you won't find those guys by looking at the stats. Ignore the numbers coming from the Cactus and Grapefruit Leagues. They don't mean a thing."

On the other hand, Nate Springfield (Springfield, 2011) argues that, for the purpose of picking players who will perform well in fantasy leagues, there are certain statistical indicators, such as slugging percentage, that have been shown to be useful in predicting regular season performance.

For minor league players and others not sure of making the team, spring training results are certainly meaningful to their careers. Similarly, to veteran players sure of being on the team, their performance in spring training might help in salary negotiations or in their value for trading to another team. However, even though spring training statistics can be very important to the players, that does not mean that these results are necessarily predictive of their future performance.

Other stakeholders, such as owners, managers, fans, and fantasy league players, are more concerned with getting some insight into how the players and the team overall will perform in the regular season. Owners' profitability depends largely on the success of the team in the regular season (as well as on the cost of the players). Managers need to make proper decisions in hiring and trading players to enhance the team's success, which in turn will certainly affect their own careers. Fans' decisions on attending games

will to some extent depend on their expectations of the team's and their favorite players' success. Fantasy league players need to decide which players to put on their teams in order to increase their chances of winning their competitions, which often involve monetary rewards. Obviously, the decisions of these stakeholders will be enhanced if they can find some relationship between spring training performance and regular season performance.

Roland Beech (Beech, 2007) compared preseason records to regular season records of basketball teams in the NBA during the previous five years. While he did observe that teams with better preseason records also had better regular season records, especially for the poorer teams, his results were not statistically significant due to the small sample sizes involved. NBA teams generally play just 8 preseason games, and other major sports also play just a few preseason games. However, MLB teams typically play between 30 and 40 spring training games each year, providing a much larger sample.

DATA

Major League Baseball provides statistics on their website MLB.com both for team records (<http://mlb.mlb.com/mlb/standings>) and for the performances of individual players (<http://mlb.mlb.com/stats/sortable>). For the five seasons of 2006 – 2010, team winning percentages in spring training games and in regular season games were compared, as well as team winning percentages in the preceding regular season. These statistics were broken down by year and by American League (14 teams) or National League (16 teams), as well as the totals for all five years. For the individual players, batting averages were compiled for spring training games, regular season games, and the preceding year's regular season games. Of the many players who participated in spring training, only those who had enough plate appearances to qualify for the batting championship in the preceding regular season, the current year's spring training season, and the current year's regular season were included each year. To qualify for the batting championship, a player must have at least 3.1 plate appearances for each scheduled game in the season (ordinarily a total of at least 502 plate appearances for a regular season).

TEAM RESULTS

Table 1 shows the winning percentages of the teams in each league for the preseason, previous year regular season, and current year regular season. A linear regression was run with each team's spring training record as the independent variable and their regular season record as the dependent variable to see if there was any relationship between the two. However, it would seem that a team's regular season record might more closely resemble their previous year's regular season record. After all, good teams tend to remain good teams for several years at a time, and the same for poor teams. In that case we would expect that a team's record in one season would show strong correlations with their records in other seasons, including spring training seasons. Therefore, regressions were also run with the previous regular season's record as the independent variable and with both the current year's preseason record and the previous regular season's record as independent variables.

Table 2 shows the statistical significance (p-value) for each regression model, as well as for each independent variable in the multiple regression models. For those 10 models using preseason results to forecast regular season results, only two showed significant relationships, the American League teams in 2009 and the National League teams in 2010, with p-values of .001 and .002, respectively. American League teams in 2007 also showed a marginal significance of .09. However, in most of the models there was no relationship. On the other hand, when teams' regular season records were compared with their previous year's regular season records, six of the ten models showed p-values below .10, with four of them below .05. When both the preseason records and the previous year's records were included as independent variables, five of the ten models showed levels of significance below .10, with four of them below .05. In these multiple regression models the preseason record variable again was significantly related to the regular season record in only two of the ten models, while the previous year's regular season record variable was significantly related to the regular season record in just three of the ten models

(and just two below the .05 level), down from the six when it was the only independent variable. From these results it appears that the best models are those where the only independent variable is last year's regular season record.

All of the above models suffer from the small sample sizes resulting from breaking the data down by year and by league (14 data points each year for the American League and 16 for the National League). When all 150 data points are combined into a single model, the results are striking. The model using the preseason record as the independent variable is now extremely significant, with a p-value of 6.2 E-5. The resulting regression equation is:

$$\text{Winning Percentage} = .40 + .20 * \text{Preseason Winning Percentage}$$

Again, the model using the previous year's regular season record as the independent variable is even more significant, with a tiny p-value of 2.7 E-10. This regression equation is:

$$\text{Winning Percentage} = .26 + .49 * \text{Previous Year's Winning Percentage}$$

The model using both independent variables shows a p-value of 2.5 E-12, with both independent variables also very significant individually, with p-values of 2.2 E-4 and 1.0 E-9, respectively. This regression equation is:

$$\begin{aligned} \text{Winning Percentage} = & .19 + .16 * \text{Preseason Winning Percentage} \\ & + .45 * \text{Previous Year's Winning Percentage} \end{aligned}$$

While last year's regular season record still shows the greater significance, the preseason record variable certainly adds significantly to the model.

INDIVIDUAL PLAYERS' RESULTS

A similar regression analysis was performed for the batting averages of individual players over the same five-year period. Table 3 shows the data for regular season batting average compared to preseason batting average and the previous year's regular season batting average for each year. Sample sizes varied over the years from 45 to 79 players who had enough plate appearances to qualify in the previous regular season, the current preseason, and the current regular season. As with teams, a player's performance would seem to be fairly consistent from year to year, so we would expect a high correlation with the previous year's batting average. However, players do improve or suffer age-related declines over the course of their careers, so spring training results in a given year might provide some useful additional information, as they do for teams.

Table 4 shows the statistical significance (p-value) for each regression model, as well as for each independent variable in the multiple regression models. In three of the five years the preseason batting averages showed a correlation with regular season batting averages with a significance level of .10 or below. However, in all five years the models based on the previous year's batting average had significances of .002 or below. The models using both preseason batting average and previous year's batting average as independent variables had p-values of .002 or below in all five years as well. In these models the preseason batting average variable showed a significance of .10 or below in just two of the years, while in all five years the previous year's batting average variable was significant at .002 or below.

Again, combining all five years of data produced a very large sample size of 324 data points. The resulting regression model using only preseason batting averages now showed a significance level of .002. The regression equation is:

$$\text{Batting Average} = .259 + .07 * \text{Preseason Batting Average}$$

The model based only on the previous year's batting average showed a significance of 9.3 E-17, an extremely low p-value. The resulting regression equation is:

$$\text{Batting Average} = .150 + .46 * \text{Previous Year's Batting Average}$$

Finally, the model using both independent variables produced a p-value of just 6.4 E-17. The preseason batting average variable was significantly related to the current year's batting average with a p-value of .02, while again the previous year's batting average variable had a very small p-value of 6.9 E-16. Therefore, both variables contribute significantly to the model, which overall is highly significant. This regression equation is:

$$\text{Batting Average} = .139 + .05 * \text{Preseason Batting Average} \\ + .44 * \text{Previous Year's Batting Average}$$

TESTING THE MODELS

Many studies of sports statistics have found statistically significant relationships for a particular time period, but these relationships often do not persist in later time periods. Certainly after a few years we can expect conditions to change, and these relationships should be reexamined. To see whether our models have any predictive value in the short term, we have collected the same data for the year 2011 (Tables 5 and 6) and compared the forecasts from our models based on the previous five years with the actual results in 2011.

Regarding the teams' winning percentages, the model based only on the preseason winning percentages ($\text{Winning Percentage} = .40 + .20 * \text{Preseason Winning Percentage}$) showed a correlation of only .15 with the actual 2011 winning percentages, certainly not significant. However, the model using both preseason winning percentages and the previous year's winning percentages ($\text{Winning Percentage} = .19 + .16 * \text{Preseason Winning Percentage} + .45 * \text{Previous Year's Winning Percentage}$) showed a correlation of .40 with the actual 2011 winning percentages, significant at the .029 level.

For players' batting averages, the model based only on the preseason batting averages ($\text{Batting Average} = .259 + .07 * \text{Preseason Batting Average}$) showed a correlation of .29 with the actual 2011 batting averages, significant at the .018 level. Again, the model using both preseason batting averages and the previous year's batting averages ($\text{Batting Average} = .139 + .05 * \text{Preseason Batting Average} + .44 * \text{Previous Year's Batting Average}$) showed even a higher correlation of .41 with the actual 2011 batting averages, significant at the .00077 level.

In both cases data from the preseason and the previous year's data from the years 2006 – 2010 provided excellent correlations with performance in the 2011 regular season.

CONCLUSIONS

As expected, both a team's winning percentage and individual players' batting averages are highly correlated with their performance in the previous year. Performance in spring training games is not as strongly correlated, especially when using small samples from one year at a time. However, preseason performance over a five-year period is significantly related to regular season performance, both for teams and for players, even when combined with the previous year's performance in a multiple regression model. Spring training performance measures can significantly contribute to the decisions made by owners, managers, players, fans, and fantasy league players.

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TABLE 1
TEAM PRESEASON RECORDS AND REGULAR SEASON RECORDS

	2006 Preseason			Regular Season	
American League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2005 Percentage</u>	<u>2006 Percentage</u>
Baltimore	13	17	0.433	0.457	0.432
Boston	9	20	0.310	0.586	0.531
Chi White Sox	10	19	0.345	0.611	0.556
Cleveland	20	12	0.625	0.574	0.481
Detroit	18	15	0.545	0.438	0.586
Kansas City	17	10	0.630	0.346	0.383
LA Angels	18	11	0.621	0.586	0.549
Minnesota	19	13	0.594	0.512	0.593
NY Yankees	15	16	0.484	0.586	0.599
Oakland	15	17	0.469	0.543	0.574
Seattle	11	17	0.393	0.426	0.481
Tampa Bay	13	16	0.448	0.414	0.377
Texas	12	16	0.429	0.488	0.494
Toronto	12	18	0.400	0.494	0.537
National League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2005 Percentage</u>	<u>2006 Percentage</u>
Arizona	18	14	0.563	0.475	0.469
Atlanta	11	18	0.379	0.556	0.488
Chi Cubs	16	13	0.552	0.488	0.407
Cincinnati	22	11	0.667	0.451	0.494
Colorado	17	12	0.586	0.414	0.469
Florida	19	9	0.679	0.512	0.481
Houston	11	19	0.367	0.549	0.506
LA Dodgers	15	13	0.536	0.438	0.543
Milwaukee	14	16	0.467	0.500	0.463
NY Mets	16	14	0.533	0.512	0.599
Philadelphia	19	11	0.633	0.543	0.525
Pittsburgh	15	17	0.469	0.414	0.414
San Diego	17	11	0.607	0.506	0.543
San Francisco	13	17	0.433	0.463	0.472
St. Louis	15	14	0.517	0.617	0.516
Washington	9	23	0.281	0.500	0.438

TABLE 1 (CONT.)

	2007 Preseason			Regular Season	
American League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2006 Percentage</u>	<u>2007 Percentage</u>
Baltimore	16	13	0.552	0.432	0.426
Boston	15	12	0.556	0.531	0.593
Chi White Sox	10	22	0.313	0.556	0.444
Cleveland	16	14	0.533	0.481	0.593
Detroit	21	10	0.677	0.586	0.543
Kansas City	11	18	0.379	0.383	0.426
LA Angels	19	14	0.576	0.549	0.580
Minnesota	14	17	0.452	0.593	0.488
NY Yankees	14	13	0.519	0.599	0.580
Oakland	17	12	0.586	0.574	0.469
Seattle	14	20	0.412	0.481	0.543
Tampa Bay	10	19	0.345	0.377	0.407
Texas	16	11	0.593	0.494	0.463
Toronto	12	14	0.462	0.537	0.512
National League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2006 Percentage</u>	<u>2007 Percentage</u>
Arizona	20	12	0.625	0.469	0.556
Atlanta	18	12	0.600	0.488	0.519
Chi Cubs	17	13	0.567	0.407	0.525
Cincinnati	18	12	0.600	0.494	0.444
Colorado	13	12	0.520	0.469	0.552
Florida	13	17	0.433	0.481	0.438
Houston	18	11	0.621	0.506	0.451
LA Dodgers	17	16	0.515	0.543	0.506
Milwaukee	13	17	0.433	0.463	0.512
NY Mets	12	21	0.364	0.599	0.543
Philadelphia	11	18	0.379	0.525	0.549
Pittsburgh	12	17	0.414	0.414	0.420
San Diego	17	14	0.548	0.543	0.546
San Francisco	15	18	0.455	0.472	0.438
St. Louis	16	10	0.615	0.516	0.481
Washington	11	17	0.393	0.438	0.451

TABLE 1 (CONT.)

	2008 Preseason			Regular Season	
American League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2007 Percentage</u>	<u>2008 Percentage</u>
Baltimore	10	17	0.370	0.426	0.422
Boston	8	13	0.381	0.593	0.586
Chi White Sox	11	19	0.367	0.444	0.546
Cleveland	15	14	0.517	0.593	0.500
Detroit	15	14	0.517	0.543	0.457
Kansas City	16	14	0.533	0.426	0.463
LA Angels	19	10	0.655	0.580	0.617
Minnesota	15	15	0.500	0.488	0.540
NY Yankees	14	12	0.538	0.580	0.549
Oakland	18	8	0.692	0.469	0.466
Seattle	13	16	0.448	0.543	0.377
Tampa Bay	18	8	0.692	0.407	0.599
Texas	17	11	0.607	0.463	0.488
Toronto	13	16	0.448	0.512	0.531
National League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2007 Percentage</u>	<u>2008 Percentage</u>
Arizona	12	18	0.400	0.556	0.506
Atlanta	15	15	0.500	0.519	0.444
Chi Cubs	15	15	0.500	0.525	0.602
Cincinnati	17	15	0.531	0.444	0.457
Colorado	14	12	0.538	0.552	0.457
Florida	19	11	0.633	0.438	0.522
Houston	13	18	0.419	0.451	0.534
LA Dodgers	11	18	0.379	0.506	0.519
Milwaukee	18	11	0.621	0.512	0.556
NY Mets	20	11	0.645	0.543	0.549
Philadelphia	12	18	0.400	0.549	0.568
Pittsburgh	13	17	0.433	0.420	0.414
San Diego	12	14	0.462	0.546	0.389
San Francisco	9	23	0.281	0.438	0.444
St. Louis	17	10	0.630	0.481	0.531
Washington	12	18	0.400	0.451	0.366

TABLE 1 (CONT.)

2009 Preseason			Regular Season		
American League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2008 Percentage</u>	<u>2009 Percentage</u>
Baltimore	13	21	0.382	0.422	0.395
Boston	20	14	0.588	0.586	0.586
Chi White Sox	16	20	0.444	0.546	0.488
Cleveland	12	20	0.375	0.500	0.401
Detroit	15	17	0.469	0.457	0.528
Kansas City	18	14	0.563	0.463	0.401
LA Angels	26	8	0.765	0.617	0.599
Minnesota	19	13	0.594	0.540	0.534
NY Yankees	24	10	0.706	0.549	0.636
Oakland	17	18	0.486	0.466	0.463
Seattle	16	18	0.471	0.377	0.525
Tampa Bay	15	16	0.484	0.599	0.519
Texas	21	14	0.600	0.488	0.537
Toronto	13	17	0.433	0.531	0.463
National League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2008 Percentage</u>	<u>2009 Percentage</u>
Arizona	11	23	0.324	0.506	0.432
Atlanta	21	12	0.636	0.444	0.531
Chi Cubs	18	18	0.500	0.602	0.516
Cincinnati	13	20	0.394	0.457	0.481
Colorado	17	17	0.500	0.457	0.568
Florida	12	19	0.387	0.522	0.537
Houston	12	20	0.375	0.534	0.457
LA Dodgers	15	22	0.405	0.519	0.586
Milwaukee	22	10	0.688	0.556	0.494
NY Mets	18	15	0.545	0.549	0.432
Philadelphia	13	19	0.406	0.568	0.574
Pittsburgh	17	15	0.531	0.414	0.385
San Diego	10	21	0.323	0.389	0.463
San Francisco	21	19	0.525	0.444	0.543
St. Louis	19	12	0.613	0.531	0.562
Washington	15	17	0.469	0.366	0.364

TABLE 1 (CONT.)

2010 Preseason			Regular Season		
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2009 Percentage</u>	<u>2010 Percentage</u>
American League					
Baltimore	12	17	0.414	0.395	0.407
Boston	17	14	0.548	0.586	0.549
Chi White Sox	12	16	0.429	0.488	0.543
Cleveland	19	9	0.679	0.401	0.426
Detroit	18	12	0.600	0.528	0.500
Kansas City	14	13	0.519	0.401	0.414
LA Angels	13	15	0.464	0.599	0.494
Minnesota	16	14	0.533	0.534	0.580
NY Yankees	13	15	0.464	0.636	0.586
Oakland	12	17	0.414	0.463	0.500
Seattle	12	18	0.400	0.525	0.377
Tampa Bay	20	8	0.714	0.519	0.593
Texas	10	19	0.345	0.537	0.556
Toronto	12	13	0.480	0.463	0.525
National League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2009 Percentage</u>	<u>2010 Percentage</u>
Arizona	15	17	0.469	0.432	0.401
Atlanta	17	12	0.586	0.531	0.562
Chi Cubs	18	12	0.600	0.516	0.463
Cincinnati	12	16	0.429	0.481	0.562
Colorado	17	13	0.567	0.568	0.512
Florida	14	14	0.500	0.537	0.494
Houston	13	15	0.464	0.457	0.469
LA Dodgers	11	17	0.393	0.586	0.494
Milwaukee	16	14	0.533	0.494	0.475
NY Mets	14	16	0.467	0.432	0.488
Philadelphia	15	12	0.556	0.574	0.599
Pittsburgh	7	21	0.250	0.385	0.352
San Diego	18	10	0.643	0.463	0.556
San Francisco	23	12	0.657	0.543	0.568
St. Louis	15	14	0.517	0.562	0.531
Washington	10	20	0.333	0.364	0.426

TABLE 2
P-VALUES OF REGRESSION MODELS FOR TEAM PERFORMANCE

		PRESEASON	PREVIOUS YEAR	PRESEASON AND PREVIOUS YEAR		
				<i>Preseason</i>	<i>Previous Year</i>	<i>Overall</i>
2006	AL	0.88	0.01	0.73	0.01	0.04
	NL	0.32	0.20	0.20	0.13	0.19
2007	AL	0.09	0.05	0.28	0.16	0.09
	NL	0.71	0.17	0.64	0.17	0.35
2008	AL	0.39	0.51	0.36	0.46	0.52
	NL	0.18	0.23	0.23	0.30	0.24
2009	AL	0.001	0.06	0.009	0.48	0.005
	NL	0.66	0.09	0.79	0.11	0.24
2010	AL	0.60	0.02	0.37	0.02	0.05
	NL	0.002	0.004	0.05	0.07	0.002
Total		6.2 E-5	2.7 E-10	2.2 E-4	1.0 E-9	2.5 E-12

TABLE 3
INDIVIDUAL PRESEASON AND REGULAR SEASON BATTING AVERAGES

		<i>Preseason 2006</i>	<i>Regular 2005</i>	<i>Regular 2006</i>
Player	Team	AVG	AVG	AVG
Atkins, G	COL	0.327	0.287	0.329
Berkman, L	HOU	0.346	0.293	0.315
Berroa, A	KC	0.439	0.270	0.234
Biggio, C	HOU	0.309	0.264	0.246
Blalock, H	TEX	0.250	0.263	0.266
Cabrera, O	LAA	0.333	0.257	0.282
Cano, R	NYN	0.337	0.297	0.342
Chavez, E	OAK	0.293	0.269	0.241
Clayton, R	WSH	0.215	0.270	0.258
Crawford, C	TB	0.281	0.301	0.305
DeJesus, D	KC	0.310	0.293	0.295
Dunn, A	CIN	0.288	0.247	0.234
Dye, J	CWS	0.279	0.274	0.315
Eckstein, D	STL	0.339	0.294	0.292
Everett, A	HOU	0.235	0.248	0.239
Figgins, C	LAA	0.362	0.290	0.267
Giles, B	SD	0.323	0.301	0.263
Gonzalez, L	COL	0.383	0.271	0.271
Green, S	ARI	0.213	0.286	0.277
Hafner, T	CLE	0.354	0.305	0.308
Hall, B	MIL	0.342	0.291	0.270
Hatteberg, S	CIN	0.286	0.256	0.289
Helton, T	COL	0.424	0.320	0.302
Huff, A	TB	0.389	0.261	0.267
Ibanez, R	SEA	0.443	0.280	0.289
Iguchi, T	CWS	0.182	0.278	0.281
Inge, B	DET	0.308	0.261	0.253
Jenkins, G	MIL	0.270	0.292	0.271
Johnson, N	WSH	0.172	0.289	0.290
Jones, J	CHC	0.322	0.249	0.285
Kendall, J	OAK	0.232	0.271	0.295
Konerko, P	CWS	0.319	0.283	0.313
Lopez, F	CIN	0.261	0.291	0.274
Lowell, M	BOS	0.327	0.236	0.284
Millar, K	BAL	0.288	0.272	0.272
Mora, M	BAL	0.315	0.283	0.274
Overbay, L	TOR	0.204	0.276	0.312
Peralta, J	CLE	0.237	0.292	0.257
Pierre, J	CHC	0.222	0.276	0.292
Ramirez, A	CHC	0.483	0.302	0.291
Rollins, J	PHI	0.278	0.290	0.277

TABLE 3 (CONT.)

		<i>Preseason 2006</i>	<i>Regular 2005</i>	<i>Regular 2006</i>
Player	Team	AVG	AVG	AVG
Sizemore, G	CLE	0.323	0.289	0.290
Swisher, N	OAK	0.347	0.236	0.254
Tracy, C	ARI	0.333	0.308	0.281
Utley, C	PHI	0.278	0.291	0.309
Wilson, P	HOU	0.240	0.260	0.263
Wright, D	NYM	0.242	0.306	0.311

TABLE 3 (CONT.)

		<i>Preseason 2007</i>	<i>Regular 2006</i>	<i>Regular 2007</i>
Player	Team	AVG	AVG	AVG
Atkins, G	COL	0.322	0.329	0.301
Beltran, C	NYM	0.237	0.275	0.276
Beltre, A	SEA	0.367	0.268	0.276
Berkman, L	HOU	0.321	0.315	0.278
Betancourt, Y	SEA	0.310	0.289	0.289
Burrell, P	PHI	0.237	0.258	0.256
Byrnes, E	ARI	0.300	0.267	0.286
Cabrera, M	FLA	0.303	0.339	0.320
Cabrera, M	NYY	0.206	0.280	0.273
Cabrera, O	LAA	0.286	0.282	0.301
Cano, R	NYY	0.338	0.342	0.306
Castillo, L	MIN	0.436	0.296	0.301
Crawford, C	TB	0.281	0.305	0.315
Cuddyer, M	MIN	0.348	0.284	0.276
Damon, J	NYY	0.220	0.285	0.270
DeJesus, D	KC	0.321	0.295	0.260
DeRosa, M	CHC	0.300	0.296	0.293
Dunn, A	CIN	0.377	0.234	0.264
Dye, J	CWS	0.361	0.315	0.254
Feliz, P	SF	0.325	0.244	0.253
Francoeur, J	ATL	0.309	0.260	0.293
Giles, B	SD	0.298	0.263	0.271
Gonzalez, A	SD	0.367	0.304	0.282
Granderson, C	DET	0.314	0.260	0.302
Hafner, T	CLE	0.208	0.308	0.266
Hall, B	MIL	0.313	0.270	0.254
Hawpe, B	COL	0.315	0.293	0.291
Helton, T	COL	0.396	0.302	0.320
Holliday, M	COL	0.340	0.326	0.340
Howard, R	PHI	0.221	0.313	0.268
Hudson, O	ARI	0.434	0.287	0.294
Huff, A	BAL	0.361	0.267	0.280
Ibanez, R	SEA	0.375	0.289	0.291
Iguchi, T	CWS	0.234	0.281	0.267
Inge, B	DET	0.258	0.253	0.236
Jeter, D	NYY	0.297	0.343	0.322
Jones, A	ATL	0.259	0.262	0.222
Kearns, A	WSH	0.262	0.264	0.266
Konerko, P	CWS	0.348	0.313	0.259
LaRoche, A	PIT	0.296	0.285	0.272
Lofton, K	TEX	0.302	0.301	0.296

TABLE 3 (CONT.)

		<i>Preseason 2007</i>	<i>Regular 2006</i>	<i>Regular 2007</i>
Player	Team	AVG	AVG	AVG
Lopez, F	WSH	0.185	0.274	0.245
Lopez, J	SEA	0.228	0.282	0.252
Loretta, M	HOU	0.321	0.285	0.287
Lowell, M	BOS	0.156	0.284	0.324
Markakis, N	BAL	0.343	0.291	0.300
Matthews, G	LAA	0.267	0.313	0.252
Mora, M	BAL	0.246	0.274	0.274
Morneau, J	MIN	0.290	0.321	0.271
Ordonez, M	DET	0.283	0.298	0.363
Ortiz, D	BOS	0.226	0.287	0.332
Phillips, B	CIN	0.338	0.276	0.288
Pujols, A	STL	0.286	0.331	0.327
Ramirez, A	CHC	0.388	0.291	0.310
Ramirez, H	FLA	0.297	0.292	0.332
Ramirez, M	BOS	0.289	0.321	0.296
Renteria, E	ATL	0.264	0.293	0.332
Reyes, J	NYM	0.329	0.300	0.280
Roberts, B	BAL	0.231	0.286	0.290
Rodriguez, A	NYY	0.283	0.290	0.314
Rodriguez, I	DET	0.394	0.300	0.281
Rollins, J	PHI	0.371	0.277	0.296
Sizemore, G	CLE	0.115	0.290	0.277
Soriano, A	CHC	0.288	0.277	0.299
Suzuki, I	SEA	0.319	0.322	0.351
Swisher, N	OAK	0.303	0.254	0.262
Teixeira, M	TEX	0.245	0.282	0.306
Tejada, M	BAL	0.246	0.330	0.296
Uggla, D	FLA	0.224	0.282	0.245
Utley, C	PHI	0.348	0.309	0.332
Vidro, J	SEA	0.324	0.289	0.314
Vizquel, O	SF	0.265	0.295	0.246
Willingham, J	FLA	0.177	0.277	0.265
Wilson, J	WSH	0.333	0.273	0.296
Winn, R	SF	0.271	0.262	0.300
Wright, D	NYM	0.290	0.311	0.325
Youkilis, K	BOS	0.368	0.279	0.288
Young, M	TEX	0.380	0.314	0.315
Zimmerman, R	WSH	0.414	0.287	0.266

TABLE 3 (CONT.)

		<i>Preseason 2008</i>	<i>Regular 2007</i>	<i>Regular 2008</i>
Player	Team	AVG	AVG	AVG
Abreu, B	NYY	0.333	0.283	0.296
Atkins, G	COL	0.250	0.301	0.286
Bay, J	PIT	0.286	0.247	0.286
Berkman, L	HOU	0.296	0.278	0.312
Betancourt, Y	SEA	0.294	0.289	0.279
Cabrera, M	DET	0.288	0.320	0.292
Cabrera, O	CWS	0.203	0.301	0.281
Cano, R	NYY	0.446	0.306	0.271
Cust, J	OAK	0.244	0.256	0.231
Damon, J	NYY	0.255	0.270	0.303
DeJesus, D	KC	0.327	0.260	0.307
Drew, S	ARI	0.302	0.238	0.291
Dunn, A	CIN	0.189	0.264	0.236
Dye, J	CWS	0.186	0.254	0.292
Ellis, M	OAK	0.283	0.276	0.233
Encarnacion, E	CIN	0.152	0.289	0.251
Ethier, A	LAD	0.377	0.284	0.305
Fielder, P	MIL	0.292	0.288	0.276
Figgins, C	LAA	0.315	0.330	0.276
Francoeur, J	ATL	0.242	0.293	0.239
Gordon, A	KC	0.310	0.247	0.260
Holliday, M	COL	0.356	0.340	0.321
Howard, R	PHI	0.313	0.268	0.251
Ibanez, R	SEA	0.314	0.291	0.293
Iwamura, A	TB	0.340	0.285	0.274
Jeter, D	NYY	0.269	0.322	0.300
Johnson, K	ATL	0.226	0.276	0.287
Jones, A	BAL	0.259	0.222	0.270
Kinsler, I	TEX	0.422	0.263	0.319
Konerko, P	CWS	0.316	0.259	0.240
LaRoche, A	PIT	0.327	0.272	0.270
Lee, D	CHC	0.179	0.317	0.291
Lopez, F	WSH	0.222	0.245	0.283
Lopez, J	SEA	0.278	0.252	0.297
Markakis, N	BAL	0.298	0.300	0.306
Martin, R	LAD	0.215	0.293	0.280
Millar, K	BAL	0.313	0.254	0.234
Molina, Y	STL	0.222	0.276	0.292
Mora, M	BAL	0.407	0.274	0.285
Morneau, J	MIN	0.200	0.271	0.300
Ordonez, M	DET	0.333	0.363	0.317

TABLE 3 (CONT.)

		<i>Preseason 2008</i>	<i>Regular 2007</i>	<i>Regular 2008</i>
Player	Team	AVG	AVG	AVG
Pedroia, D	BOS	0.152	0.317	0.326
Pena, C	TB	0.278	0.282	0.247
Phillips, B	CIN	0.284	0.288	0.261
Polanco, P	DET	0.408	0.341	0.307
Pujols, A	STL	0.407	0.327	0.357
Ramirez, H	FLA	0.378	0.332	0.301
Renteria, E	DET	0.234	0.332	0.270
Reyes, J	NYM	0.314	0.280	0.297
Rios, A	TOR	0.175	0.297	0.291
Roberts, B	BAL	0.265	0.290	0.296
Rollins, J	PHI	0.188	0.296	0.277
Rowand, A	SF	0.277	0.309	0.271
Soriano, A	CHC	0.300	0.299	0.280
Suzuki, I	SEA	0.211	0.351	0.310
Swisher, N	CWS	0.215	0.262	0.219
Teahen, M	KC	0.271	0.285	0.255
Teixeira, M	ATL	0.211	0.306	0.308
Tejada, M	HOU	0.375	0.296	0.283
Theriot, R	CHC	0.329	0.266	0.307
Thome, J	CWS	0.246	0.275	0.245
Uggla, D	FLA	0.253	0.245	0.260
Upton, B	TB	0.326	0.300	0.273
Utley, C	PHI	0.214	0.332	0.292
Victorino, S	PHI	0.294	0.281	0.293
Weeks, R	MIL	0.254	0.235	0.234
Winn, R	SF	0.318	0.300	0.306
Wright, D	NYM	0.284	0.325	0.302
Youkilis, K	BOS	0.279	0.288	0.312
Young, C	ARI	0.333	0.237	0.248
Young, D	MIN	0.286	0.288	0.290
Young, M	TEX	0.403	0.315	0.284

TABLE 3 (CONT.)

		<i>Preseason 2009</i>	<i>Regular 2008</i>	<i>Regular 2009</i>
Player	Team	AVG	AVG	AVG
Bourn, M	HOU	0.261	0.229	0.285
Cameron, M	MIL	0.267	0.243	0.250
Cust, J	OAK	0.254	0.231	0.240
Damon, J	NYY	0.262	0.303	0.282
DeJesus, D	KC	0.303	0.307	0.281
Dye, J	CWS	0.208	0.292	0.250
Ellsbury, J	BOS	0.266	0.280	0.301
Escobar, Y	ATL	0.284	0.288	0.299
Ethier, A	LAD	0.273	0.305	0.272
Fielder, P	MIL	0.273	0.276	0.299
Figgins, C	LAA	0.380	0.276	0.298
Francoeur, J	ATL	0.328	0.239	0.280
Guzman, C	WSH	0.242	0.316	0.284
Holliday, M	OAK	0.306	0.321	0.313
Howard, R	PHI	0.333	0.251	0.279
Huff, A	BAL	0.237	0.304	0.241
Ibanez, R	PHI	0.310	0.293	0.272
Jones, A	BAL	0.333	0.270	0.277
Kemp, M	LAD	0.272	0.290	0.297
Kendall, J	MIL	0.242	0.246	0.241
Kinsler, I	TEX	0.299	0.319	0.253
Konerko, P	CWS	0.364	0.240	0.277
Kubel, J	MIN	0.365	0.272	0.300
LaRoche, A	PIT	0.239	0.270	0.258
Loney, J	LAD	0.292	0.289	0.281
McLouth, N	PIT	0.293	0.276	0.256
Pence, H	HOU	0.329	0.269	0.282
Peralta, J	CLE	0.394	0.276	0.254
Pujols, A	STL	0.293	0.357	0.327
Ramirez, A	CWS	0.319	0.290	0.277
Renteria, E	SF	0.229	0.270	0.250
Reynolds, M	ARI	0.323	0.239	0.260
Ross, C	FLA	0.365	0.260	0.270
Rowand, A	SF	0.189	0.271	0.261
Schumaker, S	STL	0.287	0.302	0.303
Scott, L	BAL	0.288	0.257	0.258
Sizemore, G	CLE	0.355	0.268	0.248
Soriano, A	CHC	0.325	0.280	0.241
Swisher, N	NYY	0.222	0.219	0.249
Teixeira, M	NYY	0.433	0.308	0.292
Theriot, R	CHC	0.412	0.307	0.284
Uggla, D	FLA	0.206	0.260	0.243
Votto, J	CIN	0.314	0.297	0.322
Winn, R	SF	0.253	0.306	0.262
Young, M	TEX	0.338	0.284	0.322

TABLE 3 (CONT.)

		<i>Preseason 2010</i>	<i>Regular 2009</i>	<i>Regular 2010</i>
Player	Team	AVG	AVG	AVG
Andrus, E	TEX	0.211	0.267	0.265
Aybar, E	LAA	0.346	0.312	0.253
Bartlett, J	TB	0.373	0.320	0.254
Betancourt, Y	KC	0.236	0.245	0.259
Blake, C	LAD	0.352	0.280	0.248
Braun, R	MIL	0.250	0.320	0.304
Butler, B	KC	0.333	0.301	0.318
Byrd, M	CHC	0.302	0.283	0.293
Cabrera, M	DET	0.356	0.324	0.328
Cabrera, M	ATL	0.286	0.274	0.255
Cano, R	NYY	0.377	0.320	0.319
Cantu, J	FLA	0.327	0.289	0.256
Choo, S	CLE	0.393	0.300	0.300
Crawford, C	TB	0.226	0.305	0.307
Cuddyer, M	MIN	0.407	0.276	0.271
Damon, J	DET	0.367	0.282	0.271
Drew, S	ARI	0.365	0.261	0.278
Dunn, A	WSH	0.208	0.267	0.260
Escobar, Y	ATL	0.283	0.299	0.256
Ethier, A	LAD	0.292	0.272	0.292
Fielder, P	MIL	0.246	0.299	0.261
Figgins, C	SEA	0.254	0.298	0.259
Fowler, D	COL	0.229	0.266	0.260
Francoeur, J	NYM	0.197	0.280	0.249
Gonzalez, A	SD	0.204	0.277	0.298
Granderson, C	NYY	0.286	0.249	0.247
Gutierrez, F	SEA	0.268	0.283	0.245
Headley, C	SD	0.319	0.262	0.264
Hill, A	TOR	0.417	0.286	0.205
Howard, R	PHI	0.299	0.279	0.276
Hudson, O	MIN	0.235	0.283	0.268
Huff, A	SF	0.310	0.241	0.290
Ibanez, R	PHI	0.130	0.272	0.275
Jeter, D	NYY	0.231	0.334	0.270
Jones, A	BAL	0.293	0.277	0.284
Kemp, M	LAD	0.265	0.297	0.249
Konerko, P	CWS	0.338	0.277	0.312
Kouzmanoff, K	OAK	0.288	0.255	0.247
Kubel, J	MIN	0.281	0.300	0.249
Lind, A	TOR	0.222	0.305	0.237
Loney, J	LAD	0.304	0.281	0.267

TABLE 3 (CONT.)

		<i>Preseason 2010</i>	<i>Regular 2009</i>	<i>Regular 2010</i>
Player	Team	AVG	AVG	AVG
Longoria, E	TB	0.304	0.281	0.294
Lopez, J	SEA	0.299	0.272	0.239
Ludwick, R	STL	0.303	0.265	0.251
Markakis, N	BAL	0.254	0.293	0.297
Ortiz, D	BOS	0.226	0.238	0.270
Pena, C	TB	0.176	0.227	0.196
Pence, H	HOU	0.373	0.282	0.282
Peralta, J	CLE	0.259	0.254	0.249
Podsednik, S	KC	0.308	0.304	0.297
Polanco, P	PHI	0.371	0.285	0.298
Prado, M	ATL	0.383	0.307	0.307
Pujols, A	STL	0.306	0.327	0.312
Ramirez, A	CWS	0.261	0.277	0.282
Ramirez, H	FLA	0.313	0.342	0.300
Rasmus, C	STL	0.362	0.251	0.276
Reynolds, M	ARI	0.368	0.260	0.198
Rolen, S	CIN	0.220	0.305	0.285
Sandoval, P	SF	0.281	0.330	0.268
Schumaker, S	STL	0.182	0.303	0.265
Scott, L	BAL	0.259	0.258	0.284
Scutaro, M	BOS	0.217	0.282	0.275
Span, D	MIN	0.308	0.311	0.264
Suzuki, I	SEA	0.257	0.352	0.315
Swisher, N	NYN	0.313	0.249	0.288
Tejada, M	BAL	0.274	0.313	0.269
Theriot, R	CHC	0.359	0.284	0.270
Uggla, D	FLA	0.197	0.243	0.287
Upton, B	TB	0.295	0.241	0.237
Upton, J	ARI	0.386	0.300	0.273
Utley, C	PHI	0.339	0.282	0.275
Victorino, S	PHI	0.327	0.292	0.259
Votto, J	CIN	0.352	0.322	0.324
Wells, V	TOR	0.300	0.260	0.273
Werth, J	PHI	0.203	0.268	0.296
Wright, D	NYM	0.278	0.307	0.283
Young, M	TEX	0.429	0.322	0.284
Zimmerman, R	WSH	0.393	0.292	0.307
Zobrist, B	TB	0.358	0.297	0.238

TABLE 4
P-VALUES OF REGRESSION MODELS FOR INDIVIDUAL BATTING AVERAGES

	Preseason	Previous Year	Preseason and Previous Year		
			<i>Preseason</i>	<i>Previous Year</i>	<i>Overall</i>
2006	0.88	4.0 E-4	0.72	4.5 E-4	0.002
2007	0.10	4.3 E-5	0.15	.68 E-5	.88 E-5
2008	0.06	4.6 E-5	0.09	7.4 E-5	6.3 E-5
2009	0.02	0.002	0.02	0.002	7.2 E-4
2010	0.27	2.6 E-4	0.69	5.0 E-4	0.001
Total	0.002	9.3 E-17	0.02	6.9 E-16	6.4 E-17

TABLE 5
2011 TEAM PRESEASON RECORDS AND REGULAR SEASON RECORDS

	2011 Preseason			Regular Season	
American League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2010</u> <u>Percentage</u>	<u>2011</u> <u>Percentage</u>
Baltimore	15	15	0.500	0.407	0.426
Boston	14	19	0.424	0.549	0.556
Chi White Sox	11	20	0.355	0.543	0.488
Cleveland	15	14	0.517	0.426	0.494
Detroit	20	14	0.588	0.500	0.586
Kansas City	20	10	0.667	0.414	0.438
LA Angels	18	13	0.581	0.494	0.531
Minnesota	20	12	0.625	0.580	0.389
NY Yankees	13	15	0.464	0.586	0.599
Oakland	12	21	0.364	0.500	0.457
Seattle	16	13	0.552	0.377	0.414
Tampa Bay	15	14	0.517	0.593	0.562
Texas	13	16	0.448	0.556	0.593
National League					
<u>Team</u>	<u>W</u>	<u>L</u>	<u>PCT</u>	<u>2010</u> <u>Percentage</u>	<u>2011</u> <u>Percentage</u>
Toronto	16	14	0.533	0.525	0.500
Arizona	12	25	0.324	0.401	0.580
Atlanta	17	13	0.567	0.562	0.549
Chi Cubs	14	19	0.424	0.463	0.438
Cincinnati	17	14	0.548	0.562	0.488
Colorado	20	11	0.645	0.512	0.451
Florida	15	15	0.500	0.494	0.444
Houston	11	24	0.314	0.469	0.346
LA Dodgers	14	21	0.400	0.494	0.509
Milwaukee	19	11	0.633	0.475	0.593
NY Mets	17	15	0.531	0.488	0.475
Philadelphia	21	14	0.600	0.599	0.630
Pittsburgh	12	21	0.364	0.352	0.444
San Diego	13	17	0.433	0.556	0.438
San Francisco	23	12	0.657	0.568	0.531
St. Louis	14	16	0.467	0.531	0.556
Washington	15	14	0.517	0.426	0.497

TABLE 6
2011 INDIVIDUAL PRESEASON AND REGULAR SEASON BATTING AVERAGES

		<i>Preseason 2011</i>	<i>Regular 2010</i>	<i>Regular 2011</i>
Player	Team	AVG	AVG	AVG
Abreu, B	LAA	0.308	0.255	0.253
Andrus, E	TEX	0.274	0.265	0.279
Aybar, E	LAA	0.317	0.253	0.279
Bautista, J	TOR	0.4	0.26	0.302
Bourn, M	HOU	0.273	0.265	0.294
Butler, B	KC	0.347	0.318	0.291
Cabrera, M	DET	0.311	0.328	0.344
Cabrera, M	KC	0.468	0.255	0.305
Cano, R	NYY	0.236	0.319	0.302
Castro, S	CHC	0.348	0.3	0.307
Desmond, I	WSH	0.29	0.269	0.253
Escobar, A	KC	0.364	0.235	0.254
Escobar, Y	TOR	0.394	0.256	0.29
Ethier, A	LAD	0.269	0.292	0.292
Francoeur, J	KC	0.227	0.249	0.285
Gardner, B	NYY	0.26	0.277	0.259
Gonzalez, A	ATL	0.294	0.25	0.241
Guerrero, V	BAL	0.364	0.3	0.29
Holliday, M	STL	0.345	0.312	0.296
Howard, R	PHI	0.278	0.276	0.253
Huff, A	SF	0.369	0.29	0.246
Ibanez, R	PHI	0.253	0.275	0.245
Infante, O	FLA	0.414	0.321	0.276
Jackson, A	DET	0.209	0.293	0.249
Jeter, D	NYY	0.304	0.27	0.297
Johnson, K	ARI	0.333	0.284	0.222
Jones, A	BAL	0.304	0.284	0.28
Kemp, M	LAD	0.29	0.249	0.324
Kendrick, H	LAA	0.364	0.279	0.285
Konerko, P	CWS	0.31	0.312	0.3
Lind, A	TOR	0.367	0.237	0.251
Longoria, E	TB	0.255	0.294	0.244
Markakis, N	BAL	0.375	0.297	0.284
Martinez, V	DET	0.292	0.302	0.33
Matsui, H	OAK	0.169	0.274	0.251
McCutchen, A	PIT	0.348	0.286	0.259
Molina, Y	STL	0.273	0.262	0.305
Ortiz, D	BOS	0.25	0.27	0.309
Pena, C	CHC	0.237	0.196	0.225
Pence, H	HOU	0.323	0.282	0.314
Peralta, J	DET	0.197	0.249	0.299

TABLE 6 (CONT.)

		<i>Preseason 2011</i>	<i>Regular 2010</i>	<i>Regular 2011</i>
Player	Team	AVG	AVG	AVG
Pierre, J	CWS	0.258	0.275	0.279
Prado, M	ATL	0.28	0.307	0.26
Pujols, A	STL	0.288	0.312	0.299
Ramirez, A	CWS	0.266	0.282	0.269
Rasmus, C	STL	0.265	0.276	0.225
Reynolds, M	BAL	0.232	0.198	0.221
Rios, A	CWS	0.29	0.284	0.227
Sanchez, G	FLA	0.368	0.273	0.266
Soriano, A	CHC	0.219	0.258	0.244
Stubbs, D	CIN	0.259	0.255	0.243
Suzuki, I	SEA	0.259	0.315	0.272
Swisher, N	NYY	0.254	0.288	0.26
Teixeira, M	NYY	0.294	0.256	0.248
Uggla, D	ATL	0.212	0.287	0.233
Upton, B	TB	0.293	0.237	0.243
Upton, J	ARI	0.254	0.273	0.289
Victorino, S	PHI	0.304	0.259	0.279
Weeks, R	MIL	0.442	0.269	0.269
Werth, J	WSH	0.245	0.296	0.232
Wieters, M	BAL	0.283	0.249	0.262
Young, C	ARI	0.292	0.257	0.236
Young, D	PHI	0.258	0.298	0.268
Young, M	TEX	0.38	0.284	0.338

ABOUT THE AUTHOR

Michael R. Summers is a professor of management science at Pepperdine University. He has a BS in Engineering Physics, an MBA, and a PhD in Management Science, all from the University of Illinois. He is the author of a textbook, *Analyzing Operations in Business*, and has written many case studies in operations management, as well as several statistical analyses of sports and a wide variety of applications of quantitative analysis.