Author's response to reviews

Title: Stability and variability in income position over time: exploring their role in self-rated health in Swedish survey data

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Version: 2
Date: 11 November 2014

Author's response to reviews:

Referee 1:
Thank you very much for your helpful comments. We considered most of your recommendations in the revised version of the manuscript.

Please find our responses below:

1. The citation styles were changed.
2. We added some information regarding methods to the data and method section (page 5, line 3 to 5).

Ethical issues were not stated because the used data set and descriptive study design do not require an ethical approval. However, we added a note that we obtained permission for using the data (page 4, line 37).

3. The statement was corrected (please see page 7, line 23).
4. We agree with you and replaced “probability” by “risk” (page 8, line 8).
5. Indeed, the phrase was not correct. A revising the section, we dropped this statement.
6. The sentence was a left over and not supposed to be there. We deleted the sentence.
7. A reference was added to page 3, line 3.
8. We agree that we used inconsistent labels. We replaced “less than good” by “poor” SRH.
9. A reference was added to page 9, line 5.
10. We decided to keep the abstract as before (without OR’s) as we feel that the report of estimates does not suit to the rather general report of findings.
11. Indeed, the unequal distributions across the income groups require some explanation: We calculated the income quintiles on the basis of the total survey sample (N=5142) as it is random sample representing the Swedish population. The age restriction of our using sample then resulted in these unequal income groups.

This way of coding is justified by the assumption of the income inequality
hypothesis – assuming that individuals in our study population relate at least to some degree to the overall income distribution. In other words, we have classified our sample according to the national income distribution.

We added a sentence in method section that explains the uneven distribution (please see page 5, line 26).

12. The used income variable in Model 1 (Table 2) was based on disposable income. An additional variable of disposable income would likely result in over-adjustment and collinearity in the model.

Referee 2:

Thank you very much for your helpful and constructive comments. Please find our responses below:

1. Thank you for this comment and suggestion: Indeed, our intentions and overall aims of the study could have formulated more clearly. All of the three potential justifications of the study that you figured out apply to our study. However, the major aim of the study was to show that income change as such may be an important determinant of health. We therefore included a sentence at the end of the instruction stating the general aim of the study (page 4, line 20).

For studying the effects of social mobility, we would have chosen other measures (e.g. occupation, employment histories).

We deleted the paragraph on cumulative disadvantage on page 3 as we think it does not contribute that much to our approach. Also, the terms regarding “accumulation” have been removed from the discussion section.

2. Indeed, measures of absolute and relative income usually refer to the same income variable recoded into different scales. However, as the vast of studies on the relevance of relative income suggests, the way of scaling income is important and may lead to different conclusions and interpretations. A justification has been included on page 10, lines 14 to 24.

3. We agree that the overall income development in Sweden might have affected our results. A brief explanation was already included in the limitation section. We further added some explanations clarifying how the used measures of absolute and relative (rank) income position were affected by the overall income development. Please see the changes on page 10, line 25 to 31.

4. Given the used measures and type data, we cannot certainly rule out that confounding has occurred. Indeed, income change likely overlaps with changes in the employment status. That a variable of employment status was not available is certainly a drawback of the study; the same time, the inclusion of employment could lead to over-adjustment of the model (Blakely et al 2004). We added some considerations in the revised manuscript on page 10, starting with line 32.

We think that the study design demands a separate limitation section. We therefore kept the limitations in its previous form.

5. This is an interesting suggestion. We performed the test according to your suggestion with income levels based on the years 1991-1994: The income
gradients based in income levels during the years 1991 to 1994 is somewhat weaker, but still notable. The coefficients of the income change variable are slightly more pronounced throughout all models and both income change measures.

Given the similar results compared to our current approach, we decided not to present the adjustments from the earlier period. Further, as already mentioned in the previous version of the manuscript, we somewhat distrust the income histories from the early 1990ies as Sweden went through a severe economic crisis during that time. Using income information from that period may lead to potential problems and biases in the results.

6. The variable used in Model 2 was actually based on medians calculated separately for each calendar year. We added a brief explanation on page 5, line 32.

7. The associations of income-level with the health outcome are included in the tables now (Table 3 and 4). We further removed some unadjusted models and adjust for educational attainment throughout all models. Consequently, and in order to save space, we rearranged the tables showing all “income change” variables in a single table for men and women.

The analysis of income slopes is now included in Table 4/ Model 5.

8. We changed the terminology and replaced “relative income” by “rank position”. However, in the introduction and discussion section we still refer to the dichotomy “absolute/ relative income” as it represents the standard terminology in literature. We also deleted the phrase about “an increase in relative income does not necessarily correspond to an increase in absolute income…” in the seventh paragraph of the previous version as we feel that is does not contribute to the discussion.

We also dropped the statement on the effects of absolute/ relative income in Sweden in the instruction (on page 4 in the previous version).

9. Indeed, we used many different terms that are probably confusing. As there does not seem to be a standard terminology regarding “income change” in the literature, we used a variation of terms in the previous version of the manuscript that was obviously not helpful.

In order to meet your recommendation, we reduced the number of different terms for income change. We also replaced “volatile” by “inconsistent” which more properly describes the respective category in the income change variable.

Consequently, we also changed the title of the manuscript.

A brief definition of “income dynamics” has been added to page 3, line 4.

The term “dose-response relationship” was intended to describe the “temporal” gradient of income position on health. However, we deleted the section on accumulative effects and dose-response relationships in order to avoid misinterpretations.

10. Previous income research has debated whether context-level effects of
income inequality on health just reflect the individual level associations. Our impression is that this puzzle is still not solved. We mainly intended to show here that previous studies have identified lagged effects of income on health. Following the stream of research that holds context-level effects as consequence of individual level effects our conclusion is then that lagged effects of income exist. We kept the statement but rephrased the sentence (page 3, lines 38 -42).

We deleted two paragraphs in the introduction section in order to streamline the introduction section (page 3 – the section on cumulative effects; page 4 – section on lagged effects and regional levels).

11. We changed the structure according your recommendations: The description of results in discussion section was removed and is included in the result section now. Correspondingly, the methodological description in the result section was moved to the “Data and method” section.

12. We revised the in particular the second part of the discussion section. We hope that the discussion is more clear now (please see our revisions on page 10, starting with line 14).