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20954138

Using dominance matrices to predict the outcome of the AFL 2021 season

Introduction

1) A variety of dominance matrice formulas are tested in 2019 for rounds 1-7.
2) The results obtained from the predicted formulas are compared against 2019 end of season's actual results.
3) The variance (squared difference of the predicted result and the actual result) is calculated for the ranking of each team. The average of the variance of each matrice formula is used to measure how far off the formula is from the actual results.
4) The formular with the lowest average variance is deemed the most suitable formular to predict the ranking of each team because that formula would yield the least errors out of all the tested formulars.
5) Using the same formula obtained from 2019 for round 1-7 in 2021 to predict 2021 end of season's rankings for each team.

Choosing the inputs of the matrice

It is plausible to argue that the sores of each match should be considered as inputs of the matrice because a better team would sore higher as supposed to just taking into consideration whether a team has won or lost a match. We are interested in knowing how much higher the winning team has sored and how much lower the losing team has lost. This would give a better indication of how much better or worse the winning or losing team is respectively.

Team	1	2	3	4	5	6	7	8
Adelaide	**Geel +12**	Syd -33	**GCS +10**	NM +41	**Frem -12**	Haw -3	**GWS -67**	PA
Brisbane Lions	**Syd -31**	Geel -1	Coll +1	WB -19	**Ess +57**	Carl +18	**PA +49**	Frem
Carlton	Rich -25	**Coll -21**	**Frem +45**	GCS +11	**PA -28**	**BL -18**	Ess +16	WB
Collingwood	**WB -16**	Carl +21	**BL -1**	**GWS -30**	WCE -27	**Ess -24**	**GCS -24**	NM
Essendon	**Haw -1**	PA -54	**StK +75**	Syd -3	BL -57	Coll +24	**Carl -16**	GWS -2
Fremantle	Melb -22	**GWS +31**	Carl -45	**Haw +15**	Adel +12	**NM +51**	WCE -59	**BL**

Above are the sores between each teams presented by Wikipedia. However, the soring table here only takes into account the score different between each team without the actual sores. For example, Brisbane Lions lost to Geelong by 1 score but we don't know whether it's 0-1 or 49-50.

Hence, the sore ratio derived from actual scores is chosen to capture the element of each team's score in a match.

Home Tear	Away Tean	Result	Home Scor	Away Scor	Ratio	reverseratio
Carlton	Richmond	64 - 97	64	97	0.6597938	1.515625
Collingwoo	Geelong C	65 - 72	65	72	0.9027778	1.1076923
Melbourne	Port Adela	61 - 87	61	87	0.7011494	1.4262295
Adelaide C	Hawthorn	55 - 87	55	87	0.6321839	1.5818182
Western B	Sydney Sw	82 - 65	82	65	1.2615385	0.7926829
Brisbane Li	West Coas	102 - 58	102	58	1.7586207	0.5686275
St Kilda	Gold Coast	85 - 84	85	84	1.0119048	0.9882353
GWS Giant	Essendon	112 - 40	112	40	2.8	0.3571429
Fremantle	North Mell	141 - 59	141	59	2.3898305	0.4184397
Richmond	Collingwoo	66 - 110	66	110	0.6	1.6666667
Sydney Sw	Adelaide C	62 - 88	62	88	0.7045455	1.4193548
Essendon	St Kilda	65 - 76	65	76	0.8552632	1.1692308
Port Adela	Carlton	88 - 72	88	72	1.2222222	0.8181818
Geelong C	Melbourne	126 - 46	126	46	2.7391304	0.3650794
West Coas	GWS Giant	104 - 52	104	52	2	0.5
North Mell	Brisbane Li	87 - 107	87	107	0.8130841	1.2298851
Hawthorn	Western B	87 - 106	87	106	0.8207547	1.2183908
Gold Coast	Fremantle	61 - 58	61	58	1.0517241	0.9508197
Adelaide C	Geelong C	75 - 99	75	99	0.7575758	1.32
Melbourne	Essendon	112 - 130	112	130	0.8615385	1.1607143

	Carlton	Collingwood	Melbourne	Adelaide Crows	Western Bulldogs	Brisbane Lions	St Kilda	GWS Giants	Fremantle	Richmon
Carlton	0	0	0	0	1.771929825	0	0	0	0	0.65979
Collingwood	0	0	0	0	1.21875	2.016393443	0	0	0	1.66666
Melbourne	0	0	0	0	0	0	0.5789474	0	0	0.49411
Adelaide Crows	0	0	0	0	0	0	1.4264706	0	1.5	
Western Bulldogs	0.5643564	0.820512821	0	0	0	0	0	0	0.7840909	1.90384
Brisbane Lions	0	0.495934959	0	0	0	0	0	0	0	
St Kilda	0	0	1.727272727	0.701030928	0	0	0	0.614035088	0.9295775	
GWS Giants	0	0	0	0	0	0	1.6285714	0	0.7735849	1.64473
Fremantle	0	0	0	0.666666667	1.275362319	0	1.0757576	1.292682927	0	
Richmond	1.515625	0.6	2.023809524	0	0.525252525	0	0	0.608	0	
Geelong Cats	0	1.107692308	2.739130435	1.32	0	0	0	0.949367089	0	
Port Adelaide	1.2222222	0.638888889	1.426229508	0	0	0	0.841121495	0	0	0.92929
Hawthorn	1.0568182	0	0.936708861	1.581818182	0.820754717	0	0.9324324	0	0	
Sydney Swans	1.2567568	0	0.78	0.704545455	0.792682927	0.786407767	0	0.658333333	0	0.7528
West Coast Eagles	0	1.289473684	0	0	0	0.568627451	0	2	1.2321429	
Gold Coast Suns	1.0350877	0	0	0.386554622	1.073529412	0.558558559	0.9882353	0	1.0517241	
Essendon	0	0.945205479	1.160714286	0	0	1.723076923	0.8552632	0.357142857	0	
North Melbourne	1.9354839	0	0	1.203389831	0	0.813084112	0	0	0.4184397	

Above a snapshot of the matrice of rounds 1-7 with the inputs being the sore ratio between each team. For example, horizontally, Richmond won Calton by 64-97 so the ratio is 0.659794. Vertically, the reverse ratio is captured so 64-97 is 1.515625. The full excel workbook for this matrice is available upon request.

Testing different formulas

As seen in the article written by Roger Walter, different formulas of dominance matrice can yield different results. Therefore, it is reasonable to test out different formulas on historical events and compare them to the actual results. The variance (square of the actual result – predicted result) to find out how far off the prediction was from the actual results. Thereafter, the formula with the lowest mean variance will be shortlisted. 2019 results are chosen for testing.

1) Ranking using just D1, the dominance matrice with just the ratio and the reverse ratios of raw scores from each team (refer to the snapshot above). After multiplying it with a vector of 1, we obtained the results as followed.

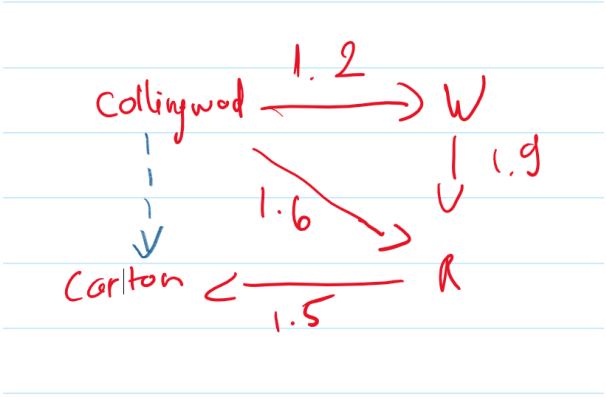
		Just D1		
		Rank	Actual	Error
Carlton	6.474609303	15	16	1
Collingwood	9.203286497	3	4	1
Melbourne	5.350451117	18	18	0
Adelaide Crows	9.15352753	4	11	49
Western Bulldogs	7.484242435	11	7	16
Brisbane Lions	8.315614257	6	2	16
St Kilda	7.225515507	13	14	1
GWS Giants	9.919213851	2	6	16
Fremantle	8.462713872	5	13	64
Richmond	7.677132215	8	3	25
Geelong Cats	11.22520754	1	1	0
Port Adelaide	8.072430096	7	10	9
Hawthorn	7.350344663	12	9	9
Sydney Swans	5.731535227	17	15	4
West Coast Eagles	7.493955193	10	5	25
Gold Coast Suns	5.806189744	16	18	4
Essendon	7.66930968	9	8	1
North Melbourne	6.504671302	14	12	4
				13.6111

2) First order ranking R1 is the method using (D -D transpose) *1. When subtracting DT by D, we are taking into consideration that the losing team should be "punished" and the winning team gains less score when the losing team scores higher.

	Carlton	Collingwood	Melbourne	Adelaide Crows	Western Bulldogs	Brisbane Lions	St Kilda	GWS Giants	Fremantle	Richmond
Carlton	0	0	0	0	1.207573389	0	0	0	0	-0.85583
Collingwood	0	0	0	0	0.398237179	1.520458483	0	0	0	1.06667
Melbourne	0	0	0	0	0	0	-1.14833	0	0	-1.52969
Adelaide Crows	0	0	0	0	0	0	0.72544	0	0.83333	0
Western Bulldogs	-1.20757	-0.3982372	0	0	0	0	0	0	-0.49127	1.37859
Brisbane Lions	0	-1.5204585	0	0	0	0	0	0	0	0
St Kilda	0	0	1.148325359	-0.72543966	0	0	0	-1.01453634	-0.14618	0
GWS Giants	0	0	0	0	0	0	1.01454	0	-0.5191	1.03674
Fremantle	0	0	0	-0.833333333	0.49127141	0	0.14618	0.519098021	0	0
Richmond	0.85583	-1.0666667	1.529691877	0	-1.378593629	0	0	-1.03673684	0	0
Geelong Cats	0	0.20491453	2.37405107	0.562424242	0	0	0	-0.10396624	0	0
Port Adelaide	0.40404	-0.9263285	0.725080083	0	0	-0.34776739	0	0	0	-0.14679
Hawthorn	0.11058	0	-0.13085871	0.949634274	-0.397636088	0	-0.14003	0	0	0
Sydney Swans	0.46106	0	-0.50205128	-0.714809384	-0.468855535	-0.48519717	0	-0.86065401	0	-0.57555
West Coast Eagles	0	0.51396348	0	0	0	-1.18999324	0	1.5	0.42055	0
Gold Coast Suns	0.06899	0	0	-2.2004019	0.142022562	-1.23176402	-0.02367	0	0.1009	0
Essendon	0	-0.1127655	0.299175824	0	0	1.14271978	-0.31397	-2.44285714	0	0
North Melbourne	1.41882	0	0	0.372403915	0	-0.41680095	0	0	-1.97139	0

Using the same team example, when Carlton loss to Richmond, the score ratio – reverse score ratio is 0.659794 - 1.515625 = -0.85583. So Carlton get minus points here for losing. On the other hand, the points for Richmond is 1.515625 - 0.659794 = 0.85583. Had Carlton scored higher, Richmond would get less points and the reverse is true also.

3) Second hand winning was also discussed by Roger Walter which we will also explore here. By squaring the original D1 matrice, we get D2 matrice and this matrice considers second hand winning. A visual example is presented in the following.



Revisiting D1 (above), Collingwood hasn't played with Carlton yet so the cell is still 0. However, D2 will fill in the cell by predicting second hand winning. Historically, Collingwood beat Richmon by the ratio 1.6, Richmond beat Carlton by the ratio 1.5 and therefore, D2 predicts that Collingwood would beat Carlton. According to 2019 ladder, Collingwood ranked 4th and Carlton ranked 16 so this prediction derived from D2 held true for that particular case.
A snapshot of D2 is shown below. Similar to R1, R2 is calculated by D2 – D2T which will "punish" the losing teams.

	Carlton	Collingwo	Me
Carlton	7	2.37249	4
Collingwo	5.12689	7	
Melbourne	4.34531	1.96315	

By similar logic, third hand winning, D3 can be derived by cubing the original D1 matrice. Third order ranking can also be calculated by (D3-D3T)*1

4) Tabulate the ranking of each team using D1, R1, D2, R2, D3, R3 and compare that to actual results of 2019.

		D1		
		Rank	Actual	Error
Carlton	6.474609303	15	16	1
Collingwood	9.203286497	3	4	1
Melbourne	5.350451117	18	18	0
Adelaide Crows	9.15352753	4	11	49
Western Bulldogs	7.484242435	11	7	16
Brisbane Lions	8.315614257	6	2	16
St Kilda	7.225515507	13	14	1
GWS Giants	9.919213851	2	6	16
Fremantle	8.462713872	5	13	64
Richmond	7.677132215	8	3	25
Geelong Cats	11.22520754	1	1	0
Port Adelaide	8.072430096	7	10	9
Hawthorn	7.350344663	12	9	9
Sydney Swans	5.731535227	17	15	4
West Coast Eagles	7.493955193	10	5	25
Gold Coast Suns	5.806189744	16	18	4
Essendon	7.66930968	9	8	1
North Melbourne	6.504671302	14	12	4
				13.61111

		R1		
		Rank	Actual	Error
Carlton	-2.111740884	14	16	4
Collingwood	3.305578357	3	4	1
Melbourne	-5.443414224	18	18	0
Adelaide Crows	2.589521847	4	11	49
Western Bulldogs	0.00598071	9	7	4
Brisbane Lions	1.008344507	7	2	25
St Kilda	-0.260162339	10	14	16
GWS Giants	3.439652558	2	6	16
Fremantle	1.773153881	5	13	64
Richmond	-0.374130828	11	3	64
Geelong Cats	6.279766465	1	1	0
Port Adelaide	1.346829061	6	10	16
Hawthorn	0.341854546	8	9	1
Sydney Swans	-3.146058769	16	15	1
West Coast Eagles	-1.117592299	13	5	64
Gold Coast Suns	-3.834931109	17	18	1
Essendon	-0.892380301	12	8	16
North Melbourne	-2.910271181	15	12	9
				19.5

		D2		
		Rank	Actual	Error
Carlton	45.41745	15	16	1
Collingwood	75.37871	3	4	1
Melbourne	39.53719	18	18	0
Adelaide Crows	64.7125	4	11	49
Western Bulldogs	54.05167	11	7	16
Brisbane Lions	57.47462	8	2	36
St Kilda	52.34157	13	14	1
GWS Giants	76.69182	2	6	16
Fremantle	63.39053	6	13	49
Richmond	52.42551	12	3	81
Geelong Cats	84.73533	1	1	0
Port Adelaide	56.93572	9	10	1
Hawthorn	56.12449	10	9	1
Sydney Swans	43.5411	17	15	4
West Coast Eagles	64.47918	5	5	0
Gold Coast Suns	44.29983	16	18	4
Essendon	59.01781	7	8	1
North Melbourne	50.28712	14	12	4
				14.72222

		R2		
		Rank	Actual	Error
Carlton	-25.99138	16	16	0
Collingwood	31.81616	2	4	4
Melbourne	-36.25241	18	18	0
Adelaide Crows	16.07963	4	11	49
Western Bulldogs	-4.250528	11	7	16
Brisbane Lions	0.254576	9	2	49
St Kilda	-4.404782	12	14	4
GWS Giants	27.7324	3	6	9
Fremantle	11.01983	5	13	64
Richmond	-6.230479	13	3	100
Geelong Cats	48.90564	1	1	0
Port Adelaide	3.252356	7	10	9
Hawthorn	1.294636	8	9	1
Sydney Swans	-25.7094	15	15	0
West Coast Eagles	8.280127	6	5	1
Gold Coast Suns	-27.04642	17	18	1
Essendon	-0.240754	10	8	4
North Melbourne	-18.5092	14	12	4
				17.5

		D3		
		Rank	Actual	Error
Carlton	333.482	15	16	1
Collingwood	547.2001	3	4	1
Melbourne	293.6477	18	18	0
Adelaide Crows	487.6138	5	11	36
Western Bulldogs	401.5708	11	7	16
Brisbane Lions	449.2445	7	2	25
St Kilda	393.699	12	14	4
GWS Giants	573.3885	2	6	16
Fremantle	482.152	6	13	49
Richmond	388.2041	13	3	100
Geelong Cats	660.2609	1	1	0
Port Adelaide	434.1577	9	10	1
Hawthorn	409.6721	10	9	1
Sydney Swans	311.5101	17	15	4
West Coast Eagles	492.7888	4	5	1
Gold Coast Suns	326.4915	16	18	4
Essendon	442.1088	8	8	0
North Melbourne	360.9313	14	12	4
				14.61111

		R3		
		Rank	Actual	Error
Carlton	-205.9147	15	16	1
Collingwood	233.3267	2	4	4
Melbourne	-271.9416	18	18	0
Adelaide Crows	119.7349	4	11	49
Western Bulldogs	-52.14117	12	7	25
Brisbane Lions	31.9402	8	2	36
St Kilda	-27.93833	11	14	9
GWS Giants	222.0154	3	6	9
Fremantle	99.79508	5	13	64
Richmond	-62.50793	13	3	100
Geelong Cats	399.1148	1	1	0
Port Adelaide	35.61928	7	10	9
Hawthorn	-2.57652	10	9	1
Sydney Swans	-210.0999	16	15	1
West Coast Eagles	63.32839	6	5	1
Gold Coast Suns	-211.1519	17	18	1
Essendon	2.621001	9	8	1
North Melbourne	-163.2236	14	12	4
				17.5

5) Consider experimenting with combining R1, R2 and R3. It is reasonable to say that first order winning is more important than second order winning and third order winning. So we can try r1+0.5*r because hypothetically speaking, r2 maybe only worth half of r1. The following results were obtained.

	r1+0.5*r2			
		Rank	Actual	Error
Carlton	-15.10743	15	16	1
Collingwoo	19.21366	2	4	4
Melbourne	-23.56962	18	18	0
Adelaide Cr	10.62934	4	11	49
Western Bu	-2.119284	11	7	16
Brisbane Li	1.135633	8	2	36
St Kilda	-2.462553	12	14	4
GWS Giants	17.30585	3	6	9
Fremantle	7.283069	5	13	64
Richmond	-3.48937	13	3	100
Geelong Ca	30.73259	1	1	0
Port Adelai	2.973007	7	10	9
Hawthorn	0.989172	9	9	0
Sydney Swa	-16.00076	16	15	1
West Coast	3.022471	6	5	1
Gold Coast	-17.35814	17	18	1
Essendon	-1.012757	10	8	4
North Melb	-12.16487	14	12	4
				16.83333

Instead of 0.5, the formula was tested with 0.2, 0.3, 0.4, 0.6 and 0.7 but the average error did not improve so for this formula, we choose 0.5 for r2.
R1+0.5r2+0.2R3 was also experimented. The results are of followed.

		r1+0.5*r2+0.2*r3		
		Rank	Actual	Error
Carlton	-56.29037	15	16	1
Collingwoo	65.879	2	4	4
Melbourne	-77.95793	18	18	0
Adelaide Cr	34.57632	4	11	49
Western Bu	-12.54752	12	7	25
Brisbane Li	7.523673	8	2	36
St Kilda	-8.05022	11	14	9
GWS Giants	61.70893	3	6	9
Fremantle	27.24208	5	13	64
Richmond	-15.99096	13	3	100
Geelong Ca	110.5555	1	1	0
Port Adelai	10.09686	7	10	9
Hawthorn	0.473868	9	9	0
Sydney Swa	-58.02075	16	15	1
West Coast	15.68815	6	5	1
Gold Coast	-59.58852	17	18	1
Essendon	-0.488557	10	8	4
North Melb	-44.80959	14	12	4
				17.61111

A variety of numbers were also tested on this formula but 0.5 for r2 and 0.2 for r3 yields the least error for this formula.

D1+0.5D2 is also considered and the results are:

		D1+0.5*D2		
	Score	Rank	Actual	Error
Carlton	29.18333	15	16	1
Collingwood	46.89264	3	4	1
Melbourne	25.11905	18	18	0
Adelaide Crows	41.50978	4	11	49
Western Bulldogs	34.51008	11	7	16
Brisbane Lions	37.05292	8	2	36
St Kilda	33.3963	13	14	1
GWS Giants	48.26512	2	6	16
Fremantle	40.15798	5	13	64
Richmond	33.88989	12	3	81
Geelong Cats	53.59287	1	1	0
Port Adelaide	36.54029	9	10	1
Hawthorn	35.41259	10	9	1
Sydney Swans	27.50208	17	15	4
West Coast Eagles	39.73355	6	5	1
Gold Coast Suns	27.95611	16	18	4
Essendon	37.17821	7	8	1
North Melbourne	31.64823	14	12	4
				15.61111

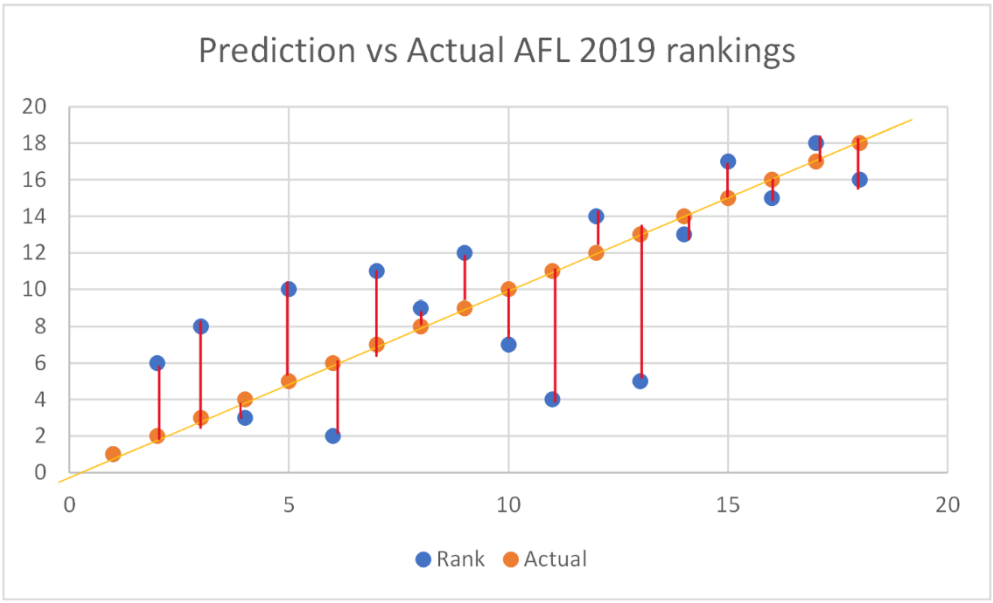
Different numbers were tried for D2 on this formula too but changing the number did not improve the error.

Another experiment was tested on the excel workbook is to take away 5 points from the home team and give 10 points for the away team. This is based on the assumption that the home team has the advantage of the crowd soaring for them and therefore increases their spirit and thus their performance. On the other hand, the away team doesn't have such advantage so if the away team wins, they should deserve some credit. However, this approach did not improve the error in the results table and therefore was omitted.

The verdict

After testing a variety of formulas for this dominance matrice, it is concluded that using just a simple matrice of D1 yields the least error and therefore, D1 should be used to predict the 2021 season.

This can be explained visually as followed with ranking based on D1 vs actual ranking results in 2019:



As seen in the graph, the most suitable formula is the formula that will give minimal vertical square distance between the actual result line and the predicted results. D1 was able to predict fairly accurate the winning team and the teams that came last. However, there were a few discrepancies with teams ranked in the middle. This can be due to many reasons that one can not control. A team may not start off well but towards the middle and end of the reason, due to superior coaching and improvement in training, they might thrive. The opposite also holds true.

2021 prediction

Replicating the 2019 formula on 2021 using the D1, the snapshot of the matrice and the rankings are shown below.

	Carlton	Collingwood	Melbourne	Adelaide Crows	Western Bulldogs	Brisbane Lions	St Kilda	GWS Giants	Fremantle	Richmond	Geelong Ca	Port Adela	Hawthorn	Sydney Swans	West Coast Eagles	Gold Coast Suns	Essendon	North Melbourne
Carlton	0	0.80188679	0	0	0	0.825242718	0	0	1.70313	0.7619	0	0.70833	0	0	0	1.186440678	1.14953	0
Collingwood	1.24706	0	0	0	0.768115942	0.98630137	0	0.66666667	0	0	0	0	0	0	0.737864078	0.696202532	0.77982	0
Melbourne	0	0	0	0	0	0	1.24658	1.5	1.37931	1.70833	1.41667	0	1.925925926	0	0	0	0	1.410958904
Adelaide Crows	0	0	0	0	0	0	0	0.36792453	0.85714	0	1.13187	0	0.970588235	0.72727273	0	1.117647059	0	1.602941176
Western Bulldogs	0	1.30188679	0	0	0	1.351851852	0	1.6	0	0.71429	0	0	0	0	1.075268817	2.107142857	0	4.282051282
Brisbane Lions	1.21176	1.01388889	0	0	0.739726027	0	0	0	0	0	0.98765	2.11364	0	0.752	0	0	2.26667	0
St Kilda	0	0	0.8021978	0	0	0	0	1.1025641	0	0.35821	0	0.41935	2.169491525	0	1.243902439	0	0.47552	0
GWS Giants	0	1.5	0.66666667	2.717948718	0.625	0	0.90698	0	0.64368	0	0	0	0	1.02898551	0	0	0	0
Fremantle	0.58716	0	0.725	1.166666667	0	0	0	1.55357143	0	0	0	0	1.185185185	0	0.553030303	0	0	2.0625
Richmond	1.3125	0	0.58536585	0	1.4	0	2.79167	0	0	0	0	0.97468	1.591836735	0.61538462	0	0	0	0
Geelong Cats	0	0	0.70588235	0.883495146	0	1.0125	0	0	0	0	0	0	1.078125	0.97777778	3.487179487	0	0	1.638297872
Port Adelaide	1.41176	0	0	0	0	0.47311828	2.38462	0	0	1.02597	0	0	0	0	0.657407407	0	1.83077	1.8
Hawthorn	0	0	0.51923077	1.03030303	0	0	0.46094	0	0.84375	0.62821	0.92754	0	0	0	0	0	1.01099	0
Sydney Swans	0	0	0	1.375	0	1.329787234	0	0.97183099	0	1.625	1.02273	0	0	0	0	0.6	1.0375	0
West Coast Eagles	0	1.35526316	0	0	0.93	0	0.80392	0	1.80822	0	0.28676	1.52113	0	0	0	1.431034483	0	0
Gold Coast Suns	0.84286	1.43636364	0	0.894736842	0.474576271	0	0	0	0	0	0	0	0	1.66666667	0.698795181	0	0	2.512820513
Essendon	0.86992	1.28235294	0	0	0	0.441176471	2.10294	0	0	0	0	0.54622	0.989130435	0.96385542	0	0	0	0
North Melbourne	0	0	0.70873786	0.623853211	0.233532934	0	0	0	0.48485	0	0.61039	0.55556	0	0	0	0.397959184	0	0

	D1	Rank
Western Bulldogs	12.4324873	1
Melbourne	10.5877705	2
Geelong Cats	9.78325764	3
Port Adelaide	9.58364903	4
Richmond	9.27143741	5
Brisbane Lions	9.08533697	6
Gold Coast Suns	8.52681625	7
West Coast Eagles	8.13632985	8
GWS Giants	8.0892558	9
Sydney Swans	7.96184549	10
Fremantle	7.83310955	11
Essendon	7.19559363	12
Carlton	7.13646599	13
Adelaide Crows	6.77538472	14
St Kilda	6.57124414	15
Collingwood	5.88202593	16
Hawthorn	5.42095167	17
North Melbourne	3.61487684	18

If the 2019 model holds true for 2021, this table of forecast would be fairly accurate at predicting the winner, Western Bulldogs and the teams at the bottom of the ladder such as North Melbourne, Hawthorn, Collingwood and St Kilda.

Conclusion

The dominance matrice for 2021 was chosen based on testing a variety of formulas in 2019 and compared that against the actual results. After testing, a simple D1 matrice yields the least error. While the prediction is not perfect, it still predicted fairly accurate the winning team and the teams at the bottom. If more time and resources were available, the same process should be repeated for many more past seasons to determine the best dominance matrice methods. Is D1 still the most suitable dominance matrice for other past seasons or it just happened to be the best one in 2019? Perhaps formula involving R1, R2 and R3 would be a better predictor than D1 in other seasons?