



Ambulance attendances during the Hazelwood mine fire Research Summary

December 2018

Analysis aims

This study aimed to investigate whether there were increased ambulance attendances during the mine fire period, compared to other times before and after the mine fire. The study also aimed to determine whether those attendances were associated with changes in mine fire-related air pollution levels.

Background

The fire in the Morwell open cut brown coal mine adjacent to the Hazelwood Power Station blanketed the town of Morwell and the surrounding area in smoke and ash for six weeks in February and March 2014. The smoke event was recognised as one of the most significant air quality incidents in Victoria's history.

It caused considerable community concern within Morwell and the broader community. In response to these concerns, and following extensive community consultation, the Hazelwood Health Study was established to examine the impacts of the mine fire. The HHS involves multiple research streams targeting different health outcomes and different vulnerable groups.



Photo Credit: Keith Pakenham, Country Fire Authority

Meet the team

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What we found

When the mine fire period was compared to other times before and after the mine fire, the analysis showed an overall 15% increase in ambulance attendances. This corresponded to approximately 225 additional ambulance attendances during the mine fire period for all conditions. When ambulance attendances for respiratory conditions were investigated separately, there was a 47% increase during the mine fire period compared to other times. This corresponded to approximately 37 additional ambulance attendances for respiratory conditions during the mine-fire period.

When we looked at changes in the levels of mine fire-related air pollution, we could see that increases in pollution levels were followed by increases in ambulance attendances for respiratory conditions for about 5 days.

A full report describing the findings from this analysis can be found at hazelwoodhealthstudy.org.au/study-findings/study-reports



What we did

Daily ambulance attendances data for the period July 2010 to March 2015 were obtained from Ambulance Victoria for Morwell and surrounding towns.

Air pollution estimates were based on fine air particles measuring less than 2.5 thousandths of a millimetre in diameter (PM_{2.5}). These were modelled by the Commonwealth Scientific and Industrial Research Organisation for the areas impacted by the mine fire smoke. Daily maximum temperatures were collected from the Australian Bureau of Meteorology.

A statistical method called time series analysis was used to examine whether ambulance attendances increased during the mine fire period and to measure the association between ambulance attendances and daily average PM_{2.5} levels. The analysis took into account the influences of other contributing factors such as season and temperature.



Photo Credit: Monash Rural Health Latrobe Valley & West Gippsland

Considerations

Within each affected town, ambulance counts were too small to allow for comparisons between areas with higher and lower air pollution levels. Therefore we may have underestimated the impact in the most highly exposed areas. It is important to note that the data was not sufficient to link any individual person's ambulance call out to mine fire smoke exposure and that ambulance data were collected for administrative purposes and, therefore, may not provide accurate diagnostic information.

Where to from here

Researchers will be conducting further analyses using ambulance attendance, hospital admission, emergency presentation and cancer datasets.

The HHS is led by Monash University with collaborators from Menzies, Federation University, The University of Adelaide, and CSIRO.

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