

Parameters 2020 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
Athletico-PR	0.8296	0.7768
Atlético-GO	0.8820	0.9735
Atlético-MG	1.4131	1.0001

Team	α	β
Bahia	1.0757	1.2889
Botafogo	0.7187	1.3304
Ceará	1.1997	1.1212
Corinthians	0.9925	0.9789
Coritiba	0.6900	1.1571
Flamengo	1.5070	1.0720
Fluminense	1.2097	0.9238
Fortaleza	0.7486	0.9456
Goiás	0.9225	1.3657
Grêmio	1.1630	0.8777
Internacional	1.3315	0.7746
Palmeiras	1.1152	0.8099
Red Bull Bragantino	1.0970	0.8748
Santos	1.1551	1.1186
São Paulo	1.2965	0.9058
Sport	0.6870	1.0712
Vasco da Gama	0.8257	1.2081

```

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	1.3137

```
mod_0$loglik
```

```
## [1] -691.1659
```