Reviewer's report

Title: Millennium development health metrics: where do Africa's children and women of child bearing age live?

Version: 1 Date: 20 February 2013

Reviewer: Hebe Gouda

Reviewer's report:

1) Is the question posed by the authors new and well defined

The authors state that 'progress towards meeting the MDGs will be measured through national-level indicators'. The authors argue that knowing in detail where women of child bearing age and children under 5 live can improve the accuracy of some of these measures. The question posed here is therefore; to what extent might the application of high resolution age and sex structured spatial population datasets alter the health and development indicators that would otherwise be calculated using national level statistics. In this paper the authors use a dataset developed for Africa to illustrate the impact on estimates of the number of women of child bearing age and children under 5 affected by long travel times to services and to risk of malaria transmission.

The authors have previously published a number of studies which successfully demonstrate the usefulness of applying spatial population datasets to different contexts. This is the first paper, however, which looks specifically at the impact these analyses may have on interpreting progress towards the MDGs. To emphasise the importance of this at the start of the paper, the authors might want to expand briefly on the potential implications of inaccurately estimating progress towards the MDGs.

2) Are the methods appropriate and well described, and are sufficient details provided to replicate the work?

Yes. The methods and the supplements provided are comprehensive and provide full details of the author’s data sources and processes.

3) Are the data sound and well controlled?

The data used to construct the AfriPop project are gathered from a range of sources. While a substantial amount of this data will contain uncertainties and bias, the authors provide detailed explanation of processes used to refine the mapping and explicitly discuss the inherent limitations in the discussion section of the paper.

4) Does the manuscript adhere to the relevant standards for reporting and data deposition?

Yes
5) Are the discussion and conclusions well-balanced and adequately supported by the data?

Yes. The authors place the discussion in the context of the greater literature and effectively demonstrate the utility of age and sex structured population datasets. The authors also discuss study limitations and the need to quantify uncertainties. Somewhat lacking is the discussion of the differences observed between countries with regards to the impact of using the high resolution population data set. The authors mention population size of some countries in passing but a brief expansion on this and other potential explanations would be welcomed.

6) Do the title and abstract accurately convey what has been found?

Yes, however, the abstract is not formatted correctly and should present more detailed results.

7) Is the writing acceptable?

Yes

Minor Revisions:
• Figures are not appropriately labelled
• Abstract is not appropriately formatted and could be more informative
• Deeper (but brief) exploration of the difference between countries with regards to the impact of using the high resolution population data set.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.