New Approaches to Historical Pitcher Evaluation Using DRA

In 2001, Voros McCracken published an article at baseballprospectus.com in which he introduced to the public the idea that pitchers have surprisingly little control over the outcomes of at-bats, excluding strikeouts and home runs, or "batting average on balls in play" ("BABIP"). McCracken found that there was an extremely low correlation in each pitcher's BABIP from year to year, and that most long-term BABIP rates for pitchers were very similar. Veteran baseball analyst Craig Wright immediately identified two particular groups of pitchers that tend to have noticeably lower BABIP (extreme fly ball pitchers and knuckleball pitchers), but praised McCracken as "… *the* guy who really got people to understand that most folks overestimate the pitcher's ability to influence the number of hits that result from balls batted into the field of play."

In contrast, McCracken found that walk, strikeout, and, to a lesser extent, home run rates of each pitcher were far more consistent year-to-year and varied greatly over long periods of time from pitcher to pitcher. McCracken therefore proposed that pitchers should be evaluated by the statistics over which they have the most control, that are "independent" of the quality of the defenses behind them—strikeouts, walks, and home runs. McCracken developed a method for converting these elements directly into another statistic, scaled the same as ERA, that he called Defense Independent Pitching Statistics ("DIPS").

In 2003, I introduced the basic ideas of DRA in an on-line article at the predecessor website to baseballthinkfactory.com. In the article, I suggested further refining DIPS to give pitchers credit for their assists (after all, if they induce a ground ball and field it, who else should get credit?) and for infield fly outs (which are nearly automatic outs most similar to strikeouts). I also

reported that, under DRA, the run weights for strikeouts, walks, and home runs allowed by pitchers were nearly identical to the run weights for batting outs, walks, and home runs generated by batters, based on dozens of models developed over the past several decades in models of offense. A 'linear weights' formula for pitcher runs allowed below or above the league-average rate could thereby be developed that would be analogous to the offensive runs formulas in use for batters. In this way, one could 'break down' the components of pitcher performance and add them back together again into one estimate of defensive runs that would be independent of their fielders, in much the same way that one can 'break down' the components of a batter's contributions, independent of the impact his teammates might have on the number of runs he actually scores or drives in.

Appendix A has all the DRA formulas for pitchers; in this appendix we'll provide detailed DRA results for fifteen pitchers (three from each of the five historical eras we've assigned fielders) who have interesting stories to tell. For each pitcher we'll show a chart summarizing, for each season he pitched, his innings pitched and runs saved or allowed, relative to the league-average rate that season, on walks (including batters hit by pitch, "*BB*"), strikeouts ("*SO*"), home runs ("*HR*"), pitcher assists ("*A1*"), wild pitches and passed balls (collectively, "*WP*") if available, runners caught stealing ("*CS*") (this is normally assigned to catchers in the DRA team model, but, on a career basis, pitchers have an impact), *estimated* infield fly outs ("*~IFO*") (I didn't have exact counts per pitcher; two estimation methods are used, which we'll describe as they arise), the sum of runs attributable to *BB*, *SO*, *HR*, *A1*, *WP*, *CS*, and *IFO* ("Pitcher Runs," or "*PR*"), team fielding runs, allocated to the pitcher on the basis of his relative share of team batted balls in play ("Fielding Runs," or "*FR*"), the 'negative' of the pitcher's actual runs allowed above or below the league-average rate, given his innings pitched ("*RA.ip*"), and the difference between the sum of *PR* and *FR* versus (*RA.ip*) ("Difference," or "*Diff.*").

PR is the fully disclosed DRA version of DIPS that I introduced in 2003.

CONTEMPORARY ERA

Greg Maddux (see next page) won more Gold Gloves than any other pitcher in major league history. In general, Gold Gloves have been mis-awarded so often as to be essentially meaningless, but, as we discovered in the third base, first base, and catcher chapters, the voters are usually better at evaluating positions in which sheer range—in particular, the 'invisible' range attributable to positioning and first step—is less important. Pitchers can't position themselves at all, so it stands to reason that they can be evaluated reasonably

Greg Maddux

Year	L	Tm	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1986	N	CHI	31	0	-1	0	0	0	0	0	**-1**	-2	-6	3
1987	N	CHI	156	-4	-2	0	11	0	-1	0	**3**	-9	-32	26
1988	N	CHI	249	-1	-5	8	2	1	-1	0	**5**	-10	10	-16
1989	N	CHI	238	0	-5	9	2	1	3	-6	**4**	3	14	-8
1990	N	CHI	237	5	-2	16	9	1	-1	-9	**19**	-5	-5	18
1991	N	CHI	263	8	9	4	6	1	-2	-8	**17**	0	7	10
1992	N	CHI	268	3	10	16	11	1	0	-6	**34**	3	47	-10
1993	N	ATL	267	12	9	15	9	1	-3	-10	**35**	9	49	-5
1994	N	ATL	202	11	8	23	5	2	-2	-1	**46**	0	60	-14
1995	N	ATL	210	16	13	17	11	2	-2	-5	**52**	0	69	-18
1996	N	ATL	245	21	0	24	15	2	-1	-11	**49**	0	43	6
1997	N	ATL	233	21	5	22	7	3	-1	-11	**46**	7	62	-8
1998	N	ATL	251	14	9	19	12	1	-1	-15	**40**	6	54	-8
1999	N	ATL	219	19	-7	21	11	2	1	-12	**35**	3	19	19
2000	N	ATL	249	19	5	19	14	2	-3	-12	**44**	0	50	-6
2001	N	ATL	233	19	2	15	9	1	1	-11	**35**	8	37	5
2002	N	ATL	199	11	-7	14	7	1	-3	-12	**12**	11	33	-10
2003	N	ATL	218	16	-8	5	10	2	-2	-10	**13**	1	1	14
2004	N	CHI	213	14	0	-13	10	2	1	-14	**0**	-1	8	-8
2005	N	CHI	225	15	-6	-3	7	0	-2	-16	**-5**	6	2	-2
2006	N	CHI	136	11	-5	6	6	1	-1	-10	**9**	2	-4	15
2006	N	LA	74	5	-4	5	3	0	0	-5	**4**	-1	9	-7
2007	N	SD	198	16	-11	17	9	0	-4	-13	**14**	4	14	5
2008	N	SD	153	11	-10	5	10	1	-2	-9	**5**	-1	-1	4
2008	N	LA	41	4	-3	0	3	0	0	-1	**3**	1	-4	8
Total			5008	266	-6	263	198	30	-27	-207	**516**	34	537	13

well just be observing how they handle the balls hit to them. And indeed, Greg Maddux caught an extraordinary number of ground balls throughout his career, good for almost 200 runs saved.

But most of those runs were not fielding runs, but runs attributable to generating a lot of ground balls. Maddux was an extreme ground ball pitcher, with a career ground out to fly out ratio reported by baseball-reference.com of 1.84, well above the league norm of approximately one-to-one, and even higher than Tommy John's (1.67). This explains Maddux's estimated 263 runs saved by allowing a below-average number of home runs. They can't hit it over the fence if they hit it on the ground.

The flip side of generating lots of ground outs, including pitcher ground outs, is generating fewer infield fly outs—the closest thing to an automatic 'pitcher' out as a strikeout. Though I don't have exact counts of infield fly outs from Retrosheet play-by-play data, baseball-reference.com reports an estimated percentage of total balls in play allowed by each pitcher that are "infield fly *balls*." Those may be restricted only to fly balls that land in the infield, rather than *all* fly balls and pop ups caught by infielders, including in

the *outfield*. If they are restricted to balls hit literally no farther than the infield, they result in outs ninety-nine percent of the time. Assuming then that all such infield fly balls are caught, that still leaves an estimate of infield fly outs that is probably too low in absolute terms, but it is a decent proxy for the infield fly out rate of a pitcher relative to the league (hence the 'tilde' or 'squiggle' in front of *IFO*, because it is only an estimate). The above chart compares Maddux's reported rate of such estimated relative infield fly out runs each year against the major league average throughout his career. The bottom line seems to be in Maddux's case that the runs he saved by inducing and fielding ground outs were more or less offset by runs lost by generating a below-average number of infield fly outs. We will see this pattern play out, though not as precisely, throughout our sample of pitchers.

The runs estimate for *WP* is the only one in which I have substituted a non-DRA run weight (.26 runs allowed per extra *WP*, based on Markov chain models developed by other analysts). As previously discussed, the DRA run weight for *WP* incorrectly captures, or 'carries', not only the impact of base runner *advancement* on wild pitches and passed balls, but also (and incorrectly) the impact of the *presence* of base runners on expected runs, which is, or at any rate should already be, captured by the *other* DRA variables. As a superb control pitcher, Maddux not surprisingly had below-average *WP* runs allowed. He seemed to have taken an (appropriately) relaxed view about stolen bases.

Maddux's teams had only a mildly positive impact defensively, as indicated by the *FR* estimates. In general, then, the DRA version of DIPS estimates quite well Maddux's contribution as a pitcher.

Over the course of his career, Maddux was essentially league-average in striking out batters. Tom Glavine (see next page) was well below average. Glavine also didn't have the control that Maddux had, and wasn't nearly as much of a ground ball pitcher as Maddux. (Note how his *A1* runs are lower, his *~IFO* runs higher, and that *A1* runs and *~IFO* runs more or less cancel out.) Somehow, though, he prevented a lot of home runs, and when you add everything up, he managed to allow about 100 runs less than he 'should' have.

I can't say that this explains the entire gap, but Glavine was particularly outstanding in avoiding allowing home runs when runners were on base. According to Retrosheet, Glavine's rate of home runs allowed, given the number of times batters made contact, was *one-third* (thirty-four percent) lower when runners were on base than when the bases were empty. And how did he manage that? By pitching away from the hitters—his walk rate went *up* by forty-four percent with runners on. Stated differently, Glavine

Tom Glavine

Year	Tm	L	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1987	ATL	N	50	-5	-5	1	2	0	1	0	**-5**	0	-9	3
1988	ATL	N	195	0	-12	6	3	2	2	0	**0**	-8	-27	19
1989	ATL	N	186	9	-8	-7	3	1	2	6	**7**	-4	-7	9
1990	ATL	N	214	1	-3	2	1	0	0	7	**8**	-9	-10	9
1991	ATL	N	247	6	11	3	5	0	0	6	**30**	2	30	3
1992	ATL	N	225	3	-4	15	-2	1	2	-5	**10**	4	16	-3
1993	ATL	N	239	-1	-10	12	0	2	0	2	**5**	9	29	-15
1994	ATL	N	165	-1	6	11	4	0	-2	-5	**12**	0	9	3
1995	ATL	N	199	2	-4	18	6	1	-1	2	**24**	0	27	-3
1996	ATL	N	235	3	2	17	8	2	2	2	**35**	0	32	3
1997	ATL	N	240	4	-6	8	0	2	1	1	**11**	8	38	-19
1998	ATL	N	229	4	-2	18	8	1	2	-11	**19**	6	51	-26
1999	ATL	N	234	6	-10	20	10	2	-1	-11	**17**	3	15	5
2000	ATL	N	241	12	-5	11	3	2	1	-6	**19**	0	35	-16
2001	ATL	N	219	-4	-14	8	3	2	2	-9	**-11**	7	24	-28
2002	ATL	N	225	2	-10	8	7	2	4	5	**17**	12	27	2
2003	NY	N	183	3	-15	4	5	1	1	-7	**-7**	-5	1	-13
2004	NY	N	212	6	-13	12	6	2	2	-17	**-1**	-2	17	-20
2005	NY	N	211	7	-13	21	4	2	1	-13	**9**	3	19	-8
2006	NY	N	198	5	-4	5	6	2	3	-10	**6**	6	13	-2
2007	NY	N	200	4	-16	4	-1	2	3	-4	**-9**	4	5	-10
2008	ATL	N	63	-4	-4	-5	3	1	2	-4	**-11**	2	-7	-2
Total			4413	64	-139	190	85	28	28	-72	**185**	35	328	-108

challenged hitters when nobody was on, and painted the outside corner when runners were on, to an extent that is *almost* unprecedented for the years for which we have Retrosheet play-by-play data.

There is little to add to the extraordinary record of Pedro Martinez (see next page) other than the fact that he was even better than Glavine at reducing his home runs allowed rate when runners were on: down thirty-six percent. And he was able to do that without raising his walk rate (well, it went up by two percent). Given that, one might have expected him to outperform his DRA-estimated Pitcher Runs by more than twenty.

MODERN ERA

Phil Niekro (see next page) is one of the greatest exceptions to DIPS theory in major league history (which is not entirely surprising, given Craig Wright's

Pedro Martinez

Year	Tm	L	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1992	LA	N	8	1	1	1	0	0	0	1	**2**	0	1	1
1993	LA	N	107	-7	14	4	-3	0	1	4	**13**	-1	20	-8
1994	MON	N	145	-1	13	3	-1	0	-1	-1	**13**	2	17	-2
1995	MON	N	195	-1	11	-5	0	1	4	14	**24**	-2	22	1
1996	MON	N	217	4	18	3	-4	1	-4	20	**37**	2	13	26
1997	MON	N	241	6	38	5	2	2	-2	6	**58**	3	59	2
1998	BOS	A	234	6	27	-3	-3	-1	0	-1	**23**	2	49	-24
1999	BOS	A	213	14	51	15	-2	0	0	2	**80**	-2	70	8
2000	BOS	A	217	13	43	4	4	2	-1	5	**71**	2	85	-12
2001	BOS	A	117	4	25	7	-3	0	0	0	**34**	-3	31	0
2002	BOS	A	199	6	31	8	-1	2	1	6	**53**	4	45	12
2003	BOS	A	187	4	25	17	0	0	0	-1	**46**	-5	50	-9
2004	BOS	A	217	3	22	-3	-3	2	-2	-1	**18**	-1	22	-6
2005	NY	N	217	10	18	3	-3	1	-1	0	**28**	2	41	-11
2006	NY	N	133	1	12	-7	-1	1	-2	-5	**-1**	3	0	2
2007	NY	N	28	1	3	5	-2	0	0	0	**6**	1	4	3
2008	NY	N	109	-1	0	-9	1	1	-2	-3	**-13**	2	-14	2
2009	PHI	N	45	2	1	-3	0	1	-1	1	**0**	0	4	-4
Total			2827	63	353	45	-20	12	-9	47	**492**	9	521	-20

Phil Niekro

Year	L	Tm	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1964	N	MIL	15	-1	-1	0	0	0	0	0	**-2**	0	-3	2
1965	N	MIL	75	-1	0	3	2	-3	-1	-3	**-3**	2	1	-2
1966	N	ATL	50	-3	-5	2	4	-1	-1	0	**-4**	0	-9	5
1967	N	ATL	207	2	0	9	3	-9	-3	9	**11**	-1	24	-14
1968	N	ATL	257	9	-5	0	7	-4	0	-2	**4**	6	15	-5
1969	N	ATL	284	15	4	4	2	-6	-2	22	**37**	-8	36	-7
1970	N	ATL	230	7	5	-27	2	-2	-2	14	**-2**	-14	-8	-8
1971	N	ATL	269	8	4	-9	2	-3	0	4	**6**	-4	5	-2
1972	N	ATL	282	15	-2	2	-1	-5	0	9	**17**	-1	10	6
1973	N	ATL	245	0	-4	1	2	-3	-1	6	**0**	-1	10	-11
1974	N	ATL	302	8	9	2	0	-3	2	6	**24**	6	48	-19
1975	N	ATL	276	9	-2	-14	0	-4	2	1	**-8**	-8	12	-27
1976	N	ATL	271	-2	6	-2	0	-5	-3	9	**4**	-13	4	-13
1977	N	ATL	330	-14	17	3	2	-8	2	3	**6**	-23	-5	-13
1978	N	ATL	334	3	17	11	6	-6	-2	-4	**26**	-6	20	0
1979	N	ATL	342	1	4	-20	3	-6	-4	15	**-6**	-17	1	-24
1980	N	ATL	275	3	7	-17	0	-2	2	0	**-8**	3	4	-9
1981	N	ATL	139	-2	-4	4	0	0	0	4	**2**	0	4	-3
1982	N	ATL	234	2	3	-9	1	0	3	0	**0**	0	0	0
1983	N	ATL	202	-9	0	-3	-1	0	-1	-6	**-20**	0	-2	-19
1984	A	NY	216	0	4	8	3	0	3	-5	**13**	-5	22	-13
1985	A	NY	220	-12	5	-10	-3	-3	-2	5	**-19**	6	2	-16
1986	A	CLE	210	-4	-17	4	0	0	0	-3	**-19**	-1	-17	-3
1987	A	CLE	124	-1	-8	0	-1	-1	1	0	**-10**	-3	-15	2
1987	A	TOR	12	-1	0	-3	-1	0	0	1	**-5**	0	-4	0
1987	N	ATL	3	-1	-1	1	0	0	0	-1	**-2**	0	-3	1
Total			5404	32	37	-60	30	-75	-6	86	**43**	-81	152	-191

observation, offered as soon as Voros McCracken published his DIPS article, that knuckleball pitchers were perhaps the most extreme exception to the rule that pitchers don't control BABIP). On the sole basis of the 'whole is equal to the DIPS-like parts' analysis, Niekro saved 'only' forty-three runs relative to the league-average pitcher, but, taking into account that he pitched for a few extremely poor fielding teams, he 'out-performed' his expected runs saved by +191 runs.

This is even more remarkable considering the way *~IFO* runs is calculated. Baseball-reference.com does not report Retrosheet estimates of infield fly balls before 1988. So, for Niekro and the rest of the pitchers we'll be discussing as we move backwards in time, we instead credit the pitcher with his pro-rata share of the team's *actual IFO* runs, and then assign his outs on batted balls in play above or below his *team*'s rate (net of his *A1* runs, which are already counted) to his *~IFO* runs as well. The idea (really a book-keeping assumption) is that pitchers control *IFO* runs and fielders all the rest of fielding runs, so any difference in hits prevented among pitchers on the same team (taking into account their relative performance on *A1* runs) should go into the *IFO* runs 'pile'.

So we're *already* giving Niekro some credit for 'hits prevented' relative to his team in the *~IFO* runs category, causing him to be the rare pitcher with both *A1* runs saved and *~IFO* runs saved—someone who induces easy-to-field ground balls back to the mound *as well as* lots of infield fly outs. Niekro's purely pro-rata share of team *IFO* runs amounted to +49 runs over the course of his career. Given the extraordinary length of that career, there is a good chance that his fellow pitchers were roughly average at inducing infield fly outs, so that another estimate for Niekro's 'pure' career *IFO* runs might also be about fifty.

So Knucksie's 'out-performance' appears to go *beyond* low BABIP. He was good at lowering his home runs allowed rate when runners were on base (decreasing it by 14 percent), but not with the same success Glavine and Martinez had. Knucksie's overall success, then, remains a mystery to me. What we need to do is obtain actual play-by-play data of all of his actual *IFO*.

Two main points regarding the career of Nolan Ryan (see next page): first, he maintained his value to an extraordinary degree well into his mid-forties, and second, he under-performed his projected run savings by –133 runs. Ryan's success in the latter part of his career was not due to a freakish disinclination to age, but to the simple fact that he finally learned to throw strikes when he joined the Astros. As to his 'under-performance', part, but presumably only a *small* part, could be attributed to his taking the opposite tack of Glavine, and allowing home runs at a *higher* rate with men on base (eleven percent higher) while allowing fewer walks with men on base (nine percent lower).

Nolan Ryan

Year	L	Tm	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1966	N	NY	3	-1	1	-1	0	0	0	-1	**-2**	0	-4	2
1968	N	NY	134	-12	13	-8	-3	-1	-1	6	**-6**	4	1	-4
1969	N	NY	89	-7	9	5	-3	1	0	4	**9**	5	3	11
1970	N	NY	132	-15	11	0	-2	0	-1	9	**1**	4	7	-2
1971	N	NY	152	-24	10	4	-2	0	-4	2	**-13**	0	-12	-1
1972	A	LA	284	-22	45	1	-2	-3	-6	6	**18**	9	30	-2
1973	A	LA	326	-14	57	5	-4	-1	-5	4	**43**	-3	43	-3
1974	A	LA	333	-30	53	2	5	0	1	2	**33**	-3	25	5
1975	A	LA	198	-19	21	1	-3	-2	-3	5	**1**	0	5	-4
1976	A	LA	284	-28	50	0	1	1	0	-2	**22**	4	9	16
1977	A	LA	299	-34	49	14	0	-3	-3	6	**30**	2	42	-9
1978	A	LA	235	-20	39	4	2	-1	-6	-5	**13**	-2	5	6
1979	A	LA	223	-12	32	4	1	0	0	5	**29**	-3	13	13
1980	N	HOU	234	-6	19	7	-2	-1	0	-1	**16**	0	5	11
1981	N	HOU	149	-5	17	8	-1	-3	-1	3	**17**	3	30	-10
1982	N	HOU	250	-10	28	-7	0	-2	-2	1	**8**	4	13	-2
1983	N	HOU	196	-11	19	6	2	-1	-1	0	**13**	8	16	5
1984	N	HOU	184	-2	24	-1	-5	-1	-4	5	**15**	1	5	11
1985	N	HOU	232	-5	19	7	-5	-2	-1	-3	**10**	3	-3	16
1986	N	HOU	178	-6	22	-2	-2	-3	-1	8	**15**	3	10	8
1987	N	HOU	212	-3	37	4	-2	-1	-5	5	**35**	0	32	3
1988	N	HOU	220	-5	25	-6	-5	-1	-5	3	**6**	0	-3	10
1989	A	TEX	239	-6	45	-3	-3	-3	-4	7	**33**	3	19	17
1990	A	TEX	204	-1	31	-6	-3	0	-2	11	**29**	2	13	19
1991	A	TEX	173	-4	28	0	-1	0	-2	11	**32**	-3	28	0
1992	A	TEX	157	-6	17	4	0	-1	0	-1	**12**	-6	1	6
1993	A	TEX	66	-4	1	2	-2	0	-1	7	**2**	-1	-12	13
Total			5386	-314	722	43	-40	-29	-55	96	**423**	31	321	133

But the strangest thing of all is that Ryan only underperformed by about 2.5 runs per 250 innings pitched during his 'wild' years (through 1979), but underperformed by about 9.8 runs per 250 innings pitched after he 'reformed' himself (1980 onward).

Jim Kaat (see next page) had the second most Gold Gloves at pitcher. He won his first one in 1962, which was his best year in *A1* runs. Though he was considered a ground ball pitcher, his career ground out to fly out ratio, as reported by baseball-reference.com (1.18), was not that much higher than the league average during his career (1.09).

Kaat also has the second highest career wins total of all post-nineteenth century pitchers not in the Hall of Fame, behind Tommy John.

Jim Kaat

Year	L	Tm	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1959	A	WAS	5	-1	0	-1	0	0	0	0	**-3**	0	-7	4
1960	A	WAS	50	-5	-1	-5	1	0	0	0	**-9**	-1	-15	4
1961	A	MIN	201	-2	2	13	4	0	-2	-4	**10**	-7	-3	6
1962	A	MIN	269	5	6	7	13	-1	2	-11	**20**	-1	27	-9
1963	A	MIN	178	7	-3	-7	6	0	0	-10	**-7**	-5	-15	4
1964	A	MIN	243	8	2	4	4	0	0	-7	**11**	-3	10	-2
1965	A	MIN	264	12	-6	2	7	3	0	-19	**-2**	5	-5	8
1966	A	MIN	305	17	3	0	-1	0	0	0	**18**	-1	18	0
1967	A	MIN	263	16	9	2	1	1	-1	-11	**16**	-11	-2	6
1968	A	MIN	208	11	-2	1	-1	1	1	-2	**10**	-8	1	0
1969	A	MIN	242	7	-4	2	-4	1	-2	-5	**-5**	-1	-4	-3
1970	A	MIN	230	11	-7	-2	3	0	-2	-11	**-7**	3	-3	-1
1971	A	MIN	260	17	-6	12	-2	1	-2	1	**22**	-13	9	0
1972	A	MIN	113	7	0	3	0	1	0	-1	**9**	4	8	5
1973	A	MIN	182	10	-3	-13	-1	1	-2	-3	**-11**	-2	-14	2
1973	A	CHI	43	4	-2	0	8	0	0	-7	**5**	-2	-3	5
1974	A	CHI	277	11	-1	6	-7	2	3	17	**31**	-14	21	-4
1975	A	CHI	304	12	-6	10	-10	3	4	12	**26**	-15	25	-14
1976	N	PHI	228	17	-10	-8	-5	2	0	1	**-3**	2	6	-8
1977	N	PHI	160	8	-12	-4	-1	1	1	-12	**-19**	5	-22	8
1978	N	PHI	140	5	-9	3	1	0	0	-6	**-5**	7	-4	6
1979	N	PHI	8	-1	-1	0	10	0	0	-10	**-2**	0	0	-1
1979	A	NY	58	2	-2	3	7	0	0	-9	**2**	2	2	3
1980	A	NY	5	-1	-1	1	11	0	0	-11	**-1**	0	-2	1
1980	N	STL	130	4	-10	6	1	0	0	-3	**-2**	2	-3	3
1981	N	STL	53	1	-6	3	7	0	-1	-9	**-5**	2	-2	-1
1982	N	STL	75	1	-3	0	6	0	-1	-9	**-6**	4	-6	4
1983	N	STL	35	2	-1	-3	8	0	-1	-11	**-5**	0	-3	-2
Total			4530	186	-74	37	65	17	-4	-141	**86**	-48	13	24

Though he had a couple of excellent seasons (1974–75), several very fine seasons, and a career just as good as several Hall of Famers, I can't recommend him as a high priority candidate for the Veterans Committee. The strange thing is that if he'd had better fielding teams behind him and just a little more luck, he would have cleared 300 wins, and nobody would doubt his Hall of Fame credentials, which shows how powerful certain numbers can be.

TRANSITIONAL ERA

Warren Spahn (see next page) was perhaps the ultimate crafty lefty, the sum of which was greater than the parts. Like Glavine, he challenged the hitters when the bases were empty, but when men were on base he willingly gave

Warren Spahn

Year	L	Tm	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1942	N	BOS	16	-2	0	1	-1	0	0	-4	**-5**	0	-8	2
1946	N	BOS	126	6	8	0	-5	-1	0	8	**16**	2	10	8
1947	N	BOS	290	14	5	12	-3	0	0	21	**49**	-2	63	-16
1948	N	BOS	257	11	3	1	3	0	0	1	**19**	2	13	7
1949	N	BOS	302	15	12	-4	-7	0	0	7	**24**	-1	29	-6
1950	N	BOS	293	4	25	7	4	-1	0	-3	**38**	5	30	13
1951	N	BOS	311	6	15	11	-2	0	0	-4	**26**	10	44	-7
1952	N	BOS	290	9	14	5	2	-1	0	-5	**25**	-1	27	-3
1953	N	MIL	266	7	9	18	5	1	0	6	**46**	3	68	-19
1954	N	MIL	283	9	3	6	4	1	-1	4	**25**	2	38	-10
1955	N	MIL	246	10	-2	6	1	1	0	-6	**10**	2	26	-13
1956	N	MIL	281	15	-2	8	-2	0	0	7	**27**	1	42	-15
1957	N	MIL	271	5	-9	9	1	2	1	6	**14**	7	37	-16
1958	N	MIL	290	10	-1	2	9	2	2	-6	**18**	9	37	-10
1959	N	MIL	292	12	-6	15	-2	2	1	7	**29**	-11	38	-21
1960	N	MIL	268	7	-2	2	5	2	0	0	**14**	-8	12	-6
1961	N	MIL	263	9	-10	7	6	2	1	7	**23**	7	37	-7
1962	N	MIL	269	14	-11	4	3	2	0	10	**23**	-4	38	-20
1963	N	MIL	260	12	-17	0	10	2	0	-6	**1**	9	25	-15
1964	N	MIL	174	2	-10	-10	0	0	2	-5	**-21**	2	-32	12
1965	N	NY	126	3	-8	-8	-10	0	0	8	**-15**	-1	-14	-2
1965	N	SF	72	1	-4	-2	-5	0	1	7	**-2**	-2	-2	-2
Total			5244	179	10	91	17	15	7	62	**383**	31	559	-145

them walks (twenty-four percent higher rate than with the bases empty) and avoided giving up home runs (twenty-three percent lower rate than with the bases empty), at least on the basis of Retrosheet data for seasons since 1952.

As discussed in the detailed analysis of the pre-1952 DRA model, strikeouts and walks correlated *much* more strongly with BABIP results before strikeouts jumped in the 1950s than afterwards, and the runs reported above saved by Spahnie on walks and strikeouts before 1952 reflect higher run weights that capture this effect. Spahn always had great control, but was slightly to significantly below average in strikeouts in the latter half of his career. That decline was masked by the general rise in strikeout rates, so that the relative decline in his strikeout totals does not stand out quite as much as it should.

Until I did the above analysis, I had wondered why Bill James continued to rank Spahn above Seaver, even in the revised paperback version of *The Historical Abstract*. No doubt Seaver had a more dominant peak and prime, but he was more or less a league-average pitcher after age thirty-five, whereas Spahn maintained an extraordinarily high value from his age thirty-five season (1956) through his age forty-one season (1962). Spahn might have gone on pitching forever, but for some completely inexplicable reason he

was allowed to throw over 200 pitches in an epic sixteen-inning loss to Juan Marichal on July 2, 1963. Though he finished 1963 with twenty-three wins against only seven losses, his DRA numbers above suggest that he clearly lost the magic that season.

The ageless Jamie Moyer, yet another crafty lefty, has recently broken the record for career home runs allowed, previously held by the late Robin Roberts. But it's worth pointing out that Roberts was above average at *preventing* home runs through 1953, given the huge number of batters he was facing, and didn't start giving up a consistently high number until after 1955, when he lost his 'plus' fastball. Even then, he remained a solid and valuable pitcher, due to his outstanding control. He simply had the misfortune of pitching for teams that generally just weren't that good.

The prototypical fly ball pitcher, Roberts had –93 *A1* runs and an estimated +168 *~IFO* runs.

Robin Roberts

Year	L	Tm	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1948	N	PHI	147	-3	9	0	-5	0	0	0	**2**	3	10	-5
1949	N	PHI	227	5	2	5	-10	1	0	12	**15**	12	14	13
1950	N	PHI	304	20	7	0	-1	1	0	8	**35**	13	47	1
1951	N	PHI	315	25	0	14	-12	1	0	22	**51**	0	42	9
1952	N	PHI	330	22	0	8	-7	1	0	10	**34**	5	50	-11
1953	N	PHI	347	21	11	9	-3	2	-1	13	**53**	-2	68	-17
1954	N	PHI	337	23	12	-5	-7	2	-2	22	**45**	1	56	-10
1955	N	PHI	305	22	4	-9	-11	1	-1	22	**30**	-1	18	11
1956	N	PHI	297	23	2	-18	0	1	-2	2	**8**	-16	-13	6
1957	N	PHI	250	15	-1	-19	-1	1	-3	11	**3**	-2	-1	2
1958	N	PHI	270	17	-5	0	-5	1	-1	16	**23**	-10	21	-7
1959	N	PHI	257	19	-3	-8	-2	2	-3	5	**10**	3	-10	23
1960	N	PHI	237	17	-6	-11	-8	2	-4	3	**-6**	2	-1	-3
1961	N	PHI	117	7	-5	-7	-4	1	2	-6	**-13**	1	-26	14
1962	A	BAL	191	10	-1	5	-4	1	0	5	**16**	5	32	-11
1963	A	BAL	251	16	-8	-12	-4	2	-1	19	**11**	1	14	-2
1964	A	BAL	204	7	-8	7	-3	1	0	-2	**3**	9	23	-11
1965	A	BAL	115	8	-3	-8	-2	1	1	1	**-3**	6	-1	4
1965	N	HOU	76	5	-3	9	-4	0	1	9	**17**	-3	12	2
1966	N	HOU	64	4	-4	0	-1	0	0	-1	**-3**	-3	-2	-4
1966	N	CHI	48	2	-1	-4	0	0	0	-4	**-8**	-1	-13	5
Total			4689	283	1	-45	-93	23	-13	168	**324**	23	341	6

Billy Pierce

Year	L	Tm	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1945	A	DET	10	-3	2	-1	0	0	0	0	**-1**	0	2	-3
1948	A	DET	55	-11	5	-3	0	0	0	2	**-6**	-1	-11	4
1949	A	CHI	172	-9	10	0	2	0	0	1	**4**	5	2	8
1950	A	CHI	219	-12	11	11	-4	0	0	10	**16**	6	13	9
1951	A	CHI	240	15	7	6	-2	1	0	-1	**26**	6	31	0
1952	A	CHI	255	7	9	8	1	1	0	5	**30**	4	43	-9
1953	A	CHI	271	1	20	-1	-2	1	2	14	**34**	4	41	-2
1954	A	CHI	189	-2	17	-4	-4	0	0	-3	**4**	4	2	6
1955	A	CHI	206	7	18	0	-2	1	0	6	**28**	5	52	-19
1956	A	CHI	276	9	14	2	-4	0	2	6	**29**	-4	36	-12
1957	A	CHI	257	10	11	7	1	1	1	-3	**29**	4	22	11
1958	A	CHI	245	8	5	-16	-5	1	1	15	**10**	8	32	-14
1959	A	CHI	224	8	-2	-5	1	1	0	-4	**-1**	7	11	-5
1960	A	CHI	196	12	2	-7	-1	1	1	-3	**4**	3	15	-9
1961	A	CHI	180	7	1	4	1	1	2	-8	**7**	3	7	4
1962	N	SF	162	7	-5	-4	-2	1	0	11	**9**	2	15	-4
1963	N	SF	99	4	-4	-4	1	0	0	1	**-2**	-4	-7	1
1964	N	SF	49	2	0	-3	-1	0	0	4	**3**	0	8	-5
Total			3307	60	121	-11	-21	10	10	52	**222**	52	315	-41

After struggling with his control for a few years, Pierce settled down as one of the dominant pitchers of the 1950s. Pierce later acknowledged that he had a bit of a "sore" arm in 1954 and took on a lighter workload in 1955, his best season. His career won—lost record might have been hurt a bit by the White Sox saving him for their toughest rivals—the Indians and the Yankees.

LIVE BALL ERA

At his peak, the late Bob Feller (see next page) was the greatest strikeout pitcher before Nolan Ryan. As we shall see, neither Lefty Grove nor Walter Johnson had five seasons with as many *SO* runs as Rapid Robert had in 1938–41 and 1946. *SO* runs are calculated with a higher run pre-1952 than post-1951; with the same run weight, Ryan's best five seasons are slightly better, but there is good statistical evidence that high strikeout pitchers like Feller had a significantly bigger impact on BABIP before the 1950s than after.

Feller had a monster year in 1946, at age twenty-seven, and dropped off sharply thereafter. Nowadays, no team owner would allow its twenty-seven-year old franchise pitcher to pitch 371 innings in a season in which the team never contended and finished thirty-six games out.

Bob Feller

Year	L	Tm	IP	BB	SO	HR	A1	WP	CS	~IFO	PR	FR	(RA.ip)	Diff.
1936	A	CLE	62	-10	21	3	-2	-2	0	-1	**10**	-1	11	-2
1937	A	CLE	149	-19	36	6	4	-1	0	2	**29**	-3	20	5
1938	A	CLE	278	-38	52	7	-3	0	0	14	**32**	-1	34	-3
1939	A	CLE	297	-10	54	7	2	-2	0	22	**73**	-2	70	1
1940	A	CLE	320	1	53	12	-8	0	0	21	**80**	11	78	14
1941	A	CLE	343	-24	51	6	-1	1	0	12	**45**	0	54	-10
1945	A	CLE	72	-4	13	2	-5	0	0	12	**18**	-3	10	5
1946	A	CLE	371	-5	73	10	-3	1	0	13	**89**	0	68	20
1947	A	CLE	299	-3	31	-2	5	0	0	4	**35**	15	42	7
1948	A	CLE	280	7	23	-5	-4	1	0	-2	**21**	22	26	16
1949	A	CLE	211	10	11	-6	-11	1	0	8	**12**	10	7	15
1950	A	CLE	247	6	8	1	-11	0	0	19	**24**	9	36	-2
1951	A	CLE	250	5	4	-5	-6	1	0	10	**8**	1	24	-14
1952	A	CLE	192	-1	-3	3	-1	1	0	-12	**-14**	2	-35	23
1953	A	CLE	176	2	-4	-3	1	1	0	3	**-1**	4	10	-7
1954	A	CLE	140	6	-1	-4	-4	1	-1	7	**4**	2	13	-6
1955	A	CLE	83	1	-4	0	-1	0	2	8	**8**	-3	-2	6
1956	A	CLE	58	2	-3	-1	-1	0	-1	1	**-3**	0	-4	0
Total			3827	-75	415	31	-48	3	0	143	**469**	63	462	69

On top of all his other accomplishments—most seasons leading his league in ERA, most seasons leading his league in winning percentage, successfully adapting to a decline in velocity in mid-career to successfully shut down home run hitters as a left-handed pitcher in Fenway park—Lefty Grove (see next page) owned Ruth, practically humiliated him. Retrosheet has recently incorporated box score information for 1920 through much of the 1940s. In the eighty-six times Ruth faced Grove, Grove struck Ruth out twenty-seven times and walked him only six times, yielding a BA/OBP/SLG line of .300/.349/.438, far, far below Ruth's career rates of .342/.474/.690.

Our next man, about as different a kind of pitcher as one could be from Grove in terms of talents and temperament, was even better against the Bambino. Ted Lyons (see next page) was below average in *SO* runs every single season except one, in which he had exactly one *SO* run. He had some good fielders behind him (Luke Appling was his shortstop the second half of his career) and seemed to have figured out ways to save even more runs than we can account for on the basis of his individual statistics. He also helped himself out at the plate, with a decent .233 batting average. And, surprisingly, he had great success with Ruth, in some sense even more success than Grove had.

Lefty Groove

Year	L	Tm	IP	BB	SO	HR	A1	WP	~IFO	PR	FR	(RA.ip)	Diff.
1925	A	PHI	197	-23	22	-4	7	-2	-10	**-10**	2	-5	-3
1926	A	PHI	258	-3	47	3	0	0	1	**48**	0	41	7
1927	A	PHI	262	8	38	5	-1	0	7	**57**	-1	29	27
1928	A	PHI	262	11	41	-1	-6	0	12	**57**	0	47	10
1929	A	PHI	275	9	33	9	-8	-1	-1	**42**	0	51	-10
1930	A	PHI	291	17	43	12	1	1	0	**74**	-1	77	-3
1931	A	PHI	289	19	32	5	-3	1	18	**71**	12	82	1
1932	A	PHI	292	15	35	6	-4	1	7	**61**	0	69	-8
1933	A	PHI	275	11	7	5	0	1	11	**35**	-15	41	-20
1934	A	BOS	109	8	-1	4	-3	0	-7	**1**	-4	-21	18
1935	A	BOS	273	20	11	15	7	1	5	**59**	-3	51	5
1936	A	BOS	253	18	18	3	4	2	18	**62**	-6	72	-16
1937	A	BOS	262	14	20	14	-3	0	10	**56**	-15	55	-14
1938	A	BOS	164	10	15	7	0	0	-3	**28**	0	35	-7
1939	A	BOS	191	9	4	8	-6	1	15	**32**	-2	49	-20
1940	A	BOS	153	5	-1	-12	4	1	3	**1**	-6	13	-18
1941	A	BOS	134	7	0	2	-5	0	-1	**3**	-2	-13	13
Total			3941	154	365	81	-16	6	86	**675**	-41	673	-39

Ted Lyons

Year	L	Tm	IP	BB	SO	HR	A1	WP	~IFO	PR	FR	(RA.ip)	Diff.
1923	A	CHI	23	-3	-1	-2	0	-1	-2	**-8**	0	-9	1
1924	A	CHI	216	7	-5	-3	-6	0	-8	**-15**	-4	-22	4
1925	A	CHI	263	9	-12	9	8	0	6	**20**	2	42	-20
1926	A	CHI	284	3	-14	8	11	1	2	**10**	9	44	-25
1927	A	CHI	308	21	-7	8	2	1	15	**40**	7	45	2
1928	A	CHI	240	8	-8	0	3	0	-14	**-12**	1	-5	-5
1929	A	CHI	259	9	-10	5	6	0	-1	**9**	7	10	7
1930	A	CHI	298	23	-15	11	9	1	2	**30**	-8	22	0
1931	A	CHI	101	3	-8	-1	-2	0	4	**-4**	-3	8	-16
1932	A	CHI	231	8	-9	8	-3	1	10	**14**	-1	31	-18
1933	A	CHI	228	10	-4	5	-2	-2	-10	**-1**	7	-15	21
1934	A	CHI	205	11	-12	-1	4	1	-2	**0**	-8	-19	11
1935	A	CHI	191	9	-5	-5	-4	0	11	**6**	10	30	-13
1936	A	CHI	182	16	-7	-12	2	1	-6	**-6**	7	2	-1
1937	A	CHI	169	12	-8	-13	1	0	0	**-9**	6	15	-17
1938	A	CHI	195	18	-9	6	4	1	-17	**3**	8	26	-16
1939	A	CHI	173	20	1	8	-4	1	12	**38**	3	31	10
1940	A	CHI	186	18	-2	-2	-7	0	7	**13**	11	20	5
1941	A	CHI	187	18	-4	6	0	1	-6	**15**	6	13	9
1942	A	CHI	180	19	-5	-3	3	0	1	**14**	3	34	-16
1946	A	CHI	43	4	-4	1	1	0	1	**4**	1	2	2
Total			4161	240	-147	32	26	6	6	**162**	67	303	-74

In 124 face-offs, Ruth had a BA/OBP/SLG line of only .257/.371/.410 against Lyons.

As is well known, the White Sox used Lyons only on Sundays, starting in 1939. Oddly, that did not result in any meaningful decline in his total innings pitched, but the revised work schedule worked wonders, as can be seen by looking at his Pitching Runs in the seasons before and after the change. There have been all sorts of theories about how to manage pitcher workloads. About thirty or forty years ago teams went from a five-man to a four-man rotation. The current conventional wisdom is to keep pitch counts per game not too much higher than a hundred. And teams are especially protective of their pitchers before age twenty-five. These theories come and go with little more than a little bit of common sense behind them.

I have the feeling that nobody really has any idea about how to optimize pitcher workloads, taking into account in-game strategy, divisional races, post-season schedules, and career value preservation. And whoever does is not going to write about it in a book, but use it to make money boosting the value of a franchise.

DEAD BALL ERA

On a career basis, Walter Johnson (see next page) was the greatest strikeout pitcher, relative to his leagues, before Nolan Ryan and Randy Johnson, and almost certainly a fly ball pitcher, given his *A1* runs total of –111 runs. Some of the extra run weight for strikeouts in the pre-1952 model is probably attributable to 'carrying' the value of extra pop ups statistically associated with very high strikeout pitching. Since *IFO* runs are not calculated net of the likely association with strikeouts, there may be some 'double counting' going on above, which should explain why Johnson seems to have saved 139 runs 'fewer' than projected.

Ed Walsh (see next page) holds the record for career ERA, was the last pitcher to win forty games in a season, and had perhaps the most dominant five-year run as a pitcher in major league history, taking into account playing time, production above league-average value, as well as late-season performance in pennant races. His workload from 1907 through 1917 was as grueling as any pitcher endured since the turn of the last century.

Walter Johnson

Year	L	Tm	IP	BB	SO	HR	A1	WP	~IFO	PR	FR	(RA.ip)	Diff.
1907	A	WAS	110	5	11	0	-8	0	7	**14**	-7	10	-3
1908	A	WAS	256	5	20	4	-11	-2	18	**34**	-6	24	4
1909	A	WAS	296	-2	12	3	-10	-1	14	**16**	-14	3	-1
1910	A	WAS	370	15	59	5	-8	-3	4	**72**	4	58	18
1911	A	WAS	322	18	25	-4	7	-2	-5	**39**	-4	47	-13
1912	A	WAS	369	17	57	4	2	0	2	**82**	20	96	5
1913	A	WAS	346	34	41	-7	-5	2	23	**88**	13	97	5
1914	A	WAS	372	23	25	3	0	-1	11	**60**	8	64	4
1915	A	WAS	337	26	26	6	1	0	5	**63**	7	66	4
1916	A	WAS	370	22	32	7	-17	0	15	**59**	7	46	20
1917	A	WAS	326	16	29	1	-4	0	8	**49**	11	26	33
1918	A	WAS	326	17	25	2	-7	-1	10	**46**	16	60	2
1919	A	WAS	290	19	20	10	-2	0	14	**61**	0	60	0
1920	A	WAS	144	9	13	-1	-4	-1	13	**29**	-2	8	18
1921	A	WAS	264	3	23	6	-8	-1	15	**38**	0	29	10
1922	A	WAS	280	0	5	8	0	0	4	**18**	5	33	-11
1923	A	WAS	261	6	18	2	-9	1	9	**26**	3	27	2
1924	A	WAS	278	9	33	-2	-2	0	19	**56**	13	58	10
1925	A	WAS	229	4	16	5	-10	1	22	**38**	7	38	7
1926	A	WAS	261	12	18	-5	-15	0	23	**33**	-8	19	6
1927	A	WAS	108	4	6	-4	0	0	1	**6**	1	-10	18
Total			5915	261	510	41	-111	-7	232	**927**	73	861	139

Ed Walsh

Year	Team	L	IP	BB	SO	HR	A1	WP	~IFO	PR	FR	(RA.ip)	Diff.
1904	CHI	A	111	-2	3	1	0	-1	-2	**-1**	7	-1	7
1905	CHI	A	137	5	3	3	0	-1	-8	**2**	9	4	7
1906	CHI	A	278	6	24	3	20	-1	-17	**35**	6	32	9
1907	CHI	A	422	12	17	1	62	-1	-54	**37**	-4	54	-21
1908	CHI	A	464	29	31	4	36	0	-27	**74**	3	68	8
1909	CHI	A	230	7	12	3	17	1	-6	**33**	3	37	-1
1910	CHI	A	370	23	40	-1	31	1	-6	**89**	1	63	27
1911	CHI	A	369	23	38	3	41	1	-31	**75**	-5	65	5
1912	CHI	A	393	21	32	-1	22	2	8	**84**	-19	72	-6
1913	CHI	A	98	-2	-4	1	2	-1	0	**-6**	1	6	-10
1914	CHI	A	45	-2	-2	1	1	0	2	**1**	-1	-1	0
1915	CHI	A	27	2	0	1	-2	0	5	**5**	1	8	-2
1916	CHI	A	3	-1	1	0	1	0	-1	**-1**	0	-2	1
1917	BOS	N	18	-2	-2	1	1	0	-3	**-5**	0	-2	-3
Total			2964	117	194	19	232	0	-140	**422**	3	404	21

But the reason why he's here is because of his column of *A1* runs. On a rate basis Walsh fielded more batted balls than any other pitcher in major league history. Stuart Schimler of the Society for American Baseball Research has written that

> [Walsh] fielded his position with as much agility as any pitcher in the history of the game. During his six-year stretch of historic greatness, Walsh accumulated 963 assists, an amazing 344 more than any other pitcher in baseball. He fielded bunts like a territorial animal. Once, when a new third baseman came in for a bunt with a runner on second, Walsh got to the ball but couldn't make a play to third because it was uncovered. Walsh then turned to the third baseman and said, "If you do that again, I'll kill you. On bunts on that side of the field, you stay where you belong."

A pitcher like Walsh could have a huge impact on opportunities throughout the infield. In the post-1951 DRA model, pitcher assists are used to adjust for chances at third base, which often 'competes' for chances fielding bunts with pitchers. For the pre-1952 DRA model, particularly for the Dead Ball Era, pitcher assists also impacted middle infielder opportunities to a statistically significant extent, probably because a good fielding pitcher takes some chances up the middle, but also because pitcher assists are the best single proxy for sacrifice bunts (which were not recorded consistently in those days), which also impact double play pivot opportunities for middle infielders.

I don't think Walsh was necessarily a ball hog, however. First, in the vignette above, he really should have taken the play, because the third baseman should have been covering the bag. Second, we happen to have sacrifice bunt totals recorded when Walsh was pitching. Even if you assume he 'hogged' *half* of those total bunt plays from teammates who 'should' have taken them, which is frankly an absurd assumption, he still has +150 *A1* runs. Third, judging from his ~*IFO* runs, he probably was an extreme ground ball pitcher, which would be perfectly consistent with his being the supreme master of the pitch that drops more suddenly than any other: the spitball.

The chart on the next page for Kid Nichols does not include Nichols's 1890–92 seasons, before the pitcher's mound was moved to its current distance.

Just on the basis of innings pitched, Nichols took even more abuse during his six-year peak (1893–98) than Walsh did in his (1907–12): 2,350 *IP* versus 2,248. Batters facing pitcher numbers are very unreliable throughout the Dead Ball Era, but, on the sole basis of innings pitched and hits, walks, and

Kid Nichols

Year	L	Tm	IP	BB	SO	HR	A1	WP	~IFO	PR	FR	(RA.ip)	Diff.
1893	N	BOS	425	22	-1	-2	-7	3	33	**47**	5	94	-43
1894	N	BOS	407	18	7	-7	-5	0	6	**19**	18	38	-1
1895	N	BOS	391	21	20	-3	-7	0	18	**49**	3	76	-24
1896	N	BOS	372	10	4	-5	1	0	3	**11**	20	48	-17
1897	N	BOS	368	29	14	0	-11	1	23	**57**	16	99	-26
1898	N	BOS	388	17	17	0	-7	-1	35	**60**	17	86	-9
1899	N	BOS	343	16	11	-6	-7	0	12	**25**	26	54	-3
1900	N	BOS	231	-1	-4	-8	-6	0	31	**13**	5	22	-4
1901	N	BOS	321	0	3	-1	-7	0	15	**10**	12	21	1
1904	N	STL	317	20	6	3	-1	1	25	**54**	-5	45	5
1905	N	STL	52	0	-3	0	-5	-1	0	**-7**	-4	-23	12
1905	N	PHI	139	6	-2	2	-11	0	11	**7**	2	17	-9
1906	N	PHI	11	-4	-2	0	-2	0	-1	**-9**	0	-12	2
Total			3765	154	69	-26	-75	2	212	**334**	114	565	-117

hit batsmen, Nichols has an even more impressive lead in *BFP*: about 10,000 batters faced, versus 'only' about 9,000 for Walsh, which makes sense given the higher on-base percentages in Nichols's day. And Nichols probably threw many, many more pitches per batter, because the foul strike rule was not in effect, and hitters could foul off as many pitches as they wanted. I nominate Nichols from 1893 through 1898 as the most overworked pitcher in history over a six-year span, at least since the pitcher's rubber was moved back to its current distance. (Cy Young had about 100 fewer estimated *BFP* than Nichols during those years.)

On the sole evidence of the basic 'DIPS' statistics identified by McCracken—strikeouts, walks, and home runs—Nichols is even a more extreme DIPS outlier than Niekro: Nichols saved 'only' 200 DIPS runs, but allowed 565 fewer runs, given his innings pitched, than the league-average pitcher of his time. Three hundred and sixty-five runs need to be accounted for. According to *The Historical Abstract*, despite his good but not extremely good strikeout rates, Nichols threw "very hard," just like Robin Roberts. Both Roberts and Nichols, judging by their *A1* runs and *~IFO* runs, probably generated a lot of infield fly outs, which would explain some of the 365-run gap. In addition, Nichols may have had the greatest team fielding support—relative to the league—of any pitcher in major league history other than Jim Palmer. For many seasons, Nichols had two of the very greatest corner infielders in history (Jimmy Collins at third and Fred Tenney at first), a very fine shortstop (Herman Long), and a superb left- and center-fielder (Hugh Duffy), turning a lot of outs into hits. Yet even when I estimate the impact of all those other factors, there are still about a hundred runs by which Nichols exceeded expectation. My best guess is

that he saved his strikeouts for the highest leverage situations—as Christy Mathewson explained, in *Pitching in a Pinch*, all pitchers of that time did.

Having ended with the most extreme DIPS-violator of all time, it still needs to be emphasized that the basic concept behind DIPS is largely true, especially on a team level. But, as we've done throughout this book, we discuss the outliers and exceptions to our models, rather than sweep them under the rug.