

The dataset we chose was the statistics of the English Premier League season of 2019-2020. This dataset was very interesting to us, as we are both avid soccer fans. The questions we came up with are designed to test some common preconceived notions of soccer fans. We decided on the following questions (some alterations were made after feedback from our TA):

- 1) Do teams do better (win more) in away games?
- 2) Given the betting odds are against a team, do they perform better at home than when they're away.
- 3) Do referees give out more cards to the away team than the home team?

We were interested in the first question because it is commonly assumed that there is something called a "home team advantage". This is when the team playing in their own stadium gets a morale boost from the crowd atmosphere because of their own supporters and therefore is more likely to perform better. We wanted to see whether it actually holds by comparing the number of games where the away team won versus the number of games where the home team won. Our results sided in favour of the assumption, with 172 games being won at home, and only 116 games being won away.

We were interested in the second question because we had a theory that if the home team has the odds against them, they are more likely to step up to the challenge and try harder, since they are playing in front of their own fans. We checked if the odds were against them by averaging the betting odds of four different betting companies for each particular game. Then we compared to see whether teams won more games at home compared to away, when the odds were against them. Our answers supported our theory by showing that teams won 45% more games at home, than away when the odds are against them. However, we also see that home teams won 48% more games than away teams for the season, so we can't say that odds against a team have a worse affect on away teams than hometeams.

We were interested in the third question because most soccer fans and pundits alike believe that the referee decisions during a game normally side with the home team. In order to investigate, we compared the total number of cards the referee gave out to home teams vs the total number of cards given to away teams. Our results sided in favour of our theory with 69 more cards being give to the away team over the course of the season. These results make sense because when giving a card to the home team the referee gets jeered by the crowd compared to when he gives a card to the away team where he gets cheered. It's just human nature that he would refrain from giving cards to the home team, unless he was absolutely certain, leading to a certain bias in favour of the home team.