

# Relative age effect in elite soccer

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## I: Introduction

### TODO:

Rephrase the main goals, content, and backgrounds of the article.

## II: Modeling

### 2.1 Methods

Our goal is to model the Relative Age Effect (RAE) for frequency using the birth-week number ( $W_B$ ). Here, the birth-week number ( $W_B$ ) denote the week in which the player was born. For the sake of compatibility, we will transform  $W_B$  into time of birth, illustrating how far through the competition year a player's birthday is :

$$t_B = (W_B - 0.5)/52$$

In other words, we scaled the player's birth-week number into the interval of  $(0, 1)$ . The data collect the information on the 1000 top professional soccer players in the major leagues. We think it is reasonable to apply the poisson regression model here since the probability of having a successful professional athlete is quite low. The overall model is denoted as below:

$$Frequency = e^{\beta_0 + \beta_1 * t_B}$$

From our model output, we get the estimate values of  $\hat{\beta}_0 = 3.2768$  and  $\hat{\beta}_1 = -0.7083$ . Therefore, our fitted model is denoted as below:

$$Frequency = e^{3.2768 - 0.7083 * t_B}$$

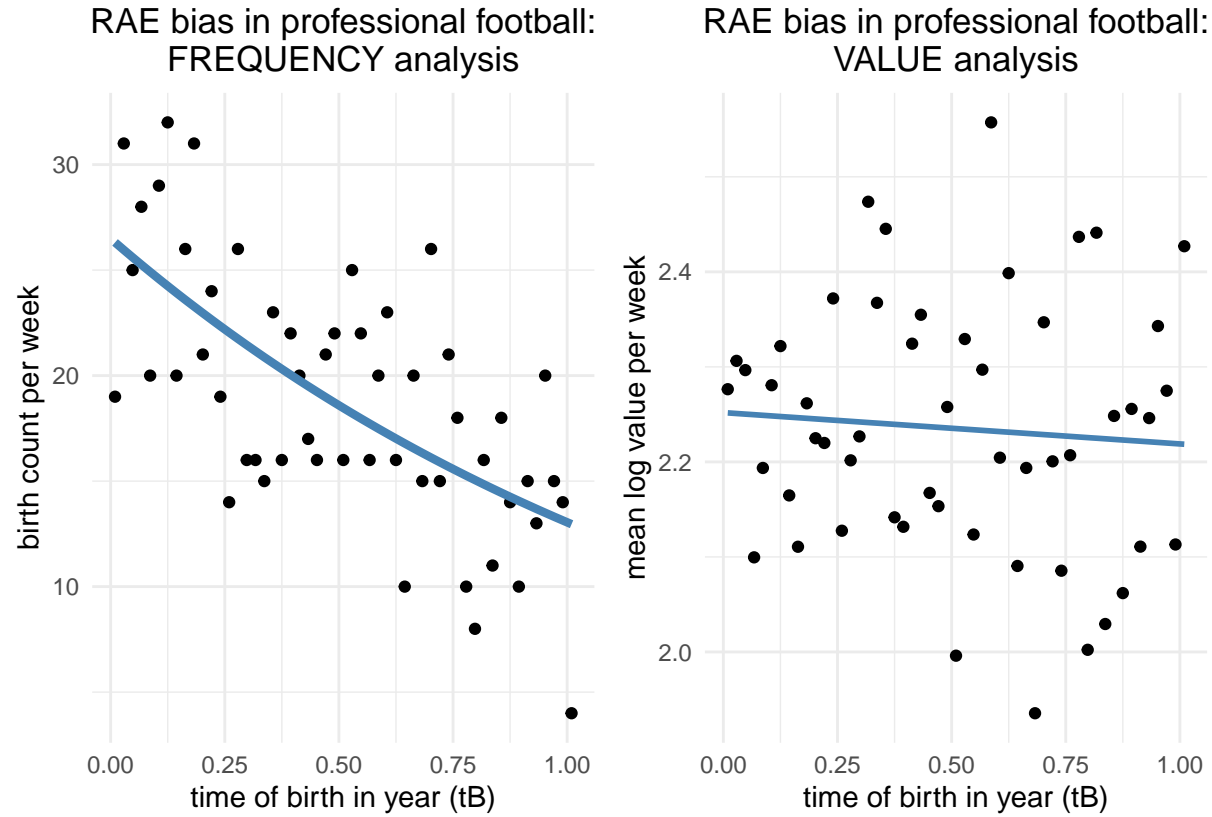
### 2.2 Findings

### TODO:

Summarise the findings of the model results. See the *Result* section at **page 4** in the article. Here, pick out some of the countries that you interested. Make comparison between the countries. Make comment on the model fit as well.

Table 1: Table 1. Model results: Overall and country-by-country analysis

Country	beta_0	beta_1	AIC
Argentina	0.9480	-1.0332	100.1744
Netherlands	0.8256	-0.9554	72.6025
Turkey	0.2097	0.0817	45.6419
Belgium	0.6231	-0.7516	59.6048
Spain	1.3626	-0.9953	143.1613
Italy	0.9125	-0.7415	118.4851
Germany	0.6832	-0.1381	107.1367
Portugal	0.5031	-0.4505	57.9986
Brazil	0.9775	-0.2442	134.9844
Russia	0.5982	-0.7704	47.5641
France	0.8445	-0.3907	130.8024
all	3.2768	-0.7083	315.8524



TODO:

Summarise the findings of the overall model results. Interpret the parameters here basing on the content of the article.

### III: Commentary & Future work

TODO:

Make some comment on the model results. Highlight the strength and drawbacks of the model, and further interests.

**TODO:**

Typo check before submitting