Escola de Matemática Aplicada
Fundação Getulio Vargas (FGV)
Rio de Janeiro – RJ
Brazil.

August 3, 2015

Laura White
Editorial Board Member
Scientific Reports

Dear Editor,

In response to the comments of the reviewers on our manuscript, we have made
the following modifications to the manuscript:

Reviewer 1: Responses to the main comments are listed below. The minor
comments where also integrally accepted, namely the improvement of the
README in the code repository as well as the citation of two additional
papers.

1. The response to this comment is two part: first, we performed a
simple study to assess whether our method of estimation of R_t pro-
vides more conservative credibility intervals and thus offers protection
against false alarm. In agreement with the analytical result shown
in equation (16), our simulation study – described at the end of the
section on the tail behaviour of the distribution of R_t section – shows
that our method provided wider CIs in $\approx 90\%$ of the time. Then,
in order to assess the ability to recover the parameters, simulation
experiment was done, as requested and included as a new section in
the supplementary material. The simulations shows that the infer-
ence methodology can recover the exact parameters used to simulate
the data.

2. The text of the methods section was improved to answer the four
issues raised in this comment.

3. The Introduction and discussion sections were expanded to included
the additional information required by this comment.

Reviewer 2: Minor comments: Fixed typo in the abstract; Added text to
the discussion stating that we expect the effects of underreporting to cancel
out in the calculation of the attack ratio. Moreover, a section explaining
the details of DREAM (delayed rejection, adaptive MCMC, etc.) was
added to the Appendix.

1. Reference 5, despite having similar concepts as those discussed in
our paper, has quite different goals. we have however, cited another
publication (ref 26), which is from the same group and based on the
same field study, and use their findings about seroprevalence in the
'results and discussion' section.

2. We have not found articles combining the use of aggregated data

to study variable force of infection, however we have reviewed other works modeling variable FoI (refs 7, 8, 9, 10, 12).

Having fulfilled all the demands of the reviewers we re-submit the modified manuscript and await the the final decision. As always, please do not hesitate to contact us if further questions arise.

Sincerely

Flávio Codeço Coelho
Professor