Reviewer's report

Title: Combining serological and contact data to derive target immunity levels for achieving and maintaining measles elimination

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Reviewer: Guillaume Béraud

Reviewer's report:

Funk et al provided an original methodology to estimate target immunity level for achieving measles elimination, by combining serological and contact data.

The combination of serological and contact data is in itself interesting and worth a publication. The application of the method -although interesting- appears a bit artificial and raises questions on its practical relevance. However, the thorough discussion on limitations makes the practical application example perfectly acceptable, in addition of being one of the best part of the discussion.

In general the considerable amount of work provided in the article is well summarized, and the discussion states clearly both the limitations and the take home message.

Specific comments:

-Page 2, lines 11-13 "Strictly speaking...": I may agree with your sentence although I'm not entirely sure that I understand where it comes from. Please, explain and justify this assertion.

-Page 2, line 29 "because of population migration": I agree, but I suggest that you discuss the importance of migration as a potential limitation to the methodology and/or an explication for the discrepancies. That may participate to the fact that highly vaccinated countries still have outbreaks.

-One of the disputable aspect is the relationship between immunity levels and case load. In absence of better approach in the literature and/or standard one, it has the merit of existing and of efficiency. However, a discussion about the numerous co-factors that could have influenced the relationship between immunity levels and case load -thus the difficulty to explore it- would be useful.

-Page 3, line 31: an susceptible or a susceptible?

-Page 6, line 16: n=100 for a bootstrap seems a small number. Has the exploration of the validity of the chosen number of bootstrap shown consistency across countries?

-Page 6, line 45: "with most models 2." What is "2."
Page 7, line 7: "...had correlation of was": A bit heavy formulation

Page 7, line 24: Two thirds of correctly classified countries is low, which requires discussion on the validity of the methods.

Page 10, lines 30 and further. I suggest to emphasize how taking into account heterogeneity is crucial.

Open question: What about, in order to take into account heterogeneity, to apply a similar method, but at a lower level such as municipalities or counties? Data are available. In order to facilitate the generalization of the method, I suggest to make both the data and the R code available.

Are the methods appropriate and well described?  
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?  
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?  
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Yes

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