Reviewer's report

Title: Educational inequalities in young-adult mortality between the 1990s and the 2000s: regional differences in Belgium

Version: 1 Date: 13 October 2014

Reviewer: Perrine Humblet

Reviewer's report:

- Major Compulsory Revisions

- Minor Essential Revisions

1. Is the question posed by the authors new and well defined?
   The question is well defined, except in the section Background, 2nd paragraph: "The mechanisms behind this are not fully understood, as all regions benefit from the same health system." The authors should be more cautious about the explanatory power of the health system as a determinant of population health status.

2. Are the methods appropriate and well described and are sufficient details provided to replicate the work?
   Methods – variables: Nationality of origin: “1) Belgian, 2) European/Western, 3) Maghrebin/Turkish and 4) other.”
   The description should be more precise in order to be able to replicate the work:
   • What is referred as ‘Western’: is it Western Europe or OECD countries? What about Eastern Europe (or new EU countries)?
   o ‘Maghrebin’: Northern Africa?

3. Are the data sound and well controlled?
   Yes

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

   4.1 In the section 'Results', both sections “General mortality changes over time” and “Educational mortality pattern over time” need to be far more pedagogic to describe the results. At this stage, the description is not precise enough.
   • General mortality changes over time,
     o 2nd line: “The mortality decline was most pronounced in the BCR”: in men?
     o The next two paragraphs must explicitly cite the tables 1A and B as reference
     o “The decline is smallest in the FR, with a relative mortality decline of 21%
compared to 28% in the WR and 55% in the BCR”: in which table?

• Educational mortality pattern over time
  • “We observe substantial mortality declines in almost all educational levels over time in the BCR (especially between 1995 and 2001), whereas mortality declined most among higher educated in the FR (ASMRFR-05-higher=42.5 [36.8-48.1] compared to ASMRFR-91-higher=64.2 [56.9-71.6]) and remained stable among the lower educated”:
    - Cite the related tables
    - It would be clearer to systematise the way regions are compared
    - Where does it “remain[ed] stable among the lower educated”?

• Paragraph “There is even a relative mortality increase of 18% among the lowest educated and … a 49% higher mortality among the highest educated”:
  - Cite the related table
  - Systematise the regional comparisons: it is not always clear

• Next paragraph: “Next to these mortality trends,…”:
  - Which table(s) is/are used?
  - Are the results the same for men and women?

• Robustness: “It is evident from Tables 2A and 2B that educational inequality in mortality is increasing in all regions between 1991 and 2001 for both men and women, except for women in the BCR”
  - Since this information in very important, it should be more documented, instead of using the word ‘evident’

5. Are the discussion and conclusions well balanced and adequately supported by the data?
  • There is a problem in the reference list: the list is written twice but with n° 26 missing in the 2nd part.
  • The whole text discussing the primary educated and the early-school leavers is well discussed and interesting. However, the elements of discussion are a little scattered and would benefit from being more clearly structured. In addition, the gender dimension in education could be deepened since results were separately analysed.

7. Is the writing acceptable?
SEP: to be written in full words

- Discretionary Revisions

The study is a good example of the paradox found in social health inequalities, which grow frequently within a general trend of improved health over time. This
aspect could be more explicit, as well as the gender dimension which could be more systematically analysed.

6. Do the title and abstract accurately convey what has been found?

The title: a suggestion: add the gender dimension in the title.

The abstract: add the gender dimension and also a short sentence about the changes in educational composition of the population over time.

**Level of interest:** An article of importance in its field.

**Quality of written English:** Needs some language corrections before being published.

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.