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Home Court Advantage and Quality of Team

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Home court advantage was examined using archival data taken from the onset of NCAA Division I basketball record keeping. The effect of team quality on home court advantage was analyzed by examining games where number one ranked teams faced number two ranked teams. The purpose of only examining games between number one and number two ranked teams is an attempt to equalize team quality (team quality in this study is defined by national rank) to better examine home court advantage. My hypothesis is that if team quality is evenly matched then a home court advantage will not play a role in determining a victor. The results of my study lead me to support my hypothesis through examination of a chi square test. Even though my hypothesis is a null hypothesis there are still possible uses for this study. It is the first experiment I have found that examines team quality on a larger scale (national instead of conference) and is a possible study to build upon.

American interest in sporting competitions can be traced back practically to the conception of our nation. Although basketball does not quite date back as far as the formation of the United States in 1776, Dr. James Naismith's creation of basketball in 1891 and the thirteen original rules of the game signaled the onset of a game that was destined to evolve from a game played with a fruit basket for a hoop to a multi-million dollar business. As basketball has grown in popularity so has the interest paid to the sport

in the form of weekly if not daily up-to-date statistics, countless of sport shows on television, and an increased interest in sports betting. ESPN (sport television), a variety of other sport news shows, and numerous casinos in Las Vegas run sporting odds are all examples of an increase in sport coverage. An increase in sport coverage can be caused by one of two things, but more than likely a mixture of the two, either an increase in sport popularity or an affect of technology/media coverage.

With all the new found popularity in following sports, interest in athletics has created new arenas of opportunity. Both psychology and sociology fields have explored topics related to sports and athletics at all levels. A major concern or question that is consistently attempted to be answered is questions that are related to determining what factors cause teams to win and lose. Psychologists in search of answers to this question have examined athletics psyche, anxiety levels, and a number of other sport/athlete related issues. An issue that is examined that is believed to be a contributing factor of team success is home advantage in sports. More simply put, does a team have an advantage on home turf? Courneya and Carron laid the ground work for home advantage research in their paper, *The Home Advantage in Sport Competitions* (1992). Their experiment was conducted in 1992 and was really one of the first psychological experiments that delved into the topic of home advantage theory in sports. Their study found statistical data that supported the theory that home advantage did play a role in sports. Though they found support what was unclear were what factors caused home advantage. Courneya and Carron suggested that further testing be conducted aimed at studying a variety of factors ranging from attendance numbers, offense/defense statistics,

game location, etc. From these suggestions other psychologists conducted experiments aimed at determining what causes home advantage, if any one factor can be solely influential.

Though evidence has been presented to prove home advantage in sports does exist, there has been no evidence discovered to justify what causes home advantage to occur. Certain variables such as, game location factors, historical performance, team offense/defense, attendance numbers, and a variety of other factors have been examined in previous studies.

Team quality is the factor that this study is focused upon and its effects on home advantage. Basic home advantage theory states that the home team has a better chance of being triumphant than it would if the team was competing at an away site. In Madrigal and James' study, *Team Quality and the Home Advantage*, they find that, "high quality teams enjoyed a greater home winning percentage than moderate or low quality teams when matched against comparable opponents," (Madrigal & James, 1999). Both Madrigal and James and Courneya and Carron's studies were useful in forming my experiment. They both provided different perspectives for me to draw upon when designing my experiment.

My hypothesis is that if team quality is evenly matched then home court advantage will not play a factor in determining outcomes of games. The purpose of this study is to downplay the importance of home advantage and to re-examine Madrigal and James' study applying a different operational definition of team quality. They defined team quality as wins in a season; the more wins the better the team quality. There is no

real problem in this, but I believe that where they lack is that they only examined a certain conference. By examining one conference you really don't get a good sample size and the sample really is not that representative of the entire nation, be it college basketball, baseball, etc. In my study by examining the number one versus the number two teams games team quality does not become a factor. Depending upon the conference in examination really has an effect on the quality of teams being examined. One conference maybe strong one year and weak another, and some conferences are weaker than the others. I do not believe that home advantage plays that great a role in determining victors of sporting competitions. I believe that a greater emphasis should be placed upon team quality. A better team is commonly favored to win, but if the teams are of an equal quality differing aspects of the game are commonly examined in an effort to predict the victor. Home advantage is commonly used as prediction device, often if teams are of an equal quality the home team is given the advantage, I however feel that home advantage in this regard plays an insignificant role in this capacity. By examining competitions involving number one and number two ranked teams in men's NCAA Division-I games I hope to provide statistical evidence supporting my hypothesis.

Method

Materials

There was one primary source drawn upon, The Official 2006 NCAA Men's Basketball Records Book, to obtain the necessary statistics for completion of this study. This record book held statistics dating back to 1946 all the way up to 2006. No statistical

programs (computer software) were used in analyzing my data. Instead, a chi square analysis was employed.

Procedure

The study was conducted using archival research methods. The statistics used for the study was gathered from The Official 2006 Men's Basketball Records Book which is a compilation of statistical records for men's NCAA records from 1946 to 2006. The statistics can also be found on-line at various websites, but I found the afore mentioned text (The Official 2006 Men's Basketball Records Book) to be most useful. Previous studies of team quality and home advantage conducted by Madrigal and James, *Team Quality and the Home Advantage*, defined team quality mainly as the best teams out of a certain college conference (Madrigal & James, 1999). I did not particularly like this way of examining team quality for a few reasons, but mainly because conference team's strength or quality depends on the conference. A team with a record of 21-3 in a mid-major conference does not necessarily say much for the team when compared to a more average record team, for instance a 14-10 team, from a major conference. I chose to examine equal or somewhat equally rated teams, by this I mean that no two teams are exactly equal but the closest one can come to examining equal teams is to examine closely rated teams, to test to see if home court advantage played a factor when teams were of an evenly matched quality.

To do this I only included meetings of number one versus number two ranked teams. This has occurred thirty-five times since 1949. I then disregarded all games that were played at neutral locations, mainly national and tournament championship games

that offered neither team a real home advantage. When this was done it left eighteen games to be examined. I then listed all eighteen games assigning them numbers 1-18 based on the older games starting at #1 (the earliest game) and #18 (the latest game). The sample size is small because since 1949 number one and number two teams have only met eighteen times with a home court setting. If the sample was expanded out to include more rankings, say one through tenth ranked teams, the equality of teams would greatly be jeopardized. The problem with expanding the sample out into other sports is that each sport has different rating systems and the very fact that you would be comparing different sports would present a problem. Comparing different sports is similar to comparing a motorcycle to a moped. While many similarities can be found they are too different to really form a good analysis. I then set up three columns. The first two columns were labeled A and B. Column A was showed the wins and loses for the number one ranked teams and like wise for Column B, but for the number two ranked teams. The third column was labeled H for which the home team was placed in this column with the letter X representing #1 ranked teams and letter Y representing #2 ranked teams (Table 1).

I then took the data and transferred it into a data distribution chart. Home and away teams were split into two columns with rank in the opposing axis. Then I placed the numbers of wins in the appropriate boxes. After this I calculated the degrees of freedom and found the p-value to 3.60 and the significant p-value to be 3.84 at .05 level.

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TABLE 1. Wins and losses for number 1 and number 2 ranked teams, while at home

Meetings	School Rank #1/A	School Rank #2/B	Home Court H
1)	L	W	(2)
2)	W	L	(1)
3)	L	W	(2)
4)	L	W	(2)
5)	L	W	(2)
6)	L	W	(2)
7)	W	L	(2)
8)	W	L	(1)
9)	W	L	(2)
10)	L	W	(1)
11)	L	W	(1)
12)	W	L	(2)
13)	W	L	(2)
14)	L	W	(1)
15)	W	L	(2)
16)	W	L	(2)
17)	L	W	(2)
18)	L	W	(2)

W-Win
L-Loss
(1)-Number one ranked school
(2)-Number two ranked school

Results

My hypothesis stated that if team quality is evenly matched then home advantage will not play a factor in team success. I used a chi square analysis and found that there was no statistical significance between home court advantage and team quality, $X (2/1) = 3.60$, $p>.05$.

Discussion

I concluded that evenly matched teams seemed to split games regardless of which team held home court advantage. The previous research in the field helped a great deal by creating a starting point to go from and allowed me to adapt my research to my standards I felt better exemplified team quality. It seemed that evenly matched teams tended to split games. There were only a small number of games to draw upon. This study should only be used as a study to be expanded upon and not as a model for duplication since I tested a null hypothesis.

I think that the concept of home advantage in athletics is a very interesting topic, but I feel that there are just too many factors that take place in a sporting event to clearly find solid evidence for anything really in terms of definites. Sports seem to have too many factors and possibilities to gauge the question of home advantage in my opinion at least. By examining the win-loss chart and apply years to the data it seems that earlier games prior 1980 (which would numbers one through nine) home advantage does seem to play a larger role. Possible factors to this could be caused by early graduation rates in college athletics. Prior to 1980 far more students stayed in college the full four year duration. The effects of early graduation on home advantage would be an interesting topic to examine. In order to make my experiment better, maybe next time some one could operationally define team quality on a longer continuous measure perhaps examining a sport dynasty, or broadening the teams to the top 25 AP polls in college basketball. Due to time constraints and lack of the luxury of hindsight these measures were not put into place.

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