

Hello Dr Flander

Thank you very much for submitting the following paper to the Department of Health & Human Services: 'Age-standardised mortality and cause of death in the Latrobe Valley at the time (and five years prior) of the Hazelwood coalmine fire in Morwell, Victoria.' This paper has been reviewed by a number of staff and we have the following comments/queries to make:

1. Heat data and air quality/particulate matter have not been incorporated into the review. The first project brief listed the January 2014 Victorian heatwave event as a matter to be included for consideration, as it alone was estimated to have resulted in 167 excess deaths across Victoria. This heatwave event could have impacted the morbidity/mortality data ascribed to the Hazelwood event. See also point 2 regarding temperature data.
2. The first project brief also requested 'other sources of smoke or particulate matter' be included. Your paper notes that all-cause mortality and smoke-exposure-related mortality were examined for the study periods in the absence of comparable air quality and temperature records for 2009-13. For air quality, measured as fine particles and over the period of the fire, this information is contained in the original dataset provided. To assess comparable air quality data for 2009 to 2013, there is one air monitoring station in the Latrobe Valley that has consistently operated over the study period (ie from 2009 to 2014), at Traragon, measuring PM10 fine particles. This may be the most useful dataset to assess comparable air quality data. This data will be provided by the Department.

For temperature data, the Department acknowledges that it should have also provided you with temperature data from the period before the mine fire. The temperature data from 2009-14 will be provided by the Department. When controlling for temperature, mean temperature should be used. The Department notes that in his papers, Barnett states that he controlled for temperature but does not state whether he used minimum, maximum or mean temperatures.

3. The Department wonders if the issue of small datasets could be discussed in more detail. We wonder if more emphasis could be given to the fact that all-cause mortality should not be considered a good indicator of exposure to smoke or particulate matter compared to cardio-vascular and respiratory mortality. Given the small datasets, would cardio-respiratory mortality (especially in those >65 years) be a better indicator?
4. This review states that the corresponding months in 2009 were a season of similarly high temperatures to 2014, but which did not have fire. However the Black Saturday fires occurred from 7 February to 14 March 2009; the Churchill fire claimed 11 lives. Have the Black Saturday fires and the 11 Churchill deaths been excluded from this review?
5. DHHS wonders if the review would be improved if it specifically listed the summary of significant mortality difference to previous years (2009-2013) for the period Feb-March 2014; as well as the summary of significant mortality difference to previous years (2009-2013) for the period Feb-June 2014.
6. DHHS would be interested in any commentary around Moe, given the air quality data that was sent in the initial data set.
7. As it stands, the review lacks a formal discussion section. Could this please be included? It would also be helpful if there was a narrative for each table to help explain these.
8. For Table 1 and Table 2, the Department wonders if using an indirect standardisation process might be more appropriate as the numbers are very small and there are a number of cells with zero deaths, which will impact on age-standardised rates.

Other issues:

1. With the Executive Summary, we wonder if there is any way it could be simplified for the reader. As it stands, a number of statistical findings are provided for different time periods. It is actually somewhat difficult to determine what the key message is. Would it be possible to provide a narrative about what the key findings are?
2. DHHS suggests changing the title to: *'Age-standardised mortality and cause of death in the Latrobe Valley at the time of (and five years prior to) of the Hazelwood coalmine fire in Morwell, Victoria.'*
3. On page 3 of the document, under the heading 'Cause of death categories definitions' there is a number: 203,965. Is this the number of deaths for the state over a certain period? If so, could you please state this?
4. Could you also please provide a plain language definition of 'Age-standardised mortality' to improve clarity for the lay person?