

Bayesian Ranking and Quantifying of Handicaps of Brush Bowlers 2026

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Introduction

At the highest level of bowls, bowlers' ranks are typically determined according to their performance in a series of knockout events with points awarded based on where they finish in each event. Consequently, a bowler's rank depends on the number of ranking competitions that they enter and their performance in each competition in a particular year.

Brush Bowls Club holds its own internal knockout competitions such as Men's Championship, Ladies Championship, Maiden Singles – George Y. Elder Cup (for bowlers that have not won a singles competition), 2 Wood Singles and The Micheal Spencer Novice Cup. In addition, a Handicap Singles competition takes place in which bowlers are given a handicap with the intention of making the outcome of a match more equal between bowlers of different abilities. Handicaps are typically assigned by the competition organiser depending on their opinion of the ability of each bowler. In each event, bowlers play one or more times depending on whether they win a particular round of the knockout competition with progression depending on their own ability and who they are drawn against.

The aim of this report is to use a statistical model that allows information available from all singles competitions to be combined to determine the proportion of times that every bowler would be expected to win against every other bowler. These estimates are used to quantify each bowler's rank against all other bowlers. A separate statistical model is used to estimate appropriate handicaps.

Data

The data comprises the results of competitions played in 2026, 2025, 2024, 2023, 2022 and 2021.

Outcomes of the Handicap Singles competition prior to 2025 are not included with the other competition outcomes when determining bowlers ranks because the winner of a Handicap Singles match depends on the specific handicaps assigned to them while the actual scores giving the results to 21 points were not available. Outcomes of the Handicap Singles competition are included with the other competitions outcomes when determining bowlers ranks from 2025 onwards for bowlers who were first to score 21 points.

Outcomes of all singles matches from non-Handicap Singles matches are combined with the outcomes of Handicap Singles matches when determining a bowler's handicap; non-Handicap Singles matches provide information on the outcome when bowlers' handicaps are equal.

51 players were included in the analyses in 2026; three bowlers were removed from the analyses because they were no longer active members of the club and 18 bowlers were added to the analyses.

313 matches across 225 pairs of players (out of a possible 1326 pairs) were used to estimate ranks.

410 matches across 312 pairs of players (out of a possible 1326 pairs) were used to estimate handicaps.

The Statistical Models

Ranks and handicaps were estimated using two different statistical models.

We begin by considering the simple outcome of a non-handicapped match ending with a win or lose.

Let

$$x_{ij} \in [0,1]$$

represent the outcome of a match between Players i and j .

Then the outcome is Binomial distributed such that:

$$x_{ij} \sim \text{Bin}(n_{ij}, p_{ij})$$

where p_{ij} represents the unknown but true proportion of times that Player j wins against Player i .

We transform the proportions, p_{ij} , to the logit scale such that

$$\text{logit}(p_{ij}) = \log\left(\frac{p_{ij}}{1 - p_{ij}}\right) = d_{ij}$$

The statistical analysis is based on a network meta-analysis model that is similar that used to combine treatment effects in a meta-analysis of randomised clinical trials comparing different groups of treatments. In a clinical trial setting the requirement is that each trial must have at least one treatment in common with at least one other trial; it is not required that every treatment be compared with every other treatment. In the case of the analysis of competition results the requirement is that matches are linked if they have one individual in common with another match.

The basic parameters are $d_{1,2}, \dots, d_{1,36}$.

The consistency equations are

$$d_{ij} = d_{1j} - d_{1i}$$

Hence, the result of the match between Player j and Player i provides information on the results of the matches between Player j and Player 1, and between Player i and Player 1 i.e. it is not just head-to-head matches that contribute to the estimates.

Estimates of the basic parameters allows the estimation of the underlying proportion of times that each individual wins against every other individual and their expected rank together with an estimate of the uncertainty associated with these estimates.

Estimation of handicaps is done in two stages. Firstly, $\text{logit}(p_{ij})$ is regressed against the differences in the handicaps between bowlers in each match such that:

$$\text{logit}(p_{ij}) = d_{ij} + \beta_{ij} \cdot (x_{ij} - \bar{x})$$

where β_{ij} is the pair-specific regression parameter, x_{ij} is the difference in handicaps between Bowler j and Bowler i , and $\bar{x}$ is the average of the difference in handicaps.

The basic parameters are $d_{1,2}, \dots, d_{1,36}$ and $\beta_{1,2}, \dots, \beta_{1,36}$.

Three options are available when estimating the regression parameters: 1) independent bowler-specific regression parameters; 2) related but not identical regression parameters; 3) identical regression parameters. We will assume that the regression parameters are identical such that $\beta_{1,2} = \dots = \beta_{1,36} = B$.

Estimation of the handicap, H_{1j} , such that 50% of matches will end in a win for Bowler j playing Bowler 1 is given as:

$$H_{1j} = \bar{x} - \frac{d_{1j}}{B}$$

The analyses were conducted using a Bayesian approach. Bayesian statistics allows the incorporation of external information in addition to the observed results. The external information is presented in the form of a probability distribution known as a prior distribution. We use non-informative prior distributions. Results are generated as another probability distribution, known as a posterior distribution, and summarised as point estimates (median) and 95% credible intervals (CrI). 95% credible intervals provide a range of values for the underlying quantity of interest such that there is a 95% probability that the underlying quantity lies within the interval given the evidence available.

Results

Table 1 provides estimates of the ranks (95% Credible Intervals) of the 51 active bowling members who competed in at least one of the Men's Championship, Ladies Championship, Maiden Singles, 2-Wood Singles, Handicap Singles – George Y. Elder Cup (to 21 points) and The Michael Spencer Novice Cup between 2021 and 2026 together with the probabilities of them being the best bowler.

Bowlers in Table 1 have been ordered according to their most likely log run (median) rank and then by their mean rank when medians are identical. There is uncertainty regarding estimates of the long run proportion of matches that each bowler wins and, consequently, uncertainty in their true long run rank as represented by the 95% credible intervals.

Although there is uncertainty with respect to each bowler's true rank, the order of bowlers has remained stable with only six bowlers changing their rank by more than three places compared to 2025.

The top five bowlers are estimated to be Andy Reynolds, Dave Bettany, Trev Hammond, Mick Spencer and Pete Edge. Andy Reynolds has a probability of 0.698 of being the best player; Dave Bettany has a probability of 0.205 of being the best player; Trevor Hammond has a probability of 0.020 of being the best player; Mick Spencer has a probability of 0.006 of being the best player; and Pete Edge has a probability of 0.046 of being the best player. The highest

ranked new entry is Barry Dalby who is ranked 14 (95% CrI (4, 27)). Pete Dickson is the highest ranked new bowler out of those who joined the Club in 2026; ranked No. 33 (95% CrI (11, 39)).

Table 1: Ranks of Brush Bowlers

	Rank 2024	Rank 2025	Rank 2026	95% Credible Interval	Probability Best
Reynolds, Andy	1	2	1	(1, 3)	0.698
Bettany, Dave	18	1	2	(1, 6)	0.205
Hammond, Trev	5	3	4	(2, 9)	0.020
Spencer, Mick	5	6	5	(2, 9)	0.006
Edge, Pete	5	6	6	(1, 14)	0.046
Kirk, Alex	3	6	6	(2, 12)	0.002
McAuliffe, Mick	6	8	7	(3, 13)	0.001
Hinton, Dave	6	10	9	(3, 15)	0.002
Beaken, Phil	12	9	10	(5, 15)	0.000
Bunney, Rob	9	13	10	(2, 21)	0.011
Waters, Graham	14	10	12	(6, 18)	0.000
Edge, Mel	11	13	14	(4, 22)	0.001
Dalby, Barry	-	-	14	(4, 27)	0.003
Williams, Paul	16	13	15	(7, 25)	0.000
Stevens, John	25	14	16	(10, 23)	0.000
Danvers, Sid	12	14	16	(7, 26)	0.000
Jackson, Chris	-	-	17	(6, 29)	0.000
Toone, Lea	11	14	17	(10, 24)	0.000
Hopkin, Phil	14	19	20	(12, 27)	0.000
Bentley, Brian	18	18	20	(13, 27)	0.000
Mace, John	-	-	23	(9, 34)	0.000
Holmes, Ray	17	21	24	(15, 33)	0.000
Toone, Madge	24	26	25	(12, 35)	0.000
Wesson, Keith	-	23	25	(14, 35)	0.000
Godddden, Keith	-	21	25	(13, 36)	0.000
Wesson, Lynn	-	30	26	(15, 35)	0.000
Abate, Paul	22	26	27	(10, 39)	0.000
Hockley, Patsy	24	28	29	(21, 36)	0.000
Burrow, Mick	22	25	29	(17, 38)	0.000
Hockley, Norman	19	24	29	(22, 36)	0.000
Saunders, Dave	25	24	30	(23, 36)	0.000
Rodgers, Linda	24	29	31	(24, 38)	0.000
Dickson, Peter	-	-	33	(11, 39)	0.000
McAuliffe, John	28	31	34	(23, 40)	0.000
Whitt, Dave	31	26	34	(24, 40)	0.000
Bentley, Lesley	28	32	35	(23, 41)	0.000
McAuliffe, Lesley	28	33	36	(26, 41)	0.000
Pomfret, Martin	-	-	39	(18, 43)	0.001
Patel, Navin	-	-	40	(21, 46)	0.001
Patel, Hasmukh (Harry)	-	-	40	(22, 46)	0.000
Waring, Dave	-	-	41	(34, 46)	0.000
Haydon, Martin	-	-	43	(39, 48)	0.000
Chambers, Ian	-	-	44	(22, 51)	0.000
Brownlow, Lorraine	-	-	44	(40, 48)	0.000

Table 1 (Continued): Ranks of Brush Bowlers

Doyle, Rob	-	-	44	(32, 51)	0.000
Galliara, Ajay	-	-	46	(42, 49)	0.000
Patel, Ken	-	-	47	(42, 51)	0.000
Brutnell, Karen	-	-	47	(43, 51)	0.000
Bond, John	-	-	47	(43, 51)	0.000
Brutnell, Derek	-	-	49	(44, 50)	0.000
Shah, Jagdish	-	-	51	(46, 51)	0.000
Out of	32	36	51		

Table 2 provides estimates of the proportion of times that the highest-eleven ranked bowlers are expected to win against each other in the long run. For example, although Dave Bettany is ranked No. 2 below Andy Reynolds and is estimated to win against Andy Reynolds on 36.5% of occasions, the true proportion of match wins could be as low as 10.4% or as high as 72.3%.

Table 2: Proportion and 95% credible interval of times Player 2 beats Player 1 for highest ranking players

Player 1	Player 2									
	Dave Bettany	Trev Hammond	Mick Spencer	Edge Pete	Alex Kirk	Mick McAuliffe	Dave Hinton	Phil Beaken	Rob Bunney	Graham Waters
Andy Reynolds	36.5 (10.4, 72.3)	22.1 (5.3, 55.0)	20.7 (5.4, 49.0)	16.3 (2.3, 62.6)	15.3 (3.6, 41.5)	12.9 (2.9, 37.7)	9.7 (1.6, 38.2)	8.1 (1.5, 28.6)	7.9 (0.8, 46.2)	5.8 (0.9, 24.9)
Dave Bettany	-	33.3 (9.5, 67.9)	31.3 (9.6, 62.9)	25.5 (4.1, 74.0)	23.8 (5.7, 59.7)	20.6 (5.0, 53.0)	15.8 (2.9, 52.5)	13.4 (3.0, 38.8)	13.1 (1.4, 40.0)	6.8 (0.8, 38.9)
Trev Hammond		-	47.9 (20.9, 75.4)	40.9 (5.4, 83.5)	38.8 (12.4, 73.6)	34.4 (11.6, 66.2)	27.7 (6.9, 64.5)	23.7 (6.9, 54.2)	23.6 (3.1, 73.6)	17.9 (3.9, 50.3)
Mick Spencer			-	43.1 (11.2, 83.3)	40.8 (16.7, 70.4)	36.4 (14.8, 64.3)	29.3 (7.8, 66.6)	25.3 (8.2, 54.5)	25.2 (3.7, 73.8)	19.2 (4.8, 50.5)
Pete Edge				-	47.7 (10.2, 86.9)	42.9 (8.8, 83.8)	35.4 (6.1, 79.9)	30.9 (5.4, 75.1)	30.8 (3.5, 82.0)	24.0 (3.7, 67.7)
Alex Kirk					-	45.2 (17.7, 75.4)	37.4 (9.7, 76.7)	33.0 (10.3, 66.5)	32.9 (5.0, 80.4)	25.5 (5.9, 63.2)
Mick McAuliffe						-	42.2 (12.4, 78.9)	37.3 (12.5, 70.5)	37.2 (5.8, 84.3)	29.5 (7.4, 67.2)
Dave Hinton							-	45.0 (14.0, 79.8)	44.8 (7.3, 88.9)	36.6 (9.4, 74.3)
Phil Beaken								-	49.9 (10.3, 89.2)	41.3 (13.6, 75.1)
Rob Bunney									-	41.5 (7.9, 84.5)

Table 3 provides an estimate of the relationship between the handicap and the proportion of times that bowlers win matches. There is a weak relationship between the handicap and the proportion of times that bowlers win matches (slope: -0.079 95% CrI (-0.336, -0.003). Furthermore, the relationship is estimated to be weaker than that estimated in 2025. Only four bowlers out of 25 (16%) with a lower handicap won their match in 2026 compared to an ideal win rate of 50%. Furthermore, three of the top four ranked bowlers successfully progressed to and competed in the Handicap Singles semi-finals.

Table 3: Relationship between handicap and proportion of successes

	Slope (95% CrI)
2026	-0.079 (-0.336, -0.003)
2025	-0.115 (-0.507, -0.004)

Table 4 provides estimates of the differences in each bowler's handicap relative to the reference bowler (i.e. Mick Spencer); the handicaps that were assigned to each bowler in 2026; and three suggestions for the 2027 handicaps assuming a maximum 29 shot handicap for the bowler with the highest estimated difference in handicap from the reference bowler and a minimum 18, 15 and 13 shot handicap for the established bowler with the lowest estimated difference in handicap from the reference bowler and for all bowlers below that.

None of the top 17 bowlers who entered the Handicap Singles competition in 2026 were estimated to change their handicap by more than two based on a minimum 13 shot handicap relative to their assigned handicap in 2026; three bowlers are assigned a lower handicap, five bowlers handicap was unchanged and 14 bowlers were assigned a higher handicap. The remaining 14 bowlers who entered the 2026 Handicap Singles were all assigned lower handicaps.

Table 4: Handicaps of Brush Bowlers

	Estimated Difference in Handicap from Reference Bowler 2026	Assigned Handicap 2026	Suggested Handicap Max 29 Min 18	Suggested Handicap Max 29 Min 15	Suggested Handicap Max 29 Min 13
Bettany, Dave	16.4	29	29	29	29
Reynolds, Andy	15.6	28	29	29	29
Hammond, Trev	1.8	27	28	27	27
Spencer, Mick	0	27	27	27	26
Edge, Pete	-4.7	-	27	26	25
McAuliffe, Mick	-8.2	23	26	25	25
Beaken, Phil	-10.6	23	26	25	24
Kirk, Alex	-11.4	26	26	25	24
Bunny, Rob	-15.1	-	25	24	24
Hinton, Dave	-19.6	21	25	24	23
Waters, Graham	-20.2	21	25	23	23
Edge, Mel	-20.2	-	25	23	23

Table 4: (continued) Handicaps of Brush Bowlers

Jackson, Chris	-23.8	21	24	23	22
Stevens, John	-25.4	22	24	23	22
Williams, Paul	-26.4	21	24	22	21
Abate, Paul	-26.9	-	24	22	21
Toone, Lea	-26.9	23	24	22	21
Dalby, Barry	-30.0	19	23	22	21
Danvers, Sid	-33.3	-	23	21	20
Wesson, Lynn	-34.5	19	23	21	20
Hopkin, Phil	-36.7	19	22	21	19
Dickson, Peter	-40.1	18	22	20	19
Godden, Keith	-40.1	-	22	20	19
Bentley, Lesley	-43.1	-	22	20	18
Mace, John	-45.6	21	21	19	18
Bentley, Brian	-45.7	21	21	19	18
Toone, Madge	-48.3	-	21	19	17
Holmes, Ray	-50.6	-	21	18	17
Burrows, Mick	-55.6	19	20	18	16
Hockley, Patsy	-56.6	19	20	18	16
Saunders, Dave	-56.7	21	20	17	16
Wesson, Keith	-56.9	21	20	17	16
Hockley, Norman	-67.5	19	18	16	14
McAuliffe, Lesley	-69.2	-	18	15	13
Rodgers, Linda	-70.9	18	18	15	13
McAuliffe, John	-73.7	-	18	15	13
Whitt, Dave	-74.0	19	18	15	13
Pomfret, Martin	-105.0	-	18	15	13
Patel, Navin	-130.5		18	15	13
Patel, Hasmukh (Harry)	-130.6		18	15	13
Waring, Dave	-190.4	18	18	15	13
Hayden, Martin	-253.5		18	15	13
Brownlow, Lorraine	-299.4	18	18	15	13
Chambers, Ian	-299.4		18	15	13
Dowle, Rob	-319.8	18	18	15	13
Galliara, Ajay	-347.8		18	15	13
Patel, Ken	-404.6		18	15	13
Bond, John	-406.3		18	15	13
Brutnell, Karen	-407.5	18	18	15	13
Brutnell, Derek	-469.1	18	18	15	13
Shah, Jagdish	-662.9		18	15	13

Discussion

There is uncertainty in the proportion of times that bowlers are expected to win their matches and, consequently, uncertainty in the estimates of ranks. Nevertheless, the results provide information on each player's rank conditional on the currently available results. The order of players has remained stable with only six players changing their rank by more than three places compared to 2025. Uncertainty will be reduced and more precise estimates of the true ranks generated as further match results are included in the analysis.

Andy Reynolds is estimated to be the Brush Bowls Club best singles bowler. However, he is estimated to be the best bowler with probability 0.698 which is far from conclusive. His true rank is likely to be between 1 and 3. The strongest rival for the top spot is Dave Bettany. While Dave Bettany is estimated to beat Andy Reynolds on 36.5% of occasions, the true proportion of wins could be as low as 10.4% or as high as 72.3%.

There is a weak relationship between the assigned handicap and the probability of winning a match. Assigned handicaps for some bowlers may not be reflective of their true performance and the differences in handicaps between some players may not be large enough to give less able bowlers an equal chance of winning a match. Currently assigned handicaps do not penalise better performing bowlers sufficiently. Better performing players are still expected to win against players of less ability in the long run. Furthermore, the bias in favour of better performing bowlers increases with increasing ability.

The maximum handicap assigned in 2026 was 29 shots and it is assumed that this should remain unchanged in 2027. Increasing it would unduly extend the likely duration of a match. The minimum handicap assigned in 2026 was 18 shots. It is recommended that this is reduced to 13 shots to improve the relationship between the assigned handicap and the outcome of a match in an attempt to equalise the probability of each bowler winning a match. The average shot difference for matches played in the quarter and semi-finals was 15. A handicap difference of 16 shots between the highest and lowest handicaps may still not be sufficient to equalise the outcome of matches and may need to be extended further to make the Handicap Singles competition fairer. Nevertheless, it should go some way towards more bowlers with low handicaps winning Handicap Singles matches in 2027.