Letter to the Editor

Response to Fay Johnston and David Bowman (2013), ‘Bushfire Smoke: An Exemplar of Coupled Human and Natural Systems’

Johnston and Bowman (2013) argue that the health impacts of smoke from both uncontrolled bushfires (wildfires) and ‘controlled’ burns have gone unappreciated. (‘Controlled’ burns refer to planned fires undertaken to reduce fuel loads in the neighborhood of communities on the wildland urban interface.) In drawing attention to the health hazard posed by smoke from burning bushlands, the authors are to be commended. Our concern with the Johnston and Bowman (2013) manuscript is with its dismissive treatment of other efforts to inform policy debate about the cost of all fires – structural and bushfires – in Australia, notably those of Ashe et al. (2012).

Ashe et al. (2012) considered the cost of fire and explored whether or not the allocation of increasing resources to manage this peril was ‘efficient’, in an economic sense. This followed on from Ashe et al. (2008), who provided a first-ever estimate of the cost of fire to the nation, an analysis that included an estimate of the cost due to environmental pollution. In a survey of 26 fire professionals, Ashe et al. (2011) then asked whether these experts believed that outcomes would be materially changed if more or less money were to be invested in the management of fire than was currently the case. Significantly none of the 26 professionals surveyed thought that increased funding would improve outcomes. We cannot know whether smoke inhalation was a significant consideration for these respondents.

Without any quantifiable evidence, Johnston and Bowman (2013) speculate that the true numbers of bushfire deaths might be an order of magnitude higher than the average annual toll of 14 deaths assumed by Ashe et al. (2012) as directly attributable to bushfires. The figure of 14 comes from Crompton et al. (2010), who normalised the most comprehensive and complete time history of bushfire deaths (Haynes et al., 2009) for changes in population. That time history was elicited by Haynes et al. (2009) from coroners’ reports of deaths, along with the circumstances surrounding them, between 1901 and 2007/2008.

If we were to accept Johnston and Bowman’s amplification factor of 10 at face value, then this would bring the average annual number of deaths from fire to around 240: about 100 from structural fires (Steering Committee for the Review of Government Service Provision, 2011) and 140 (=14 × 10) due to bushfires. Would this amplified estimate materially challenge the arguments posited by Ashe et al. (2012)? We think not.

Ashe et al. (2012) examined the regulatory cost associated with an annual investment (in year 2010) of some 16 million AUD towards fire safety, mitigation, and maintaining fire services. The analysis follows the argument of Keeney (1990 and 1997) and others (e.g. Haln et al., 2000) who posit that since regulatory costs are paid by individuals, investments made by government in safety regulations on their behalf leave them with less disposable income. Moreover, as wealthier individuals are on average healthier, lowered incomes will lead to higher mortality rates. (For example, if there is less money to spend on reducing risks, people may avoid visiting the doctor when sick.) With this in mind, Ashe et al. (2012) determined the Australian willingness-to-spend to prevent the loss of one extra statistical life in the fire ‘space’ to be somewhere between 20 million and 50 million AUD, depending upon how these costs were imposed upon the population. Then if the results of the survey of fire professionals (Ashe et al., 2011) are accepted as suggesting an annual over-investment in fire prevention and management of the order of 4.5 billion AUD per annum (2010 dollars), this excess would imply between 90 and 225 extra ‘regulatory’ or ‘statistical’ fatalities. Therefore, even if the Johnson and Bowman assertion were correct, these numbers of ‘regulatory’ fatalities remain ‘of the same order’ as the annual average number of fire fatalities.
experienced. We cannot know how many lives were saved through this expenditure.

Bushfires that affect large urban areas remain relatively rare events. Nonetheless if Johnston and Bowman (2013) could substantiate their contention that for every death that has been directly attributable to bushfires, another ten have died from the effects of occasional smoke inhalation, it would be a very valuable contribution. In doing so they would also have to differentiate between deaths attributable to smoke inhalation (whether acute or chronic) and extreme heat that often coincides with bushfires (Haynes et al., 2010; Coates et al., 2014). The analysis is likely to be complicated as those diagnosed as suffering from breathing difficulties could be suffering from either the direct effects of smoke, or from the increase in concentration of other airborne pollutants, such as ambient ozone and coarse and fine particulate matter – dirt, dust, spores, nitrogen, and sulphur dioxide, etc. More work is needed on understanding the relationship between air pollution and bushfire deaths in Australia, but until firm empirical evidence can be provided, Johnston and Bowman’s assertions remain conjectural.

Now to another point of contention: Johnston and Bowman (2013) incorrectly cite Emergency Management Australia (2010) as the source of the average annual insured cost of $77 million for Australian bushfire for the years 1967–1999. The actual source of this outdated figure was a report by the Bureau of Transport Economics (2001), which in turn based its estimates of the economic cost of natural disasters on an old and flawed version of the Insurance Council of Australia’s Disaster List (http://www.insurancecouncil.com.au/industry-statistics-data/disaster-statistics/historical-disaster-statistics). This malcitation in what purports to be a review article is disappointing, especially as we show below, that more recent and complete information is readily accessible.

The EMA now refers those interested in the insured costs of natural disasters to the Insurance Council of Australia’s website, which also lists normalised losses: that is the estimated cost if historical events were to impact current day societal conditions. These normalised figures are based on an improved methodology, undertaken by Risk Frontiers, to that presented in Crompton and McAneney (2008). Our most up-to-date estimate of the normalised insured cost of bushfires for the 47 year period from 1 July 1966 to 30 June 2013 sums to 5.6 billion AUD. This translates to an average annual loss of approximately 120 million AUD over the period or about 10% of the insured loss for all natural disasters and 11% of the insured loss from weather-related natural disasters. Between 2003 and 2013, the insured losses due to Australian bushfire averaged 220 million AUD per annum. Crompton et al. (2010) also show a time series of normalised home destruction from 1925 to 2010...
from which average annual costs can easily be estimated.

Johnston and Bowman (2013) accuse Ashe et al. (2012) of concluding that bushfires are of negligible importance as a cause of mortality and morbidity. Ashe et al. (2012) did not go that far but surely it makes sense to examine the cost of our national investment in the management of the fire risk in a disinterested manner. This is particularly the case for natural hazards when the overall known death rate has been decreasing since early last century (Figure 1). The question ‘How safe is safe enough?’ is not one that can be answered without considering the costs of providing that safety. Ashe et al. (2012) examined this question, and if the analysis can be improved by a more accurate estimate of the bushfire death toll by including deaths due to smoke inhalation, then this would be welcomed. However, in our view, it is unlikely to materially alter the Ashe et al. (2012) arguments.

Lastly, we are not upset at being labelled ‘economic rationalists’ but wonder at its presumably pejorative employment in what purports to be a scientific article. Perhaps our analysis could be more easily dismissed if it were ‘irrational’.

John McAneney, Brian Ashe, Felipe Dimer de Oliveira, Katharine Haynes, Ryan Crompton and Lucinda Coates
Risk Frontiers, Macquarie University, NSW 2109, Australia

REFERENCES

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