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Peer Review

Review of: "Understanding the United States Black-White Life Expectancy Gap, 2007-2018"

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Understanding the United States Black-White Life Expectancy Gap, 2007-2018

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Summary. The stated goal of the study is to "evaluate how national-level education and income disparities contributed to the Black-White life expectancy gap in the United States between 2007 and 2018". The approach is to carry out multivariate analyses through the implementation of flexible parametric models on data from the National Health and Nutrition Examination Survey (NHANES) linked to the National Death Index for all self-reported non-Hispanic Black and non-Hispanic White respondents aged 20 years and above. The study finds that Black-White differences in the level of education "explains" about half of the life expectancy gap between the two groups and differences in income about 75%. When both education and income are included in the analysis, the gap disappears (if not reverses slightly).

Comments. The paper addresses an issue (the factors driving the life expectancy differential between the Black and White populations in the United States) that should be of interest to anyone concerned about health disparities. The paper is written clearly, and the language does not require any editorial revisions. The paper is properly organized. The study weaknesses are acknowledged. However, I have a number of reservations about the manuscript, as further explained below.

- I feel that the paper would be more convincing if it explained its contribution to the field better, as it does not appear to test a new hypothesis, create a novel study design, solve a specific problem that has been overlooked, challenge an existing theoretical paradigm, address a critical barrier to progress in the field, or develop a new method. At a minimum, it has to demonstrate how the

findings are new, and the discussion should be oriented around the similarities and differences with the numerous previous studies on the same issue.

- There is indeed a very large body of literature on the life expectancy gap by ethnic and racial groups in the United States. The current study is consistent with previous findings, namely the major role of education and income as intermediate variables in the relationship between race/ethnicity and mortality, but it does not appear to contribute anything particularly novel to the field conceptually. As a matter of fact, it is rather poor in theory in spite of the above-mentioned literature. In particular, recent studies have emphasized the role of intersectionality to understand Black/White differences in mortality (see the large number of papers by Nancy Krieger and colleagues, for instance), which demonstrates the joint impact of education, income, and race/ethnicity on health disparities (i.e., these variables do not operate independently from each other and their combined effects are multiplicative rather than additive), which is precisely the main topic of this paper, but there is no discussion of this literature either in the introduction or in the discussion section of the paper. In general, the author appears to be very familiar with only part of the relevant literature (in addition to Nancy Krieger, there are essential references to be cited from scholars like Robert Hummer, Richard G. Rogers, and many others).

- The sentence "income inequalities have a greater impact on medical care utilization and expenditures than race or ethnicity" at the end of the discussion suggests that the author might have been missing some of this influential literature, which demonstrates that income (and education) inequalities between Blacks and Whites are, in fact, largely the result of racism.

- The author also needs to explain why he concentrates on the Black-White gap in life expectancy, given that NHANES also includes information about other ethnic groups. What is specific about the Black population in its difference with White that justifies a particular analytical treatment?

- Another major limitation of the paper is its reliance on a single NHANES survey. The author himself acknowledges the fact that the data used for the analyses have many weaknesses that could be resolved by analyzing multiple cycles of the NHANES surveys or by using other data like the NHIS (whose sample is much larger than NHANES). I don't understand why he did not start with these. Also, it is very unclear from the Data section which round(s) of the NHANES the author is using. This should be clearly stated (I only guessed that it is the 2005-2006 cycle by reading the study limitation section between the lines, but I am not even sure I am correct). The title itself creates some confusion since "2007-2018" could mean that the paper is about the changes in the Black-White life expectancy gap between 2007 and 2018, while, in fact, I think it means that it uses

information from the 2007 NHANES survey and the mortality follow-up from 2007 and 2018. This should be clarified.

- There is very little information about the model specifications. It is unclear, for instance, whether interactions between education, income, and race/ethnicity were introduced in the models, which, given what we already know from the literature (see above about the concept of intersectionality), appear to be necessary to really "understand the US Black-White life expectancy gap."

- What does the author mean when he mentions that "the proportional hazards assumptions failed for race-ethnicity, education, and income"? Isn't that a major issue? Or is it resolved somehow by the particular type of flexible model that is implemented?

- How is the life expectancy gap calculated from the output of the models?

- A table with the resulting coefficients or hazard ratios on all of the model variables needs to be included in the paper. The table should include confidence intervals. The author mentions that "confidence intervals were not calculated due to [...] limitations of Stata's flexible parametric survival application," but other software (e.g., R) does allow for such model output and should be used instead.

- Age, an essential variable when studying mortality, was included in the model (though not sex) but is not discussed, even though the mortality gap between Blacks and Whites varies by age (it is larger at younger ages and progressively declines up to the highest ages, when there seems to be a cross-over between the two racial groups).

- Given the possible obsolescence of the study, since the NHANES sample mortality follow-up stops in 2018, it seems important to speculate in which ways, if any, the COVID years might have affected the findings. We know that COVID had a larger impact on mortality for the Black than for the White population, and a discussion of how the interactions between race, education, and income as mortality predictors might have changed over the past four years would be very useful and a natural conclusion to the paper.

Declarations

Potential competing interests: No potential competing interests to declare.