Effect Size of Playing Home On Football Matches Results

Introduction

Football is considered the most popular sports game in the world in some football championships the participant teams have to play both home and away matches. Wining a football match is a result of many factors and nowadays it's important to know what factors affect the match results so in the next matches if we can, modify those factors to get a better results. Although factors like playing home or away cannot be changed, knowing how much it affects the match result will help with more accurate predictions and decide how much improvements on the other factors (e.g. Players training before the match, giving motivational speech to the players, etc.). Making accurate predictions is also very helpful to petting markets.

The data used in this study is the premiere league match results for the season 2017/2018 (n=380), for each match we have the home team goals, the away team goals, match result (win, draw or loss).

Research Question & Hypothesis

In this study I'll try to answer if the home team has more chance to win. My hypothesis is being the host of the match gives you a higher chance to perform better and win the match. When a team plays at home, it will be performing at a familiar stadium in familiar conditions amid familiar surroundings, all of which should provide an advantage also being among their crowd will make appositive effect on the players. Another advantage of playing home is avoiding long travels which will make the players more comfortable and improve their performance.

Experimental Design

The analysis used in this study is chi-squared goodness of fit test as the data being analyzed is nominal (match result for the home teams: win, draw or loss) and Cramer's V is used as an effect size measure.

Results

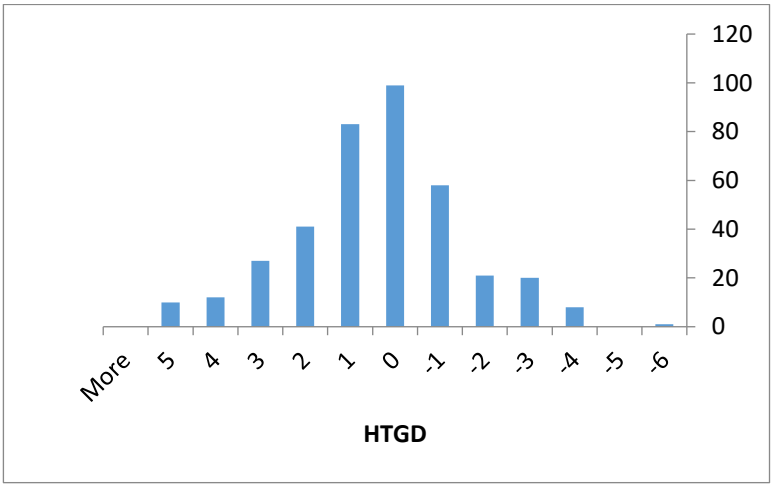
Sample of the row data.

HTGD	FTR	FTAG	FTHG
1	H	3	**4**
-2	A	2	**0**
-1	A	3	**2**
-3	A	3	**0**
1	H	0	**1**
0	D	0	**0**
0	D	3	**3**
1	H	0	**1**
4	H	0	**4**
-2	A	2	**0**
-2	A	2	**0**

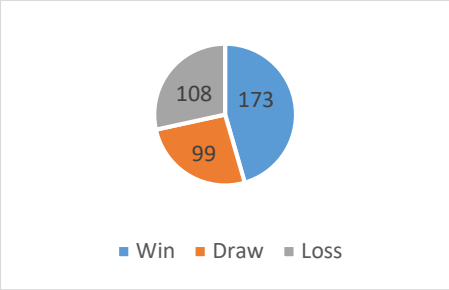
FTHG: Full Time Home team Goals, FTAG: Full Time Away team Goals, FTR: Full Time Results (H: home team win, D: draw, A: away team win), HTGD: home team goal difference (FTHG - FTAG)

Descriptive Statistics for HTGD (home team goals – away team goals [>0: home team win, 0: draw, <0: home team loss])

Mean	0.384210526
Standard Error	0.097243828
Median	0
Mode	0
Standard Deviation	1.895631183
Sample Variance	3.593417581
Kurtosis	0.355738873
Skewness	0.028298469
Range	11
Minimum	-6
Maximum	5
Sum	146
Count	380



From previous statistics the mean equals 0.38 which is > 0 and also by looking at the histo gram we can notice that the frequency if values which are > 0 is more than those <0. This tells us that home team wins most of the matches.



Home Team Results count	
Win	173
Draw	99
Loss	108

Inferential statistics

Ho: Being the host doesn't affect match results: (wins: 33.33%, draw: 33.33%, loss: 33.33%)

Ha: being the host gives you higher chance to win (win > 33.33%)

A chi-square test of goodness-of-fit was performed to determine whether the home team has more chance to win the match, χ^2 (2, N = 380) = 25.74, p < .0001.

Effect size measure: Cramer's V = 0.18

Conclusion

Chi square test results suggest that there is a relationship between playing home or not with the match results. But Cramer's V result points out that there is a week relationship which is minimally acceptable.