Hierarchical Bayesian Possion model for football data

# Introduction/background

Model football data

Use for predicting the outcome of a football game

Accomplished by measuring the skill, attacking and defensive, for each team and using that measure to simulate the number of goals each team will score in a game.

Goals are Poisson distributed

Give earlier examples, can be both frequentist and Bayesian, on how the Poisson distribution has been used for modeling football data.

Can be put in the structure of a Hierarchical model because...

Earlier articles has used this kind of Bayesian model to predict outcomes in the Italian Serie A for the?? season, the English Premier League for the ?? season and for the Spanish La Liga.

In the first two cases data from just the investigated seasons has been used. For the last case, data for ?? seasons has been used for measuring the skills of the teams. These measures of skills are also used for predicting a number of games that were left of the season.

# Data

Results from games in the Swedish Allsvenskan, the top division in Sweden, during the 2015 season and the ongoing 2016 season.

Example on how the data frame looks like

# Software

Has been using the statistical programming software R. For the Bayesian analysis has the package ?? been used and for the graphs the package *ggplot2*.

# Method

Hierarchical models

Poisson distribution

Graphical representation

Gibbs Sampling

Credible intervals

# Results

Attacking and defensive skill, compare with table position (Has earlier seen a clear correlation between the measured skill and final position)

Look at credible/HDI interval for the measure

If time...

Produce fits for the 2015 season by simulation

Predict the rest of the 2016 season

# Discussion

Discuss the results

Compare with the earlier work done