Parameters 2018 model 0

Rates for the home and away goals

$$\ln \lambda_k = \ln \alpha_i + \ln \beta_j + \ln \gamma_h$$

$$\ln \mu_k = \ln \alpha_i + \ln \beta_j$$

- i: home team index;

- j: away team index;

- α: attack strength parameter;

- $1/\beta$: defense strength parameter;

- γ_h: home advantage parameter.

Constraint

The constraint for identificability is

$$\sum_i^n \log(\alpha_i) = \sum_i^n \log(\beta_i).$$

```
options(knitr.kable.NA = "-")
options(scipen = 999)

library(dplyr)
library(knitr)

load("data/input.RData")
load("data/mod_0.RData")
```

```
alphas_betas = tibble(Team = times$Time,
                alpha = exp(mod_0$alpha),
                beta = exp(mod_0$beta))
kable(alphas_betas, digits = 4, caption = "Alphas and betas",
      col.names = c("Team", "$\\alpha$", "$\\beta$"))
```

Table 1: Alphas and betas

Team	α	β
América-MG	0.6543	0.9961
Athletico-PR	1.1646	0.8081
Atlético-MG	1.2174	0.9421

Team	α	β
Bahia	0.8446	0.8787
Botafogo	0.8282	0.9849
Ceará	0.6901	0.8070
Chapecoense	0.7446	1.0653
Corinthians	0.7306	0.7451
Cruzeiro	0.7296	0.7238
Flamengo	1.2597	0.6370
Fluminense	0.6971	0.9773
Grêmio	1.0217	0.5847
Internacional	1.0885	0.6305
Palmeiras	1.3615	0.5746
Paraná	0.3972	1.1903
Santos	0.9954	0.8649
São Paulo	0.9878	0.7348
Sport	0.7735	1.2165
Vasco da Gama	0.8961	1.0318
Vitória	0.8019	1.3467

```
Parameter = "$\\gamma_h$"
param = tibble(Parameter,
               Estimative = exp(mod_0$gamma))
kable(param, digits = 4, caption = "Other parameters")
```

Table 2: Other parameters

Parameter	Estimative
γ_h	1.7384

```
mod_0$loglik
```

```
## [1] -673.0955
```