

Interactive comment on “Bayesian networks modelling in support to cross cutting analysis of water supply and sanitation in developing countries” by C. Dondeynaz et al.

Anonymous Referee #1

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I must preface this review by stating that my background is in water supply and sanitation, as well as engineering- I am not an expert on statistics or Bayesian networks, so I highly recommend that a reviewer with a statistical background comment on the statistical validity of this work.

Having said this, I found the manuscript very interesting, and a novel way of analysing results collected in the WatSan4Dev dataset. The authors demonstrate how they have used Bayesian networks to investigate causal relationships within the data, which spans a large number of countries across the world. I don't believe work like this has been published before, and that with some improvements, the manuscript will be suit-

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able for publication in HESS.

My major concern with the manuscript is the quality of English given it is a complicated methodology. The conclusions that are drawn are mainly of interest to water and sanitation practitioners, who, like me, probably don't have a background in statistics. Currently, the poor English makes it difficult to follow the methodology and understand how results were interpreted.

In particular, something that I am having trouble understanding is how in some models water and sanitation coverage are seen as outcomes, influenced by the other variables (e.g. section 4.1.1), whilst in other sections, water and sanitation coverage seem to be being used to explain such variables (e.g. section 4.2.1). I'm unsure of how you can switch variables between 'cause and effect' in such a study. However, if this is indeed what is being done, it needs to be clearly explained in the text.

I found that the work drew some very interesting conclusions, and raised some good discussion points, but I also feel that it needs to be clear in the manuscript that they are quite speculative. This does not diminish the importance of the paper, as the relationships identified using these methods are key discussion points for water and sanitation practitioners and policy makers worldwide. I would just be careful about over interpreting the data, as further investigation may provide different explanations for these relationships.

I found that there was perhaps an excess of tables, some of which could be published as Supporting Information, rather than in the manuscript itself. There was also a lot of repetition in the Discussion section; distilling this down to the main points mentioned earlier, or moving discussion points from the Modelling section to the Discussion section, would assist in shortening the manuscript.

In all, I believe the work is cutting edge and interesting to readers, but before it can be published I recommend that:

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1. It is reviewed by a referee with a statistical background; 2. The English is improved to be more clear and concise.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 2481, 2013.