

We would like to present in this letter the results for the 2019-20 Sheffield Badminton season.

This was based on forecasting an outcome for each of the remaining un-played games. Two methods were used, and the results compared.

The main method was to use a formula to forecast the results. This was done by calculating a Win Ratio for each team and using this to calculate additional points from the maximum remaining points and adding this to the actual points achieved. This is based on the Pythagorean Expectation (See Appendix A)

The formula for the win ratio:

$$(Games\ For^{Exponent} / (Games\ For^{Exponent} + Games\ Against^{Exponent}))$$

Where Exponent is calculated using :

$$1.5\log((Games\ For + Games\ Against)/Matches\ Played)+0.45$$

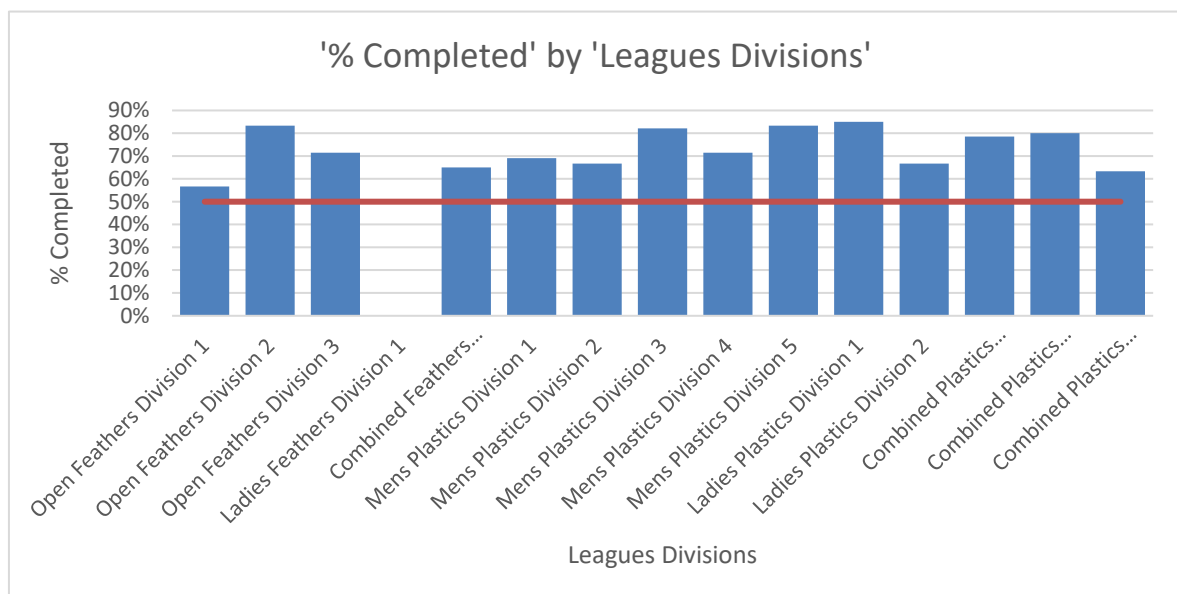
Using the above Exponent rather than a fixed value of 2 helps to take game difference into account so will handle this situation where you have 2 teams with the same games played, games won, and points achieved.

The second method was to use many years of experience to predict results of the matches and then compare this to the results for formula.

There was, surprisingly, a high degree of correlation between the 2 methods.

There was only 1 result which required any involved discussion. This was for the 2nd and 3rd places for Division 5 between Wisewood 4 and KBC with very little difference between them. The formula predicted KBC in 2nd place but as they had been 'gifted' 9 points via Abbeydale conceding against them – this had skewed the forecast unfairly, we felt, in their favour. (The formula does onto take this into account). The fact that Wisewood 4 had beaten KBC twice was also taken into consideration and the forecast adjusted with Wisewood 4 in 2nd place and KBC in 3rd place.

Having established that most of the divisions had completed more than 50% of the games, we felt that is was a fair method to complete the season.



Sheffield Badminton 2019-2020 Season Results

Mens Feathers Division 1

57% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Westfield A	5	5	0	0	0	31	14	10	50%	8.2	18.2
Staveley	3	3	0	0	0	19	8	6	30%	11.7	17.7
Wingfield	4	3	1	0	0	26	10	6	40%	10.3	16.3
Brunswick A	8	3	5	0	0	30	42	6	80%	1.4	7.4
Westfield B	7	2	5	0	0	22	41	4	70%	1.4	5.4
Brunswick B	7	1	6	0	0	25	38	2	70%	1.9	3.9

Mens Feathers Division 2

83% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Brunswick C	8	7	1	0	0	50	21	14	80%	3.3	17.3
Bessacarr A	7	5	2	0	0	41	22	10	70%	4.6	14.6
Abbeydale A	8	5	3	0	0	44	28	10	80%	2.8	12.8
PMC	9	4	5	0	1	34	45	7	90%	0.7	7.7
Abbeydale B	10	3	7	0	1	35	55	5	100%	0.0	5.0
Wisewood	8	1	7	0	0	19	52	2	80%	0.5	2.5

Mens Feathers Division 3

74% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Brunswick D	8	7	1	0	0	60	12	14	67%	7.6	21.6
Westfield Mens C	8	7	1	0	0	51	21	14	67%	6.7	20.7
Jaguar A	9	7	2	0	0	51	30	14	75%	4.4	18.4
Bessacarr B	9	4	5	0	0	40	41	8	75%	2.9	10.9
Jaguar B	10	3	7	0	0	28	62	6	83%	0.7	6.7
Phoenix A	9	2	7	0	0	36	45	4	75%	2.4	6.4
Phoenix B	7	0	7	0	0	4	59	0	58%	0.1	0.1

Ladies Feathers Division 1

0% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Westfield	0	0	0	0	0	0	0	0	0%	0.0	0.0
Brunswick	0	0	0	0	0	0	0	0	0%	0.0	0.0

Combined Feathers Division 1

65% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Brunswick A	6	5	1	0	0	44	10	10	75%	3.8	13.8
Brunswick B	6	4	2	0	0	30	22	8	75%	2.6	10.6
Abbeydale Park A	5	2	3	0	0	21	24	4	63%	2.6	6.6
University	5	1	4	0	0	12	33	2	63%	0.8	2.8
Staveley	4	1	3	0	2	8	26	0	50%	0.8	0.8

Mens Plastics Division 1

72% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Wisewood 1	7	7	0	0	0	48	15	14	58%	9.0	23.0
Broomgrove 1	7	4	3	0	0	37	26	8	58%	6.6	14.6
Nomads	8	5	3	0	1	40	32	9	67%	4.8	13.8
PMC 1	10	5	5	0	0	47	43	10	83%	2.2	12.2
Westfield 1	9	3	6	0	0	36	45	6	75%	2.4	8.4
Wisewood 2	11	3	8	0	0	35	64	6	92%	0.5	6.5
Abbeydale Park 1	6	2	4	0	1	18	36	3	50%	2.6	5.6

Mens Plastics Division 2

67% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Firvale 1	7	6	1	0	0	39	23	12	58%	7.3	19.3
Paces 1	7	5	2	0	0	35	28	10	58%	6.0	16.0
PMC 2	7	4	3	0	0	33	30	8	58%	5.4	13.4
Abbeydale Park 2	8	4	4	0	0	37	35	8	67%	4.2	12.2
PMC 3	10	5	5	0	0	46	43	10	83%	2.1	12.1
Ranmoor	8	2	6	0	0	27	45	4	67%	2.2	6.2
Grenhilleg 1	9	2	7	0	0	34	47	4	75%	2.1	6.1

Mens Plastics Division 3

85% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Westfield 2	11	11	0	0	0	67	32	22	79%	4.8	26.8
Oakbrook 1	12	9	3	0	0	66	42	18	86%	2.8	20.8
University	11	7	4	0	0	60	39	14	79%	4.2	18.2
Wisewood 3	12	5	7	0	0	47	61	10	86%	1.5	11.5
Broomgrove 2	10	4	6	0	1	40	50	7	71%	3.2	10.2
Beaverhill	13	5	8	0	1	50	67	9	93%	0.7	9.7
Firvale 2	12	4	8	0	1	49	59	7	86%	1.7	8.7
Oakbrook 2	11	1	10	0	0	35	64	2	79%	1.5	3.5

Mens Plastics Division 4

72% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Abbeydale Park 3	8	7	1	0	0	44	28	14	67%	5.6	19.6
Sheffield Social	9	6	3	0	0	56	25	12	75%	4.9	16.9
Graves	9	5	4	0	0	42	39	10	75%	3.2	13.2
Paces 2	8	4	4	0	0	38	34	8	67%	4.4	12.4
Jaguar	9	3	6	0	0	32	49	6	75%	1.9	7.9
Ecclesfield	9	3	6	0	0	30	51	6	75%	1.6	7.6
Drone	8	2	6	0	0	28	44	4	67%	2.4	6.4

Mens Plastics Division 5

83% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Phoenix	8	8	0	0	0	57	14	16	80%	3.7	19.7
Wisewood 4	9	5	4	0	0	44	35	10	90%	1.2	11.2
KBC	7	4	3	0	0	34	29	8	70%	3.1	11.1
Abbeydale Park 4	10	6	4	0	1	47	43	11	100%	0.0	11.0
Grenhilleg 2	8	2	6	0	0	23	49	4	80%	0.8	4.8
Shiregreen	8	0	8	0	0	18	53	0	80%	0.5	0.5

Ladies Plastics Division 1

85% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Westfield	7	7	0	0	0	55	8	14	88%	1.9	15.9
Beaverhill	5	4	1	0	0	29	16	8	63%	4.5	12.5
Abbeydale Park	8	4	4	0	0	35	37	8	100%	0.0	8.0
Broomgrove	7	1	6	0	0	18	45	2	88%	0.3	2.3
Oakbrook	7	1	6	0	0	16	47	2	88%	0.2	2.2

Ladies Plastics Division 2

67% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Paces	5	5	0	0	0	39	6	10	83%	1.9	11.9
Wisewood	4	2	2	0	0	18	18	4	67%	2.0	6.0
Oxley	3	1	2	0	0	13	14	2	50%	2.8	4.8
University	4	0	4	0	1	2	34	-1	67%	0.0	-1.0

Combined Plastics Division 1

76% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Broomgrove 1	8	7	1	0	0	56	16	14	67%	7.3	21.3
Abbeydale Park 1	8	7	1	0	0	55	17	14	67%	7.2	21.2
Westfield	9	7	2	0	0	57	24	14	75%	5.0	19.0
Beaverhill	11	4	7	0	0	41	58	8	92%	0.7	8.7
Broomgrove 2	9	3	6	0	0	30	51	6	75%	1.6	7.6
Paces	10	3	7	0	0	29	61	6	83%	0.8	6.8
Abbeydale Park 2	11	2	9	0	1	29	70	3	92%	0.3	3.3

Combined Plastics Division 2

63% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Stocksbridge	6	5	1	0	0	32	22	10	60%	5.4	15.4
Oakbrook 1	7	5	2	0	0	45	18	10	70%	5.1	15.1
New Embers	3	2	1	0	0	18	9	4	30%	11.0	15.0
Oakbrook 2	7	4	3	0	0	29	34	8	70%	2.6	10.6
Grenhilleg	6	2	4	0	2	19	35	2	60%	1.9	3.9
Ecclesfield	9	1	8	0	0	28	53	2	90%	0.5	2.5

Combined Plastics Division 3

80% Matches Complete

Team	Played	Won	Lost	Drawn	Conceded	For	Against	Pts	Matches Completed	Forecast Add'l. Points	Forecast Total Points
Wisewood 1	9	8	1	0	0	56	25	16	90%	1.6	17.6
KBC	9	7	2	0	0	48	33	14	90%	1.3	15.3
Wisewood 2	8	4	4	0	0	38	33	8	80%	2.3	10.3
Abbeydale Park 3	9	4	5	0	0	50	31	8	90%	1.4	9.4
Shiregreen	8	1	7	0	0	16	56	2	80%	0.3	2.3
Steel City	5	0	5	0	0	7	37	0	50%	0.4	0.4

Appendix A:



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The Free Encyclopedia

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Pythagorean expectation

From Wikipedia, the free encyclopedia

Pythagorean expectation is a *sports analytics* formula devised by **Bill James** to estimate the percentage of games a **baseball** team "should" have won based on the number of **runs** they scored and allowed. Comparing a team's actual and Pythagorean winning percentage can be used to make predictions and evaluate which teams are over-performing and under-performing. The name comes from the formula's resemblance to the Pythagorean theorem.^[1]

The basic formula is:

$$\text{Win Ratio} = \frac{\text{runs scored}^2}{\text{runs scored}^2 + \text{runs allowed}^2} = \frac{1}{1 + (\text{runs allowed}/\text{runs scored})^2}$$

where Win Ratio is the winning ratio generated by the formula. The expected number of wins would be the expected winning ratio multiplied by the number of games played.

Contents [show]

Empirical origin [edit]

Empirically, this formula correlates fairly well with how baseball teams actually perform. However, statisticians since the invention of this formula found it to have a fairly routine error, generally about three games off. For example, in 2002, the New York Yankees scored 897 runs and allowed 697 runs. According to James' original formula, the Yankees should have won 62.35% of their games.

$$\text{Win} = \frac{897^2}{897^2 + 697^2} = 0.623525865$$

Based on a 162-game season, the Yankees should have won 101.01 games. The 2002 Yankees actually went 103–58.^[2]

In efforts to fix this error, statisticians have performed numerous searches to find the ideal exponent.

If using a single-number exponent, 1.83 is the most accurate, and the one used by baseball-reference.com.^[3] The updated formula therefore reads as follows:

$$\text{Win} = \frac{\text{runs scored}^{1.83}}{\text{runs scored}^{1.83} + \text{runs allowed}^{1.83}} = \frac{1}{1 + (\text{runs allowed}/\text{runs scored})^{1.83}}$$

The most widely known is the Pythagorean formula^[4] developed by Clay Davenport of Baseball Prospectus:

$$\text{Exponent} = 1.50 \log\left(\frac{R + RA}{G}\right) + 0.45$$