

Rio de Janeiro, February 5th 2015

To the Editor of Scientific reports

Dear Editor,

Please consider the manuscript titled “Estimating the Attack Ratio of Dengue Epidemics under Time-varying Force of Infection using Aggregated Notification Data” for publication in Scientific Reports.

This article has not been submitted to any other scientific journal, and constitutes original research in field. The main contributions of the paper are related to a discussion on the possibility of estimating the specific attack ration of a Dengue epidemic from aggregated data. For this we proposed a way to include a variable force of infection in a SIR mathematical model, based on the information of the effective reproduction number (R_t) time series, which we estimate from data. The derivation of the probability distribution of R_t is also an original contribution. Then we fit the resulting model to data using methods developed and published by my group before (e.g. Coelho, Codeco & Gomes, 2011). This fitting allowed for the estimation of the Bayesian posterior distribution for the initial number of susceptibles, S_0 , for all epidemics considered, which is a key ingredient of the attack ratio. Last, but not least, we analyse 18 years of Dengue incidence, showing that the proposed model's explanatory power holds for epidemic of different shapes and sizes. Please do not hesitate to contact me if any further clarifications about the manuscript are necessary.

Sincerely,

Flávio C. Coelho