Reviewer's report

Title: Inequalities in Mortality in Scotland: Two Decades of Change. A Population-based Study

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Reviewer: Oliver Razum

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General
The paper examines the development of health inequalities in Scotland over two decades on the basis of individual death record data and ecological small area data on deprivation. The authors show that the general decline in Scottish death rates over the past two decades is largely based on mortality reductions in socially advantaged groups. They conclude that the observed health inequalities are due to poverty which negatively influences the ability to adopt healthier life-styles and behaviours. They advocate anti-poverty policies by central governments reaching beyond the health sector.

The paper neatly structured and well written. The findings are in line with other papers which show increasing socio-economic differentials in several western European countries. Taking into account that death rates for Scottish young male adults increased over the past two decades, this paper would be of special interest to policy makers, provided that the interpretation of the findings is valid.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
The manuscript, in its present form, leaves some issues and question that should be answered to decide on the validity. In particular, the discussion of limitations of the study design is too brief. In detail:

1. The claim that health inequalities have increased over the past two decades and that death rates in some strata have increased (p. 13) requires that processes of residential migration are negligible, or controlled for. As neither death records nor population data provide information on the individual socio-economic composition of deprivation categories, merely stating the high correlation coefficients for the distribution of deprivation categories from the three Censuses (p. 5) seems unconvincing. The question remains whether the results are due to an increase in health inequalities or rather an aggravation of residential segregation.

2. The authors report that coding of the NS-SEC was incomplete (p. 6). They do not discuss this limitation nor refer to the NS-SEC based analysis in the interpretation of their findings. This raises the question whether this analysis is relevant for the paper.

3. The authors do not discuss possible secular changes in the coding of causes of death.

4. The authors draw far-reaching conclusions regarding a need for more effective action from central governments. There are inherent, unsupported assumptions in their statement, namely: (i) social policies reduce poverty; (ii) poverty reduction reduces inequality to a relevant degree (which may not be the case if increasing inequality is mainly due to the rich getting richer); and (iii) a reduction in poverty will lead to a decline in health inequalities.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. The authors state that death rates for both sexes in 2000-02 were less than half those in 1980-82 (p. 7). Based on Table 1 (p. 19) the overall reduction within this period seems to be 30% for males and 25% for females. Only for children aged less than 15 (both sexes) the reduction accounts for more than 50%.

2. A population figure for Scotland should be provided. To get an idea about the precision of estimates achieved, CIs for the percent changes could be provided.

3. In the first sentence of the second paragraph (p. 10) the year is missing. It should be “…mortality rates was 1:2.1 in 1981 and…".
4. Tables 2 and 4 (p. 20 and 22) lack a footnote explaining the regional acronyms.

Discretionary Revisions (which the author can choose to ignore)

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests