



## Predicting AFL winners activity: Teacher notes

<http://topdrawer.aamt.edu.au/Statistics/Good-teaching/Data-reduction/Box-plots/Predicting-AFL-winners>

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This activity could be used with the results of any popular sport and more recent data is available from the AFL website. Students could use technology to construct the side-by-side box plots depending on the teacher's purpose for this activity.

There is naturally a lot of variation in the effectiveness of this model in predicting winners but this is to be expected when using real data and the nature of the outcomes we are attempting to predict. This allows for a lot of discussion from students regarding the results and also encourages them to improve the model.



## Predicting AFL winners: Student worksheet

The table below shows the number of points each AFL team scored in the first 10 Rounds of the 2011 AFL Season. The aim of this investigation is to see if the scoring potential of sides in previous games can be used to predict the outcomes in Round 11, 12 and 13.

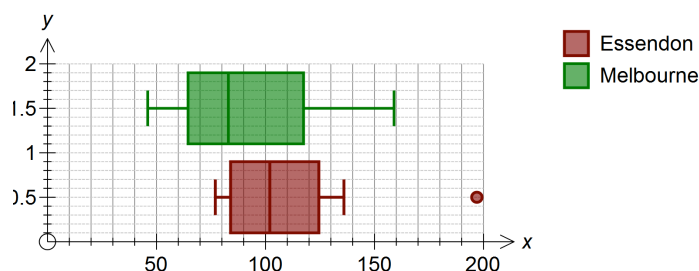
Rnd	Adel	Bris	Bull	Carl	Coll	Ess	Frem	Geel	Gld Cst	Haw	Kang	Melb	Port	Rich	St K	Syd	WC
1	105	92	58	104	155	113	94	48	-	85	88	84	80	84	57	84	92
2		45	123	171	143	93	78	89	52	122	56	77	98	95	95	98	116
3	54	71	122	74	102	136	79	122	51	115	-	82	43	52	84	101	88
4	66	-	-	79	161	79	127	81	69	72	98	159	98	90	-	54	65
5	79	76	78	85	107	77	85	117	104	98	103	-	101	112	89	-	-
6	90	98	57	87	105	197	-	-	58	-	133	52	73	124	71	71	106
7	53	116	65	84	-	106	99	127	124	104	61	149	72	148	81	73	90
8	130	66	153	-	62	102	63	65	73	99	124	83	59	118	69	121	96
9	92	73	52	100	134	89	142	102	-	106	59	86	90	105	106	60	175
10	61	101	62	93	105	-	56	139	73	91	71	46	89	74	102	72	53

In Round 11, the following teams played against each other:

Essendon vs Melbourne	Geelong vs Bulldogs	West Coast vs Gold Coast
Collingwood vs St Kilda	Brisbane vs Sydney	Hawthorn vs Fremantle
Kangaroos vs Adelaide	Port vs Carlton	

1. Allocate a game to each pair of students.
2. Work out the 5 number summary for both teams and draw side-by-side box plots. Use this graph to make a prediction of the outcome of the game.

### Essendon vs Melbourne Rnd 11



*The range and IQR of this graph suggests that Melbourne is a more inconsistent team. Essendon's median score of 102 compared to Melbourne's median score of 83 also suggests that Essendon is the team to tip. What does the outlier signify?*

3. Students should be asked to view the box plots of other pairs and make a decision about a likely winner, with reasons, for every game of Round 11.



4. Students are then given the results of Round 11.

Melbourne (101) def Essendon (68)	Geelong (148) def Bulldogs (87)
West Coast (85) def Gold Coast (67)	Collingwood (108) def St Kilda (51)
Sydney (116) def Brisbane (51)	Kangaroos (115) def Adelaide (68)
Hawthorn (111) def Fremantle (89)	Carlton (111) def Port (49)

5. Discuss with students how successful using past scoring totals was to predict future results. List some of the assumptions and limitations of using this data to predict games (e.g. *It does not consider weather conditions, player availability, home or away games, where the opposing teams are on the ladder or who they had big wins or losses against in the past, does not predict draws.*)
6. Add the scores from Round 11 to the data and repeat the process for predicting Round 12 results. If students have made suggestions to improve the reliability of the strategy you may want to include this here.

In Round 12, the following teams played against each other:

Fremantle vs Essendon	St Kilda vs Bulldogs	Adelaide vs West Coast
Melbourne vs Collingwood	Carlton vs Brisbane	Geelong vs Hawthorn
Gold Coast vs Kangaroos	Sydney vs Richmond	

The results from Round 12 were as follows:

Fremantle (98) def Essendon (64)	St Kilda (81) def Bulldogs (57)
West Coast (106) def Adelaide(67)	Collingwood(129) def Melbourne(41)
Carlton (124) def Brisbane (63)	Geelong (88) def Hawthorn (83)
Kangaroo (122) def Gold Coast(63)	Sydney(75) def Richmond (65)

7. Discuss the success in predicting results in this round. Add the scores from Round 12 to the data and repeat the process but ask students to create a modification to make allowance for some of the assumptions or limitations of the model.

In Round 13, the following teams played against each other:

St Kilda vs Geelong	Bulldogs vs Adelaide	West Coast vs Port
Melbourne vs Fremantle	Hawthorn vs Gold Coast	Essendon vs Kangaroos
Carlton vs Sydney	Brisbane vs Richmond	

The results from Round 13 were as follows:

Geelong (100) def St Kilda (72)	Bulldogs (100) def Adelaide (70)
West Coast (110) def Port(88)	Melbourne(149) def Fremantle(60)
Hawthorn (129) def Gold Coast (58)	Kangaroos (111) def Essendon (90)
Carlton (100) def Sydney(66)	Richmond (125) def Brisbane(94)

8. Students report on the merits but also the limitations of this model in predicting AFL winners.
9. Students should suggest an alternative method using statistics to predict AFL winners and/or alternative context where this method might be more appropriate. As an extension, they could conduct their proposed statistical analysis and evaluate its success.