Reviewer’s report

Title: Mortality trends in Australian Aboriginal peoples and New Zealand Māori

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Reviewer: Martin Tobias

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The authors have re-created time series of Australian Indigenous and Total mortality, and of New Zealand Maori and non-Maori mortality, correcting where possible for known biases in the data.

Their key finding is that, while survival has improved for all groups, the mortality disadvantage experienced by Australian Aboriginal peoples and by Maori has not narrowed over recent decades. Furthermore, the Australian gap is currently about twice the New Zealand gap. Interestingly, age decomposition analysis showed that younger age groups currently contribute more to the gap in Australia than in New Zealand.

This is an important study with major implications for strategic health policy and wider public policy in both countries. It will also be of interest to other countries with indigenous populations, most of which experience similar survival disadvantage relative to their corresponding settler population.

Re-creating historical age x sex specific mortality rates for indigenous populations is immensely challenging (not only in Australia and New Zealand). For New Zealand, the authors have used the lifetables previously constructed by other researchers (Cheung and Pool) for the period from 1950-1980. For the more recent period they have used Statistics New Zealand lifetables, correcting for numerator-denominator bias by linking census and death records using anonymised probabilistic linkage. While not perfect, this data linkage approach undoubtedly achieves substantive bias reduction. However, bias is uncorrected for the earlier period.

For Australia, the authors have relied on multiple methods (separately, not as an ensemble model). For some periods they have used estimates based on indirect methods such as the General Growth Balance method. For others, they have been able to use direct methods with bias correction via linkage of death and census records, as for New Zealand. Not all data used was
national (eg one input data series was for an urban cohort attending a specific community health service in Sydney) and as such may not be fully representative.

For both countries, the propensity to report Indigenous ethnicity on both death certificates and census forms has varied over time (and place), as has the meaning and classification of indigeneity itself. The assumption that the Census represents a gold standard - which underpins the data linkage approach to numerator-denominator bias reduction - is probably reasonable under the circumstances. However, the reliance on indirect methods for some periods inevitably means that the Australian Indigenous mortality time series is likely to be less robust than the corresponding New Zealand series.

Given this, the reader would logically expect the authors to have attempted to quantify the uncertainty in their estimates and provide credible intervals - especially important to interpret trends and contrasts in the less robust Australian time series. While the methods available may preclude this, even using simulation methods, the issue of uncertainty and its quantification needs to be thoroughly addressed in the Discussion.

The results are presented exclusively in terms of absolute levels and gaps. While this may be appropriate for life expectancy, other lifetable metrics (such as probability of dying (or surviving) from exact age x to exact age y), as well as the underlying age x sex specific mortality rates per se, lend themselves to comparison on a relative as well as an absolute scale. From an equity perspective, it is important to know (for example) that absolute inequalities have remained stable over the past 1-2 decades, but relative inequalities have increased (if they have).

While not all lifetable functions need be presented in the article (although the lifetables could be included as an appendix), it may be of interest to show the survival curves. This would illuminate which survival curves are becoming more rectangular, and the extent of rectangularisation occurring. This question is indirectly addressed through the age decomposition analysis, but no discussion is provided as to the implications of the difference in age specific contributions found between the two countries.

In my opinion, the Conclusion section needs to situate the historical improvement in Indigenous survival in both countries in the context of Indigenous rights and political, cultural and economic development. Even more importantly, the continuing inequalities in survival should not be attributed simply to 'economic disparity' and left at that, but should be related to the historical
experience of colonisation and ongoing post colonial structural and interpersonal racism - reflected inter alia in inequities in access to and quality of health care. Otherwise the implication is that the health system (in both countries) is helpless to address the observed (and persistent) indigenous inequality in survival, beyond simply advocating for pro poor policies, anti-racism and social justice more generally.

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