Background briefings on emerging issues for fire managers from AFAC and Bushfire CRC.

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FIRE NOTE

DEFEND OR EVACUATE? WHY RESIDENTS DELAY THIS DECISION

▲ This study shows that residents need triggers to take different actions under a variety of conditions.

SUMMARY

This *Fire Note* outlines research investigating why many residents of bushfire prone areas delay their decision to defend or evacuate in response to a bushfire until the day of a fire. The research examined several plausible reasons for such a delay stemming from decision avoidance research. This *Fire Note* discusses the research findings, as well as the opportunities and obstacles to overcoming the problems associated with decision delay.

Research showed that a lack of difference in the attractiveness between the options of defending a house or evacuating was the only significant predictor of householders' decision delay. Therefore, of the options investigated, this selection difficulty was the only valid explanation for householders' delaying their decision in response to a fire. A solution to this involves appropriate triggers and subsequent actions to take under a variety of conditions.

ABOUT THIS PROJECT

This *Fire Note* is an update on the *Information Processing Under Stress: Community Reactions* project, conducted under the Bushfire CRC theme *Communicating Risk*.

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CONTEXT

To assist community members in preparing for a bushfire, fire agencies need to understand:

1. **Why many community members delay their decision to defend or evacuate until the day of a fire.**

2. **What can be done to assist community members plan for fires more decisively, and therefore prepare more effectively.**

This research investigated what factors led people to delay deciding on their fire response before a fire occurred. Following collection of this data, a workshop with community engagement leaders from fire agencies investigated two issues:

1. How can this research inform strategies that aim to overcome the problems associated with decision delay?

2. What are the most important barriers that agencies may face in trying to implement such strategies?

BACKGROUND

Australian residents of bushfire-prone areas have a choice between either defending their property or evacuating, preferably well before the fire reaches their area. To increase successful execution of these two possible bushfire responses, fire agencies encourage residents of bushfire-prone areas to determine ahead of time what they will do in case of a fire, and properly prepare for this intended response. However, when given the choice between defending or evacuating, many people delay making this decision (i.e. wait and see; Whittaker *et al.*, 2010).

This delay is problematic for several reasons. First, previous studies have shown that people who delay this decision tend to be less prepared for both defending and evacuating, compared with people who intend to respond with one of the two more concrete actions (Dunlop *et al.*, 2012). The decision delay thus increases risk to a person or household

▲ Residents watch a fire burn on a hill behind their house. Difficulty in deciding whether to defend or evacuate can cause indecision. *Photo: CFA Strategic Communications*

during a bushfire. Second, people who delay this decision are more likely to spend valuable time on deciding during a fire, compared with people who intend to respond with a concrete action. This can result in late evacuation (McLennan *et al.*, 2012), and thus further risk of harm. The study presented in this *Fire Note* uncovers the causes behind this delay in decision making. In addition, the results of this study were used to suggest strategies to reduce the problems associated with such delay and identify possible obstacles that agencies may face in applying these strategies.

BUSHFIRE CRC RESEARCH

Bushfire CRC researchers from the University of Western Australia, Murdoch University and the University of Tasmania developed a survey that was distributed to residents of bushfire-prone areas around Western Australia across the 2011/2012 fire season. In addition to measuring the anticipated fire response of residents, the survey measured plausible causes of decision delay. These plausible causes were derived from social psychology literature on decision avoidance. Surveys were distributed to residents on two occasions: the first in October 2011 (beginning of the bushfire season), and the second in March 2012 (end of the bushfire season).

The October 2011 survey was sent to 1700 households, resulting in 350 completed

responses. This provided a quite satisfactory 20% response rate. The March 2012 survey was required to measure any changes in behaviour. As a result, this survey was only distributed to the 350 households that completed the initial survey at the beginning of the bushfire season. 189 usable responses were received – an excellent response rate of 54%.

The October 2011 survey measured several plausible causes of decision delay: two personality factors (general indecisiveness, Frost and Shows, 1993; and need for cognition, Cacioppo and Petty, 1982), lack of perceived relevance of the decision (i.e. low risk-perception), and decision difficulty due to a lack of difference in attractiveness between the option of defending a house or evacuating. To gauge this decision difficulty, researchers measured how much value people expected to derive from defending their house versus evacuating early. These value scores were based on the importance of several outcomes (e.g. saving the house, saving livestock, keeping the children safe) and the likelihood of achieving these outcomes by either defending or evacuating.

The March 2012 survey measured another plausible cause of indecision: the avoidance of responsibility for bad outcomes. To understand whether avoiding responsibility

was a motive for decision delay, the study asked people to indicate who would be responsible for saving their house and for saving their lives during a fire (government, themselves or a mix of both). Theory would predict that people might delay their decision as a means of avoiding responsibility for any negative outcomes resulting from their decision, such as their house burning down as a result of having chosen to evacuate. This is because outcomes resulting from a decision lead to greater perceived responsibility compared with outcomes resulting from decision avoidance. The main dependent variable, their intended response to a bushfire, including several options marked as decision delay (e.g. wait and see), was measured both before and after the bushfire season.

RESEARCH OUTCOMES

Most of the survey respondents indicated they would delay their decision of whether to defend or evacuate: 68.1 % in October 2011, and 67.2% in March 2012.

Across the two survey periods, about 23% expected they would defend their property throughout the fire, and about 6% expected to leave as soon as they knew there was a fire threatening their town or suburb. Less than 1% would not be home as they would leave their property on days of extreme and catastrophic fire danger, and less than 2%

END USER STATEMENT

Getting a better understanding of what motivates people to 'wait and see' as a bushfire approaches, rather than committing early to a plan, is a problem that has plagued fire agencies for several years.

This very useful research is unpacking this problem by explaining why residents are indecisive, and providing ideas about how such indecisiveness can be overcome. This will enable fire agencies to develop, in time and with further research, targeted strategies to address this large at-risk group, hence making a significant contribution to public safety.

– Damien Killalea, Director of Community Fire Safety, Tasmania Fire Service.

▲ Findings of this study showed that if evacuating held a significantly higher perceived value than defending, residents were more likely to evacuate when a fire threatened.

ticked the 'other' box (these were all volunteer firefighters who would be out fighting any fire).

The most important finding was that decision difficulty as measured by the relative attractiveness of defending or evacuating was the only significant predictor of why people delayed deciding on their action in response to a fire threat.

More specifically, if defending held significantly higher perceived value to the householder than evacuating, then they were more likely to anticipate defending. If defending held significantly lower perceived value to the householder than evacuating, then they were more likely to anticipate evacuating. However, when they perceived defending and evacuating as being equally valuable, then they were very likely to delay their decision until the time of an actual fire threat.

People were not more likely to delay this decision as a result of lack of risk awareness, so it was not the case that people who delayed their decision were less aware of the risk.

People were not more likely to delay their decision motivated by responsibility avoidance, so they were not delaying their decision in order to avoid feeling bad for having made the wrong decision (e.g. deciding to evacuate and ending up with their house in flames).

Furthermore, measured differences in personality did not play a role in the decision delay.

In conclusion, this study showed that householders who delay their decision about either defending their home, or evacuating beforehand, are not necessarily unmotivated to think about bushfire, nor are they trying to hide from the reality of bushfire threat. In fact, they are just as aware of the risks as those who intend to respond to a fire threat with a concrete action: either defending or evacuating. They also feel just as responsible for bad outcomes (e.g. losing their house or being injured). What this study shows is that the extreme difficulty in making the decision to defend or evacuate causes paralysing indecision.

An article containing the full details of this research is currecntly under review for publication by *The International Journal of Wildland Fire*, which can be made available upon request to the author of this *Fire Note*.

HOW IS THE RESEARCH BEING USED?
The research team presented the results of this study to a group of community engagement leaders at several different fire agencies across Australia, including Western Australia's Department of Fire and Emergency Services, South Australia's Country Fire Service, Victoria's Country Fire Authority and the New South Wales Rural Fire Service. During the workshop, participants received several assignments. They were first asked to identify the key ingredients of a good fire plan.

The results showed that a good fire plan should:

• Suit the needs and abilities of all household members, and consider all living beings (e.g. pets).

• Include a back-up plan, or a range of options of what would be done in response to a fire.

• Be flexible and adaptable so it can be adjusted to a variety of situations.

• Contain detailed information, such as which information sources would be used, what would be the triggers for action, transport arrangements, emergency contact numbers, safe place of last resort, etc.

Next, the group was asked to identify barriers to the creation of a good fire plan, with a special focus on back-up plans and flexibility/adaptability.

The biggest barriers related to the creation of such proper contingency plans were:

• The difficulty/complexity of constructing multiple action plans. Too many options in 'what to do'.

• Related to this, many families experience communication issues over simple things, so would their communication skills cope with complex contingency plans?

• Many people/households lack the confidence to read/identify the triggers for different actions.

The group identified that the problems associated with delaying the decision about defending or evacuating are unlikely to be reduced by forcing people to choose 'defend'

▲ Residents were not likely to delay making a decision on their action due to a lack of risk awareness, or avoiding responsibility. *Photo: CFA Strategic Communications*

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or 'evacuate', or by increasing their risk perception. A solution could be to transform their delay into a contingency plan that spells out under which circumstances they would defend, and under which circumstances they would evacuate. This would also be in line with what a good fire plan would entail. However, this may be problematic due to obstacles such as the complexity involved in making a contingency plan, and the lack of the necessary support from brigades or fire agencies in helping these householders to develop their contingency plans.

FUTURE DIRECTIONS

During the workshop for community engagement managers, the group also identified several ways to overcome obstacles to developing contingency plans.

The most important solution is to have brigades advise residents on how to identify appropriate triggers and therefore appropriate actions to take under a variety of conditions. In Victoria, households can already get personalised advice on whether they should even consider defending their house.

Over the longer term, agencies could eventually reduce the community's reliance on the agencies' advice by establishing better links with the community and increasing community-driven education. Community members could then use this knowledge to help individual households to develop good contingency plans.

Fire agencies and brigade members should also model this activity by developing their own fire plans, which they then communicate to the community.

Finally, random fire drills across neighbourhoods could help households to practise and improve their plans. This is already undertaken in NSW.

It is clear that delaying the decision regarding individual or household bushfire response is a substantial and complex problem, which will be challenging to resolve. It is hoped that this study helps to clarify the problem and identify the strategies that are most likely to succeed or fail.