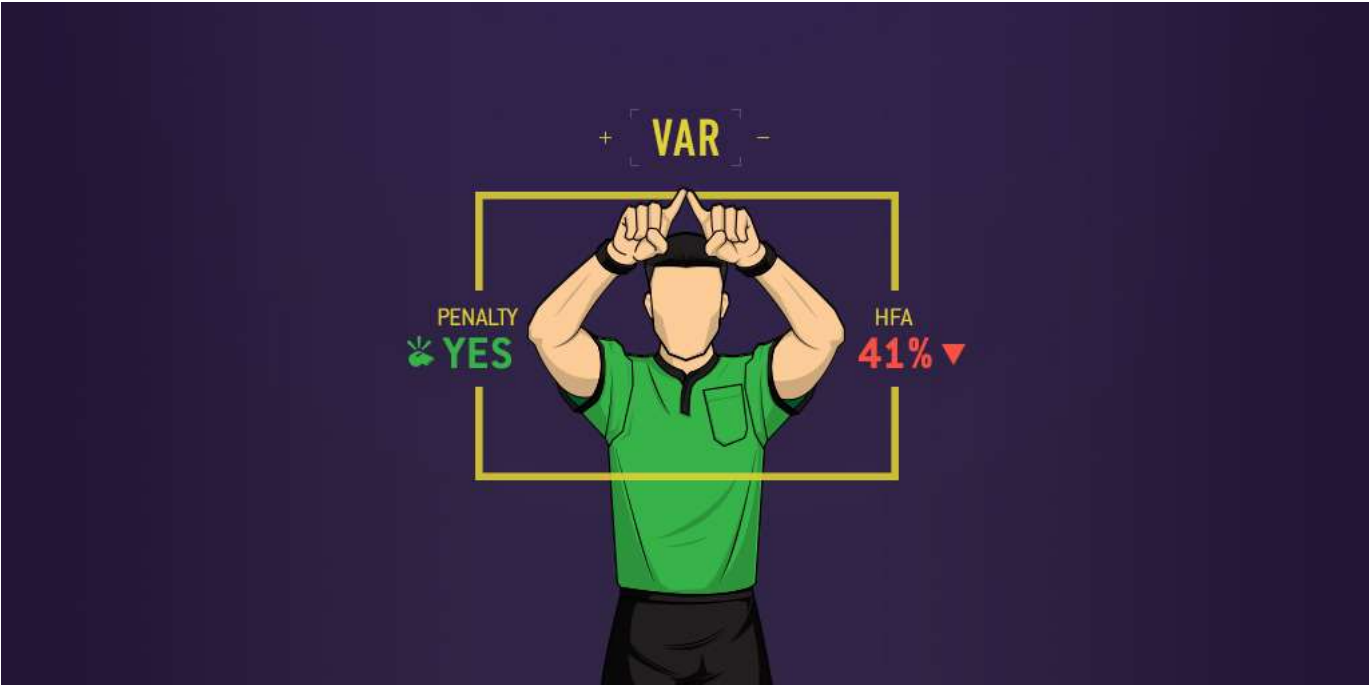




LUKE PETTY SOCCER JUN 14, 2018

Analysing VAR: Could VAR affect home advantage?

The difficulties of measuring the effects of VAR
VAR and home field advantage
Serie A and MLS home/away penalty data



VAR is an increasing presence within soccer leagues so it is important for bettors to understand the affects it may have on the outcome of matches. Does VAR minimise home advantage? How does VAR affect the award of penalties? Read on to find out.

The difficulties of measuring the effects of VAR

It is hard to assess the impact of VAR on soccer matches. Intuitively bettors may feel that the VAR system may weaken the effect of home field advantage, however it is difficult to quantify this. This is due to a few key factors.

There have not been many matches involving the use of VAR so it is difficult to collect a statistically significant set of data.

Equally, soccer is a low-scoring game which is naturally quite variable, so collecting data from a



cards and 72 goals were changed through referral to VAR.

single season may cause issues especially with teams changing style, quality, managers and personnel.

To further complicate isolating the effect of VAR, it is unknown to what extent home

advantage is down to refereeing decision making and how much can be put down to other factors VAR does not affect such as the crowd and familiarity with the stadium.

Additionally, since overall results are so dependent upon changes in the quality of different teams season-to-season the effect of VAR is unlikely to be a big contributor to overall outcomes over the course of a campaign. This makes it tricky to assess what effect it might have on a one-off fixture.

These complications make it difficult to find a metric by which to measure the effects of VAR. It is, therefore, best to focus on those match events directly influenced by the use of VAR technology.

Taking red cards as a measure proves difficult since VAR is not always used for dismissals involving two bookings. Straight red cards are also relatively rare (there were just 44 in the 2017/18 Serie A season).

Likewise, VAR is only used for close offside calls that lead to goals being scored or disallowed. This is both a rare event and one that is affected by the attacking side converting the chance to begin with, adding an extra level of variance to the data.

This leaves penalties as perhaps the most suitable metric to analyse considering the current restrictions on sample size.

Using home/away penalty data

One of the biggest decisions a referee can make in a soccer match is awarding a penalty kick to either team. We know that penalties are scored **approximately 75.8%** of the time so with one blow of his whistle the official is essentially awarding 0.758 goals to a team.

Comparing the penalties awarded to home and away teams could be a promising way to see if VAR is having an effect on home advantage, particularly as VAR is beginning to be routinely used for all penalty decisions. This ensures penalty decisions provide a useful way to isolate the effect of the Video Assistant Referee.

Historically referees award more penalties to teams playing at home than visiting sides. However, it is hard to tell whether this is due to home advantage having an effect on the referee's decision-making process or simply that teams are more inclined to attack at home.

If home advantage is not playing a part in a referee's decision-making process then VAR would be expected to correct errors equally and, therefore, there would be no noticeable difference in the ratio of home to away penalties awarded.

VAR, penalties and home advantage: Serie A

As discussed, due to VAR being a new process in World Soccer, there is little data to analyse. However, Serie A has introduced the system for the 2017/18 season so there is now a full season of data to review.

The German Bundesliga also began utilizing VAR for its 2017/18 season but its implementation has not been seamless so it is difficult to use data from that league. **VAR was not available for some games** and VAR project manager Helmut Krug was sacked for 'influencing the decision of the VAR in a manner not befitting his role' in November.



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In the 2017/18 Serie A season one decision was changed by VAR every 3.29 games. A total of 59 penalties, 16 red cards and 42 goals were changed through referral to VAR.

This is the penalty data from the last ten seasons of Serie A split into whether they were awarded to the home or away side:



This provides a reasonable insight into how the introduction of VAR could affect home advantage. The 2017/18 season, which saw the introduction of VAR, had the third-lowest number of penalties awarded to the home team and the most awarded to the away team of any season.

The number of penalties awarded to the home team for every penalty awarded to the away team fell to 1.16; the lowest of any season on record.

Whilst this is a small sample the dramatic change strongly suggests that VAR has weakened the home side's advantage, at least when it comes to the award of penalties. Home teams were still awarded a greater number of penalties but only by a comparatively narrow margin.

VAR and penalties in the MLS

Interestingly, there is a similar trend over in the MLS; another league that has implemented VAR.

VAR was introduced mid-way through the 2017 season so it is probably best to ignore this data. Equally, it should be noted that the 2018 season has just a small sample since it is currently in progress.

Here are the MLS Home/Away penalty stats since the 2011 season:

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It is common knowledge that home advantage has a bigger influence on results in the MLS than European Leagues such as Serie A. This is reflected in the higher proportion of penalties awarded to home teams with an average ratio pre-VAR of 2.15 home penalties to every one away penalty awarded compared to 1.75 in Serie A.

Read: [Home advantage in the MLS](#)

The effect of VAR has been even more drastic in the MLS so far with the ratio of home to away penalties awarded falling to an average of 1.22. This suggests the phenomena is not confined to Serie A and could demonstrate some weakening of home field advantage due to the introduction of VAR across leagues.

Why might VAR have caused the proportion of home penalties to fall?

It is difficult to isolate the exact reason why the introduction of VAR could have had an immediate effect on the bias towards home sides in terms of penalties.

It may be that referees are less inclined to make borderline decisions knowing that they can instead refer them to the VAR. Those difficult split-second judgements may be more influenced by the presence of a home crowd whilst the Video Assistant Referee is able to be more objective.

Equally, away teams may benefit from winning borderline penalties that the referee would not otherwise have considered awarding without the availability of VAR.

Could this have wider effects on home advantage in soccer?

If the imbalance in home to away penalties awarded was due to home field advantage affecting refereeing decisions then it is not unreasonable to suggest the same may happen to big offside and red card decisions in the long run.

This would certainly weaken home advantage to some extent but how big a factor VAR may ultimately prove to be is certainly questionable, especially considering VAR is not used for every decision so some refereeing bias will remain. A bigger sample size will also be needed to draw any real conclusions about VARs potential influence on matches especially since leagues have variable levels of home-field advantage to begin with.

Still, despite being based on limited data, the potential rebalancing of penalty decisions should give bettors something to consider when backing home sides in matches featuring VAR.

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About the author



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Luke studied Economics at The University of Exeter before embarking on a career that combines two of his greatest interests, writing and sports betting. Despite a keen interest in soccer, he is open to exploring any sport where value might be present. He particularly enjoys analysing markets from different perspectives to try and find a profitable edge.

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