**Reviewer’s report**

**Title:** Increases in United States life expectancy through reductions in injury-related death

**Version:** 0  **Date:** 03 Apr 2017

**Reviewer:** Abraham Flaxman

**Reviewer's report:**

Referee Report for POHM-D-17-00012

The paper "Increases in United States Life Expectancy through Reductions in Injury-Related Death" quantifies the potential gains in life expectancy that could be made through improvements to injury prevention and treatment. It also estimates the economic gains that are on the table. This is an interesting area of analysis, and with some edits and revisions, I believe it will suitable for publication in POHM.

There are four major points that I would like to see changed:

1. In the introduction, much of the increase in life expectancy is attributed to public health and safety initiatives. However, this may overstate the success of initiatives, as much of the improvement can in the first half of the 20th century and may have been an indirect effect of broader changes to society.

2. The method for calculating probability of non-injury death (e.g. Page 6, line 23; Page 7, line 47) ignores "competing risks", and assumes that all individuals who died from a fatal injury between age x and x+1 would have otherwise lived until age x+1.

3. The method of calculating the costs averted (page 8, line 10-22) assumes that averting death would avert the full cost of the medical and work loss. I find this assumption indefensible. Indeed, for an intensive treatment intervention that sustains life but with substantial disability the work loss cost may be the same, and the medical cost much greater!

4. The conclusions about the role of interventions focused on overdose, fall, and intentional self-harm deaths goes beyond the evidence presented in the paper.

I also suggest several minor changes that I believe would make the paper stronger:

5. Page 2, line 56: The leading causes depends on how causes are grouped, so could be safer to moderate this claim.

7. Page 3, line 55: I think that "the average duration that a child born in a given year is expected to live" is a misleading description of this concept. I disagree with the authors' subsequent claims that it is easily interpreted and understood. I think that it is frequently misinterpreted and misunderstood.

8. Page 4, lines 55-60: I suggest including some summary of how WISQARS uses the Multiple Cause of Death information to identify injury deaths. For example, would a stroke that led to a fall that led to death be included in the numerator of the injury death rate?

9. Page 5, line 23-25: I would also appreciate a brief description of how WISQARS estimates medical and work loss costs.

10. Page 5, lines 52-57: I do think this is enough detail to reproduce your method, and suggest you include a small example of how the process works. This could be included in an appendix if makes the methods section too bulky.

11. Page 6, line 8: what are the units of d per 100,000? Person-years?

12. Page 6, line 11: include the details of how you adjusted for missing age and error in race (side question: how did you identify errors in ethnicity/race?)

13. Page 6, lines 27-32: what is the effect of assuming the terminal age is 85? I suspect it does not make a large difference in your results, but it would be good to quantify.

14. Page 6, lines 40-43: please include more details on the separation factor. I think a small example would help make this clear.

15. Page 6, line 47: I suggest you include the equations for this estimation to make it completely precise and reproducible.

16. Page 7, line 3-4: unclear how remaining years are adopted from original life table. I suggest another small example.

17. Page 7, line 11-13: please supply details here on the life table methods from [13] that you have used.

18. Page 8, line 55-58: I'm not convinced that this figure is more effective, and in some ways it is misleading, because the white-filled circle is shown at the x-position of the annual injury death rate of the all-cause scenario, but refers to the without injury scenario, where the corresponding x-position should be injury death rate of 0.

19. Page 11, line 42-45: awkward phrasing---do you think this amount of life expectancy gain is substantial or not?
20. Page 12, line 21: I'm unclear on the take away message. Do you think efforts to eliminate injury deaths are not worth pursuing? I disagree.

21. Page 12, line 47-50: clearly bringing rates to lowest observed yields smaller gain than eliminating---question for me is would such an improvement be work trying for?

22. Page 13, line 16-21: I do not understand this Medicare data limitation, can you provide an example?

Abraham D. Flaxman, April 3, 2017

**Level of interest**
Please indicate how interesting you found the manuscript:

An article of importance in its field

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests
I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal