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### **IS THERE HOME-FIELD ADVANTAGE IN INTERLEAGUE PLAY?**

Interleague play in Major League Baseball began in 1997, in part, to boost fan interest following the 1994-95 work stoppage that forced cancellation of the World Series for the first time in the history of the game. The first interleague game took place on June 12, 1997 between the host Texas Rangers (of the American League) and the San Francisco Giants (of the National League).<sup>1</sup> In the first season of interleague play, the National League won 117 games and lost 97. Interleague play created certain matchups – Chicago Cubs *v.* Chicago White Sox, New York Mets *v.* New York Yankees, and Los Angeles Dodgers *v.* Los Angeles Angels (of Anaheim) – that featured intense regional rivalries. As was the case in the World Series and All-Star Games, when an interleague game was played in an American League (A.L.) ballpark, both teams could use a designated hitter (DH) to bat in place of the pitcher, a rule first adopted by the A.L. in 1973. In a National League (N.L.) ballpark, both teams' pitchers had to hit for themselves. One might wonder, in the years since inception of interleague play, whether or not A.L. teams have enjoyed a home-field advantage. That is, if N.L. teams use bench-warmers to pinch-hit for pitchers (in A.L. ballparks) while their A.L. opponents use designated hitters (typically starters), then one might expect A.L. teams to win (lose) disproportionately many games at home (on the road). The purpose of this brief note is to determine if there is indeed a home-field advantage in interleague play, especially for A.L. teams.

Table 1 summarizes the interleague records of all teams from 1997 through 2009.<sup>2</sup> (All data are from [www.baseball-reference.com/games/head2head.shtml](http://www.baseball-reference.com/games/head2head.shtml) where one can select a team, a range of years – 1997 through 2009, find that team's head-to-head records against all opponents in the other league, and then sum wins and losses, separately for all games at home and on the road.) Since 1997, the New York Yankees (with a winning percentage of .583) and the Minnesota Twins (.579) have compiled the best interleague records among A.L. teams, while the

Florida Marlins (.548) and the Atlanta Braves (.532) compiled the best marks among N.L. teams. In the A.L., eight of fourteen teams have won more than half of all interleague games compared to only five of sixteen teams in the N.L. The Pittsburgh Pirates (in the N.L.) compiled the worst mark (.392) of any team. Two teams in the A.L. – the Detroit Tigers and the Minnesota Twins – and only one team in the N.L. – the Florida Marlins – compiled significantly better records in interleague games than they did in all other (intraleague) games. Only one team, the Philadelphia Phillies of the N.L., compiled a significantly worse record in interleague games than in intraleague games.<sup>3</sup>

When A.L. clubs meet N.L. clubs in A.L. ballparks, one might expect A.L. teams (accustomed to using designated hitters) to enjoy a competitive edge. To test the null hypothesis that there is no home-field advantage in interleague play, one can use a chi-square test. For each of the thirty teams, one constructs a contingency table. Across the two columns of this contingency table, all games are divided into home games and road games; across the two rows, all games are divided into wins and losses. The four cells of each table are summarized for each team in both leagues in Table 2. Each  $\chi^2$  value can be converted to a  $p$ -value, as reported in the last column of Table 2. For three A.L. teams – New York Yankees, Oakland Athletics, and Toronto Blue Jays – and six N.L. teams – Chicago Cubs, Colorado Rockies, Los Angeles Dodgers, New York Mets, Pittsburgh Pirates, and Washington Nationals (who until 2004 were the Montreal Expos<sup>4</sup>), the results were statistically significant. For all six N.L. teams, losses on the road (and wins at home, with the exception of the Pirates) were disproportionately large. Table 3 which shows the matchups between in-state (even intra-city) rivals from different leagues suggests that the home-field advantage is not a factor when neither team has far to travel to play an interleague game. The home-field advantage does, however, loom large when teams on the fringe of the baseball map – namely, the (until recently) two Canadian teams, teams on the East Coast (for examples, the Mets and Yankees), and teams on the West Coast (for examples, the Athletics and Dodgers) – are required to make long flights to fulfill their interleague obligations.

The most significant result in Table 2 for the Colorado Rockies shows the devastating effect the thinner air at higher altitudes has on visiting A.L. teams.

### *Concluding Remarks*

Interleague play in Major League Baseball, where teams in one league play during the regular season against teams in the other league, was introduced in 1997. A review of all interleague games played since 1997 reveals evidence of a home-field advantage. Notable results include the A.L. New York Yankees who won 66.1 percent of their interleague games at home, but only 50.4 percent of them on the road. The N.L. Colorado Rockies won 64.3 percent of their interleague games at mile-high Coors Field, but just 32.6 percent of them on the road. A.L. teams (visiting N.L. ballparks) are not accustomed to having their pitchers bat (let alone run bases). And, N.L. teams (visiting A.L. ballparks) are unaccustomed to using designated hitters (who compare unfavorably to the A.L.'s designated hitters who, in turn, are generally starters).

**Table 1. Interleague and All Other Games, 1997-2009,  
by Team**

<i>Team</i>	Interleague Games			All Other Games*			<i>p</i> -value on difference between WinPcts [Interleague – All Other]
	Won	Lost	WinPct	Won	Lost	WinPct	
American League							
Baltimore Orioles	101	128	.441	828	973	.460	.592
Boston Red Sox	127	102	.555	1016	786	.564	.791
Chicago White Sox	127	101	.557	931	872	.516	.245
Cleveland Indians	113	116	.493	945	858	.524	.382
Detroit Tigers	123	106	.537	781	1019	.434	<b>.003</b>
Kansas City Royals	107	122	.467	740	1060	.411	.108
Los Angeles Angels	128	102	.557	963	837	.535	.536
Minnesota Twins	132	96	.579	890	913	.494	<b>.014</b>
New York Yankees	133	95	.583	1088	712	.604	.542
Oakland Athletics	128	102	.557	950	848	.528	.419
Seattle Mariners	127	103	.552	916	885	.509	.211
Tampa Bay Rays	99	115	.463	691	963	.418	.215
Texas Rangers	112	118	.487	885	916	.491	.899
Toronto Blue Jays	108	121	.472	914	890	.507	.317
National League							
Arizona Diamondbacks	84	103	.449	854	830	.507	.131
Atlanta Braves	117	103	.532	1042	768	.576	.218
Chicago Cubs	90	96	.484	902	942	.489	.891
Cincinnati Reds	83	104	.444	881	964	.478	.378
Colorado Rockies	94	99	.487	862	978	.468	.623
Florida Marlins	120	99	.548	860	953	.474	<b>.039</b>
Houston Astros	100	100	.500	985	846	.538	.308
Los Angeles Dodgers	99	110	.474	972	851	.533	.103
Milwaukee Brewers <sup>a</sup>	76	93	.450	857	1005	.460	.792
New York Mets	105	106	.498	955	864	.525	.451
Philadelphia Phillies	96	121	.442	929	883	.513	<b>.049</b>
Pittsburgh Pirates	71	110	.392	812	1036	.439	.216
St. Louis Cardinals	100	90	.526	1002	841	.544	.648
San Diego Padres	88	121	.421	890	934	.488	.064
San Francisco Giants	106	103	.507	975	846	.535	.439
Washington Nationals <sup>b</sup>	112	117	.489	777	1025	.431	.098

\*All games through the 2009 All-Star break.

<sup>a</sup>The Milwaukee Brewers competed in the AL in 1997 and then switched to the NL in 1998.

<sup>b</sup>The Washington Nationals' record includes totals for the Montreal Expos (1997-2004).

**Table 2. Interleague Games, 1997-2009,  
Home and Road Records,  
by Team**

<i>Team</i>	Home		Road		Calculated $\chi^2$	<i>p</i> -value
	Won	Lost	Won	Lost		
American League						
Baltimore Orioles	56	60	45	68	1.659	.198
Boston Red Sox	70	46	57	56	2.272	.132
Chicago White Sox	69	58	44	57	2.609	.106
Cleveland Indians	59	54	54	62	0.734	.392
Detroit Tigers	69	47	54	59	3.149	.076
Kansas City Royals	54	59	53	63	0.101	.750
Los Angeles Angels	64	51	64	51	0.000	1.000
Minnesota Twins	71	42	61	54	2.240	.134
New York Yankees	76	39	57	56	5.739	<b>.017</b>
Oakland Athletics	74	41	54	61	7.047	<b>.008</b>
Seattle Mariners	69	46	58	57	2.128	.145
Tampa Bay Rays	55	52	44	63	2.274	.132
Texas Rangers	64	51	48	67	4.455	<b>.035</b>
Toronto Blue Jays	64	52	44	69	6.054	<b>.014</b>
National League						
Arizona Diamondbacks	39	53	45	50	0.468	.494
Atlanta Braves	54	56	63	47	1.479	.224
Chicago Cubs	53	41	37	55	4.865	<b>.027</b>
Cincinnati Reds	45	50	38	54	0.696	.404
Colorado Rockies	63	35	31	64	19.347	<b>&lt;.001</b>
Florida Marlins	65	45	55	54	1.647	.199
Houston Astros	55	46	45	54	1.620	.203
Los Angeles Dodgers	58	45	41	65	6.514	<b>.011</b>
Milwaukee Brewers <sup>a</sup>	38	45	38	48	0.492	.483
New York Mets	58	43	47	63	4.550	<b>.033</b>
Philadelphia Phillies	48	62	48	59	0.033	.856
Pittsburgh Pirates	48	47	23	63	10.709	<b>.001</b>
St. Louis Cardinals	55	37	45	53	3.659	.056
San Diego Padres	45	58	43	63	0.209	.648
San Francisco Giants	61	48	45	55	2.508	.113
Washington Nationals <sup>b</sup>	68	45	44	72	11.336	<b>.001</b>

<sup>a</sup>See footnote a in Table 1.

<sup>b</sup>See footnote b in Table 1.

**Table 3. Interleague Games, 1997 -2009,  
between Major Rivalries, Selected Teams**

<i>NL</i> Team (Home Team)	Major <i>AL</i> Rival	Home Won	Home Lost	Road Won	Road Lost	Calculated $\chi^2$	<i>p</i> -value
Chicago Cubs	Chicago White Sox	20	15	15	21	1.701	.192
Cincinnati Reds	Cleveland Indians	15	15	16	17	0.014	.904
Florida Marlins	Tampa Bay Rays	21	14	15	17	1.158	.282
Houston Astros	Texas Rangers	13	14	13	14	0.000	1.000
LA Dodgers	LA Angels	20	17	13	24	2.680	.102
NY Mets	NY Yankees	16	20	14	22	0.229	.633
St. Louis Cards	Kansas City Royals	12	12	21	12	1.060	.303
SF Giants	Oakland Athletics	18	19	17	20	0.054	.816



### Footnotes

1. The Giants won the first interleague game, 4-3.
2. Since 2002, all of a season's interleague games have been played before the All-Star break.
3. Here, one can test the difference between two proportions (namely, the population proportion of interleague games won,  $\pi_1$  v. the population proportion of all other games won,  $\pi_2$ ). The null hypothesis,  $H_0: \pi_1 = \pi_2$ , was tested against a two-tailed alternative.

The test statistic is  $z_{\text{Calculated}} = \frac{P_1 - P_2}{\sqrt{\frac{P_1(1-P_1)}{n_1} + \frac{P_2(1-P_2)}{n_2}}}$ , where  $n_1$  is the number of

interleague games played,  $n_2$  is the number of all other games played, and  $P_1$  and  $P_2$  are the respective sample proportions.

4. The Montreal Expos' geographical rivalry was, until 2005, with the Toronto Blue Jays. After the Expos/Nationals relocated to Washington, D.C., the Nationals' new regional rival became the Baltimore Orioles. These two teams first played in 2006.