Reviewer’s report

Title: Mortality associated with alternative primary health care policies: a nationwide microsimulation modelling study in Brazil

Version: 0 Date: 16 Jan 2019

Reviewer: Frederico Guanais

Reviewer’s report:

The paper "Mortality associated with alternative primary health care policies: a nationwide microsimulation modelling study in Brazil" addresses a very important topic, namely the future of primary health care in Brazil under different scenarios and the potential impacts associated with each one of them. The paper is presented as a research piece, and as such, it is expected that the authors follow rigorous requirements for the presentation of evidence, separating them from opinions.

The paper has enough merits and materials that could potentially result in a good research paper or a good opinion article. However, because the current mix does not adopt a clear perspective on its goals, it falls short of either producing credible evidence as a research paper or making a convincing argument as an opinion piece.

General comments

If the authors choose to maintain the article as a research paper, a number of issues to be addressed. First, because the authors do not present a conceptual model for their analysis, the selection of variables ends up looking arbitrary. For example, the conditional cash transfer program suddenly appears in page 9 without any prior justification. Second, the paper is not sufficiently transparent in its data sources and methods for the construction of covariates used in the analysis, some of which are not publicly available for every year included in the study by the authors. Also, there is a confusion between forecasting future values and imputing missing data. Third, given the focus of the research piece on the MMP, the authors need to develop an empirical strategy to examine whether the effects of additional family physicians associated within MMP are the same of those working for ESF outside of MMP. Otherwise, the role of MMP in the simulation and analysis of impacts of primary care are irrelevant to this study. Finally, I suggest that the authors are more thorough in the presentation of evidence and previous publications to serve as proper support for the claims that are made in the text. There are several parts of the text where this is not properly conducted.

Specific comments

Lines 91-92
The authors do not present evidence that "ESF provided coverage to Brazilians who lost employer funded private health insurance during the recession". To the best of my knowledge, reference 18 does not provide sufficient evidence to back this claim.

Lines 107-109

The authors should cite specific evidence to support the claim that MMP is planned to end in 2019. Also, the simulation of effects that consider the termination of the program need to consider whether there are any differences in the impacts of the work of physicians hired under MMP versus the rest of ESF physicians, and this is not addressed in the study.

Lines 114-118

The list for ACSC was developed as a tool to measure health system performance in terms of avoidable hospitalizations, and not mortality. The authors should refer to avoidable mortality literature and build and appropriate framework to evaluate impacts of primary care on preventable mortality.

Box 1 (lines 3-4 and 32-39)

Without consideration to the merit of the statement, the language used in the text is more appropriate for an opinion piece: "In 2016, the Brazilian government approved a controversial constitutional amendment limiting the growth of federal expenditures." The references cited do not support the claim that "strong public pressure exists in Brazil to reduce emergency service crowding and expand access to specialist care".

Box 2 (lines 22-27)

MMP has low costs compared to what alternatives? What are the reasons for the mentioned political contentiousness?

Lines 149-154

Reference and inclusion of the conditional cash transfer BFP in the analysis is introduced in the text with no reference to a conceptual model, nor an explanation for its importance.

Lines 162-169

The text is not sufficiently clear about which variables are available on a yearly basis, and for which unit of analysis. Moreover, the use of forecasting for past periods (2011-2018) is confusing. The authors should make it clear that this is an extrapolation due to lack of publicly available data, if this is the case.

Lines 177-182
It seems that previously estimated effect sizes did not assess whether physicians added through MMP had a different impact. This is an important question given the three differentials of the program mentioned in Box 2.

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

No

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

No

**Are the conclusions drawn adequately supported by the data shown?**
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No

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