Reviewer’s report

Title: Estimating cause-specific mortality in Madagascar: an evaluation of death notification data from the capital city

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Reviewer: Tim Adair

Reviewer's report:

This is an interesting study based on routine subnational death notification data; data that are under-utilised as evidence of population health. The manuscript utilises a modified version of an existing framework to assess data quality and makes adjustments to the data produce cause-specific mortality in Antananarivo, Madagascar. There are however some areas where alternative methodological approaches should be used and more clarity provided.

The major drawback of the paper is that the death distribution methods used to assess death notification completeness are out-of-date, being only for the period 1975-1993. This potentially results in biased life expectancy measures, should completeness have improved or declined in the decades since. Furthermore, these methods have been shown to have high levels of inaccuracy and not be suitable for subnational areas if there is high migration (see Murray et al, What Can We Conclude from Death Registration? Improved Methods for Evaluating Completeness, PLOS Medicine). The authors should instead to use the recently developed empirical completeness method, which overcomes the drawbacks of death distribution methods. The method provides timely completeness estimates (i.e. for the latest year) using data that are available for Antananarivo and has relatively high accuracy (see Adair & Lopez, Estimating the completeness of death registration: An empirical method, PLOSOne).

Paragraph starting Line 113: When discussing how CSMFs can vary subnationally, the different age structure of the population of a major city compared of the national population is important as well.

Line 261: "Data readily available upon request" - is this applicable for any researcher?

Line 376: should be "as a result of the more advanced epidemiological transition".

Table 2: Injury deaths are very low, and there is insufficient explanation in the discussion for why this is the case. Is it because such deaths are captured by other reporting systems (coroner, police) that are not reported in this study?
There is insufficient explanation about how the DHS estimates population. The relevant DHS publications are in French, which this reviewer does not read. Could further information on this methodology be provided?

Table A.2: The redistribution of Chapter XVI deaths results in a decline in Level 2 garbage code deaths. Aren't these ill-defined deaths a Level 1 garbage code (i.e. highest severity)?

Table A.2: Can remaining codes in step 7 be redistributed to more specific causes (even broad causes) than just pro rata to Level 3 GBD causes?

Can a final VSPI be calculated? It would be relatively high by global measures. This could highlight how death notification systems can provide relatively good quality data for subnational areas, even if data are of poor quality elsewhere in the country.

Line 290 - Why was the age pattern of deaths of the GBD used, when the population of Madagascar would have a different population age structure, age-specific mortality rates and therefore age pattern of deaths than Antananarivo? To what extent does the age pattern of deaths of GBD and these death notification records differ? If completeness of notification is in fact over 90%, it is likely that age patterns of death notification are only slightly affected by the level of incompleteness (unless there is significant age misreporting).

Can more detail be provided about efforts to strengthen the death notification/CRVS system. Is there a government strategic plan? Any there any plans to move to online system or to adopt ICD 10?

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