

# **'MONEYBALL' APPLIED: THE KEY STATISTICS THAT LEAD TO SUCCESS IN AUSTRALIAN FOOTBALL**

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## **INTRODUCTION**

The use of statistics to assist sporting organizations to make coaching and management decisions is not new. They have, however, been given increased prominence in recent years with the release of books and the publication of web sites that aim in part to describe advantages that may accrue to those sporting organisations who best utilize statistical methods. Michael Lewis' "Moneyball" (2003) which deals with baseball, "The Wages of Wins" by Berri, Schmidt and Brook (2006) which is primarily about basketball and the web site "The Football Outsiders (<http://www.footballoutsiders.com>)" which deals with American football are prominent examples of this. The best selling book 'Moneyball' posited a theory on the success of the Oakland Athletics Major League Baseball franchise that used detailed match data to identify inefficiencies. These statistics were then exploited to the advantage of that team. An important part of this strategy involved using mathematical techniques to identify which statistics were most associated with team success. This paper uses a similar approach to analyse elite Australian Football, making use of various types of regression models to identify and quantify the important statistics in terms of their affect on match outcomes.

Given the proliferation of interest on the application of "Moneyball" hypotheses as evidenced by numerous seminar presentations at conferences and the emergence of writings in journals, it is strongly recommended that its application be tested across a variety of sports. This is particularly relevant to those sports that have traditionally used statistics in relatively unsophisticated ways.

## **METHODS**

Australian Football statistics are usually collected as raw numbers. That is, data on such things as the total numbers of marks (catches of the ball), player possessions and goals scored are often presented as a measure of performance. This contrasts to other sports, such as baseball and cricket where efficiency measures (such as batting averages in the case of both sports) are utilized to judge performance. Berri, Schmidt and Brook (2006) make the same distinction when comparing basketball measures to baseball and then seek to redress this by producing measures that allow basketball players' contribution to winning to be effectively measured. The same case can be made for Australian Football, given the dearth of efficiency measures that currently exist in this game. Therefore, this paper attempts to address this issue by looking at the relationship between the various match statistics and winning margins in games.

Various regression models are used to find the match statistics are the most highly correlated with team success. That is, the statistical modelling in this paper is able to show the relationship between match statistics and team winning margins. This is something that has not previously been done for Australian Football.

The paper uses data from the 2002 to 2006 Australian Football League (AFL) seasons to assess which statistics are the most likely to determine winning margins in AFL games; with 740 games being initially considered in the analysis. The match statistics were obtained from ProWess Sports. Therefore, the analysis began with the dependent variable being the winning margin in each game, and 51 different match statistics as the independent variables. Then regression was used to find those variables that were not statistically significant. Regressions were run, and re-run until eventually only the most important variables remained.

## **RESULTS**

From the 51 match statistics tested, our preferred model includes only 11. These are the statistics that are the most strongly related to the dependent variable. These key statistics are then quantified, so that their exact contribution to game winning margins can be assessed. The selected statistics generally relate to teams gaining a lot of possession, kicking the ball long and accurately and running and bouncing the ball.

## **DISCUSSION**

The implications of these findings are clear. If AFL teams are to adopt a similar strategy to that used by the Oakland Athletics they should take note of and ensure they understand the appropriate statistics when coaching and managing their teams. The Oakland Athletics profited from hiring an economist to help formulate and manage their methodological approach. As Ballard (2005) has indicated, this hiring of experts has become common in US basketball and we suspect in other major sporting codes also.

This paper also suggests a new player ranking model that may help clubs value players in terms of their contribution to a team winning. This ranking is based on the application of the key statistics derived from the earlier analysis. A cursory examination of our ranking list highlighted several players who, whilst gaining little attention from the media, ranked highly in terms of their input into their team's success. These discrepancies would assist in the identification and recruitment of these footballers as they could be undervalued elsewhere.

We feel there is a plethora of future research that could follow that deals with the extension of statistical measures to other sports. The authors are aware of research being conducted in the application of these approaches to an English Premier League club, and in completing this current study it was also evident that AFL clubs were interested in the application and testing of these concepts.

## **REFERENCES**

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