Author's response to reviews

Title: Regional variations in and correlates of disability-free life expectancy among older adults in China

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Author's response to reviews: see over
Cover letter

Melissa Norton, MD
Editor-in-Chief, *BMC Public Health*

Dear Dr. Norton,

Thank you for your helpful suggestions and feedback regarding our manuscript entitled *Regional variations in and correlates of disability-free life expectancy among older adults in China* that we hope to publish in *BMC Public Health*. We have made several changes based on the feedback provided and believe that this has resulted in a stronger and more honed manuscript. The following is a detailed list of the changes that we have made, in the order that they appeared:

**Reviewer 1: Flavia C Andrade**

**Major compulsory revisions**

# Editorial changes: needed throughout the text. It would be advisable to have a professional editor assisting the authors.

- In particular, the authors should use TLE instead of ‘total life expectancy’ throughout the text.

**Thanks for the kind suggestions. We have edited the whole article with the help of a professional editor. Term of ‘total life expectancy’ has been replaced with TLE throughout the text.**

# Regression analysis:

- The authors should provide a rationale for the inclusion of some of the variables in the analyses (e.g. birth rate, traffic accidents)

**We have added the corresponding literature review in the text. See Page 4-paragraph 2**

- The model used for males and females should be the same and based on a theoretical perspective, rather than by using a stepwise approach.

**We re-run the regression based the same model for males and females. See Table 3.**

# Discussion:

- Include more recent work on DFLE and DLE based on data from developing and emerging economies.

**We have added the corresponding literature review in the text. See Page**
10-paragraph 1

o Address how does the mortality data used in this article differ from UN Population division estimates for China.

We have added the corresponding literature review in the text. See Page 6-7, “Mortality Data” paragraph

o Address the limitations of the Sullivan method and its assumptions that may be affecting the findings. For instance, the citation to the work of Laditka & Hayward, 2003 is appropriate.

We have added the corresponding literature review in the text. See Page 12, paragraph 3

Minor essential revisions
Page 2: In the results section, give range of DFLE among regions. In the conclusion section, rewrite the last sentence.

We have given the range of DFLE from 11.2 to 20.8 years in the abstract, the conclusion has been revised. See Page 2

Page 3, first paragraph: Rewrite first 2 sentences. In the second sentence, growth refers to economic or in life expectancy?

Changed. See Page 3, paragraph 1.

Page 3, second paragraph: It can be shortened; this is a well-known in the literature.

Revised. See Page 3, paragraph 2.

Page 4, first paragraph: 2 last sentences are out of place.

Deleted.

Page 5, first paragraph: Sentence “Regional variations…” is out of place.

Deleted.

Page 3, second paragraph: It should be 1.16 instead of 1.31 according to you
2009 paper [reference 15]. Last sentence needs to be rewritten.

Thanks for your careful check. In the original article (reference 15: Liu, 2009), it shows omission rates in the resident population and disabled population in 1987 and 2006. It reads as the following:

*Results of a post-survey quality check showed omission rates of 1.06 and 1.31 per thousand in the resident population and 1.16 and 1.12 per thousand in the disabled population in 1987 and 2006, respectively.*

While the current paper only discuss issues in 2006, so words as following: *Results of a post-survey quality check showed omission rates of 1.31 per thousand in the resident population and 1.12 per thousand in the disabled population.*

Page 6, first paragraph: clarify the role of medical assessment for intellectual and hearing disabilities.

We have added the corresponding in the text. See Page 6, paragraph 1

Page 7, first paragraph: besides the measures that need a rationale for their inclusion (see major revisions above), the variable prevalence of disability should not be included in the list of variables – since it is part of DFLE calculation. Variables should not be in both ends (response and explanatory sides).

See Page 4-paragraph 2
We have deleted the variables: prevalence of disability,

Page 7, second paragraph: Prevalence rates are not in percentage, need to fix the numbers. Also, prevalence rates at administrative divisions should be presented here (at least to give a sense of range).

We have revised and confirmed the figures. See Table 1 for prevalence rates at administrative divisions.

Page 7, third paragraph: ‘especially among women’ should be deleted or clarified.

**Yes, we have deleted ‘especially among women’**

Page 8, second paragraph: The results presented in this paragraph could be limited and having the values estimated for each administrative division presented in Table 1.
See Table 1.
Page 9, first paragraph: Table 2 should focus only on the variables that are selected through an analysis of the relevant variables that are theory driven instead of data driven.

See Table 2

Page 10, second paragraph: Statement regarding the increase in disability in most administrative divisions in China should be informed by Liu et al (2009) paper in the Journal of Aging and Health. In particular, the previous paper showthat only moderate disability has increased in China during these two periods.

We have added the reference. See Page 11, paragraph 2.

Page 11, second paragraph: there were no variables that truly capture ‘speed of population aging’ included in the regressions, so statement is not valid. Dependency ratio does not capture ‘speed’ or ‘changes’. The sentence ‘The factors explaining variation in DFLE vary little between men and women’ is unclear and needs further clarification. The sentences that follow somewhat contradict this statement.

Yes, we did not include variables that capture “speed of population aging”, we have revised the discussion. See Page 12, paragraph 2

Table 1: Should include data all administrative divisions. In addition, prevalence rates should also be presented for all administrative divisions.

Thanks. We had presented Prevalence and DFLE by administrative division in Table 1. At the same time, TLE, Standard Error of DFLE, Proportion of DFLE on TLE have been presented.

Table 2: should focus on a set of variables that are relevant for the research question and based on theoretical perspective.

New variable sets have been made based on theory driven hypothesis.

Figure 1: needs better subtitles and intervals and colors used should be the same for males and females to facilitate comparison of findings.

Thanks. We have revised Figure 1 which includes using same categories as well as same color for both sexes, we had also round off the category to make it more intuitive.
Reviewer 2: Zachary Zimmer

Major compulsory revisions:
1. Not enough is said in the background section to situate the paper. While the authors themselves may not realize it, the paper builds on past literature that has explored rural / urban variations in health and literature that has examined DFLE or similar types of measures in China.

See Page 2-4.

2. Clarification is required with respect to how mortality was estimated. Reference to an individual’s previous research is insufficient.

We have added the corresponding in the text. See Page 6-7, “Mortality Data” paragraph

3. Nothing is said about the Sullivan Method method or how the estimates are calculated. There is not even an appropriate citation. More needs to be done here to clarify a Sullivan Method, what other methods exist for calculating DFLE and why Sullivan is preferred.

We have added the corresponding literature review in the text. See Page 7, paragraph 2

4. The paper implies in the discussion section that there are variations in how quantity of life is being translated into quality of life. This feeds into other debates regarding issues such as compression of morbidity. Some of this discussion would broaden the implications of the findings.

Yes.

5. Sullivan estimates should be accompanied by standard error calculations and tests of significance, which are now commonly done. Table 1 should show these estimates.

See Table 1

6. There’s no indication of where the measures used as correlates for tables 2 through 4 come from. Better discussion of data and variable measurement is necessary so one may reasonably assess the validity of the findings.

We have added the corresponding literature review in the text. See Page 4-paragraph 2
Minor essential revisions:
7. A bottom row for Table 1 should be included to show total estimates.

We had added one row to show total estimates at the bottom.

8. Figure 1 presents very odd divisions for categories. It is unclear why for instance a female DFLE category runs from 12.91 to 15.12 instead of 13 to 15, which would be more intuitive, and why categories differ for the two figures (M vs F). These should be made consistent and the categories themselves should be easier to read or these unusual divisions need to be justified.

Thanks. We have revised Figure 1 which includes using same categories as well as same color for both sexes, we had also round off the category to make it more intuitive.

Discretionary revisions:
9. One decimal place is sufficient for Table 1.

Thanks. We had used one decimal place throughout Table 1.

Sincerely,

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