

Do bushfire spread prediction maps encourage people to take appropriate protective actions?

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Abstract:

Bushfire is a regular threat for Australians, as an inherent part of our natural landscape. As climate change dries the continent and vegetation, our population will be increasingly exposed to this risk. Because many bushfires start through natural processes such as lightning strikes, the risk cannot be eliminated but must instead be managed and mitigated. To mitigate the risk to the greatest degree possible, members of the public and emergency services authorities must work together. In Australia, there is a policy of shared responsibility for bushfire risk mitigation. The population is allowed to make their own decisions about what to do and the authorities provide information that helps people to make choices that are appropriate to the situation and their circumstances, such as evacuation to a safer location or preparing their property to reduce the chance that it will be damaged by the fire.

One type of information authorities provide are emergency warnings, which include maps that tell people which regions are at risk and what to do if they find themselves in the region of risk. However, these maps tell people about the expected behaviour of the fire and appropriate actions in the near future (the next few hours). Some preparation activities take longer to complete and could benefit from longer warning lead times. In the 2019-2020 bushfire season, which was a season of both extreme risk and catastrophic fire behaviour, some states also published fire spread predictions to the public for the first time. These maps provide a picture of the fire's expected behaviour in the medium term (~24 hours) and enable their users to either take earlier action or prepare to take action. However, the evidence base on how best to design these maps is limited.

The Predictions in Public project was established to improve this evidence base. The project has undertaken a series of empirical studies that investigated how members of the public understand fire spread prediction maps that have different designs, with the aim of developing a set of evidence-based design guidelines that can be used by emergency management authorities to create nationally consistent fire spread prediction maps that communicate clearly and are easily understandable for members of the public.

This presentation reports on the findings of two studies, each with approximately 50 participants, that used eye tracking, the think aloud method, and behavioural indicators to examine what members of the public understood from fire spread prediction maps and how this information affected their appraisal of the risk and intentions to take protective actions. The studies respectively examined a) whether fire spread predictions added value to the existing warning maps; and b) how the temporal granularity of the prediction affected the comprehensibility of the maps and the risk appraisals people made from the maps. The presentation will discuss the findings of the two studies and their implications for the design guidelines.

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