30-Apr-2018

Dear Dr. Aburto:

Manuscript ID bmjopen-2018-022350 entitled "Inequalities in lifespan in Mexico, 1990-2015: deterioration in adult survival" which you submitted to BMJ Open, has been reviewed. The comments of the reviewers are included at the bottom of this letter.

Two reviewers have recommended revisions to your manuscript. Therefore, I invite you to respond to the reviewers' comments and revise your manuscript. Please remember that the reviewers' comments and the previous drafts of your manuscript will be published as supplementary information alongside the final version.

In addition to the above, please address the editorial requests towards the end of this letter

You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer. Please also highlight the changes to your manuscript within the document by using the track changes mode in MS Word or by using bold or coloured text.Once the revised manuscript is prepared, you can upload it and submit it through your Author Center.

When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

You will receive a proof if your article is accepted, but you will be unable to make substantial changes to your manuscript, please take this opportunity to check the revised submission carefully.

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to BMJ Open, your revised manuscript should be submitted within 28 days. If it is not possible for you to submit your revision by this date, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to BMJ Open and I look forward to receiving your revision.

Sincerely,

Dr Edward Sucksmith

Assistant Editor

BMJ Open

**Send the revision by May 27th !!!**

Editorial Requests:

- Please revise your title so that it includes your study design. This is the preferred format for the journal.

- Please include the study's sample size in the abstract.

- The first bullet point of the 'strengths and limitations' section is not a strength or limitation of the study. Please remove or revise. Each bullet point should relate to the methods and/ or design of the study.

- Along with your revised manuscript, please provide a completed copy of the STROBE checklist (http://www.strobe-statement.org/).

Reviewers' Comments to Author:

Reviewer: 1

Reviewer Name: Usama Bilal

Institution and Country: Urban Health Collaborative, Drexel Dornsife School of Public Health, Philadelphia, PA, USA Competing Interests: None declared

Inequalities in lifespan in Mexico, 1990 -2015: deterioration in adult survival (bmjopen-2018-022350) This is an interesting manuscript that aims to quantify the contribution of several causes of death to levels and changes in longevity in Mexican states from 1990 to 2015. The authors find an overall worsening in mortality, especially in men aged 15-49. The methodology is interesting, potentially replicable in other settings (especially with the provided GitHub repository), can provide a framework to analyze macro-level interventions in countries with within-country heterogeneity. I have a few comments that I hope can help improve the manuscript.

Introduction:

1. The introduction is clear, well written and concise. My main concern would be to have a clearer articulation of the objective of the paper. In particular, in P4 L14, it is unclear to me what “previous analyses” are. Are they those referred to in the previous paragraph? I think the authors can rephrase this paragraph to have a clear objective laid out.

Methods:

2. Ill-defined causes of death. The authors describe their classification of causes of death as including amenable causes (divided in 4 subgroups), diabetes, IHD, lung cancer, cirrhosis, homicides, road traffic accidents, and residual causes. The redistribution of ill-defined causes of death (all included in “Residual causes” here) is certainly a hot topic in global health, and the authors have decided not to redistribute them. While the merits of both approaches can be debated, the authors should at least include the reasoning behind their decision and the potential drawbacks of not redistributing these deaths.

3. Low-mortality benchmark. The authors use a low-mortality benchmark defined as the state with the lowest mortality in each age, year, cause and sex group. However, I worry that with some states being small (7 states had a population <1M in 2000), some of these low mortality benchmarks may be random deviations. Figure 1 shows how the low-mortality benchmark is very far away from the other states in the 50-84 age group. If I’m understanding Figure 3 right, that state is Zacatecas (lowest mortality), which is in the low end of population numbers. The authors do implement a smoothing technique, but there are very few measures of uncertainty in the figures (or appendix).

4. Statistical methods: I have two concerns regarding lack of detail in this section. The authors say that “Period life tables […] were calculated following standard demographic methods” and reference the HMD protocol. However, in order to be able to replicate these results more details on specific methods used should be provided. The same issue applies to decomposition techniques. If this is too much detail for the manuscript, details can be included in the appendix.

Results:

5. The graphical representation of results is remarkable and clear.

6. Figure 3 is a little bit hard to read. I’d suggest that the authors repeat the name of each state in each column, and join these names by lines (the same lines in the current figure). Otherwise, trying to figure out the ranking in ages 50-84 is very hard.

Discussion

7. Limitations: some of the aspects indicated in comments 2-3 above should be at least mentioned as limitations of this study.

8. Conclusion: the last paragraph of the conclusion seems very speculative. In particular, given that the authors spend a lot of effort in describing results by homicides and their prevention, it is unclear how the encouragement of “physical and healthy activities” fits into the results of this study.

Reviewer: 2

Reviewer Name: Moramay LOPEZ-ALONSO

Institution and Country: Associate Professor of History & Adjunct Associate Professor of Economics, Department of History, Houston, TX, USA Competing Interests: None

Excellent work, relevant topic and analysis.

Reviewer: 3

Reviewer Name: Sally C Curtin

Institution and Country: National Center for Health Statistics/CDC, USA Competing Interests: None declared.

I think this is a very well-written, well-executed article. My primary concern is whether suicide is adequately dealt with, especially in the young adult population. It is lumped in with "other causes" in the analyses but the graph in figure 1 shows that it increased nearly steadily over the period. In the US, suicide is the 2nd or 3rd leading cause of death among young adults. So my question is whether some of the deterioration in survival for young adults is due to suicide as well as homicide. I know that suicide is not as much of an issue in Mexico as in the US, but I think that suicide should be directly discussed. In the US, suicide is one of the causes of death that has lead to a slight decline in life expectancy (see Kochanek et al, Mortality in the United States, 2016). Suicide may also be an issue with the older adults, but other natural causes are much more prominent there than for the younger adults. While I think that the article is quite strong, discussing suicide more fully would strengthen it even more.