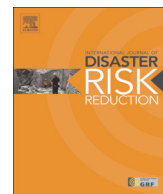


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## International Journal of Disaster Risk Reduction

journal homepage: [www.elsevier.com/locate/ijdr](http://www.elsevier.com/locate/ijdr)

# Psychological differences between south-eastern Australian householders' who intend to leave if threatened by a wildfire and those who intend to stay and defend

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## ARTICLE INFO

## Article history:

Received 17 September 2014

Received in revised form

28 November 2014

Accepted 28 November 2014

Available online 29 November 2014

## Keywords:

Bushfire

Community safety

Evacuation

Property defence

## ABSTRACT

Disastrous wildfires have occurred often in south-eastern Australia. Following multi-fatality wildfires in Victoria on 7 February 2009 the national approach to community wildfire safety, 'Prepare, stay and defend or leave early', came under intense critical scrutiny. The approach was revised subsequently so as to emphasise leaving as the safest option in the event of a wildfire warning. This study reports findings from a survey of 584 residents of at-risk locations. The majority (47%) reported that they intended to leave if warned of a bushfire threat. However, a substantial minority (24%) reported that they intended to stay and defend their home. A further 29% reported that they intended to wait and see what developed before making a final decision. Those intending to leave differed from those intending to stay and defend in several ways. Those intending to leave were characterised generally by being more concerned about the danger posed by bushfires, they viewed themselves as more vulnerable to bushfire threat and they were worried about their house being destroyed in their absence. Those intending to stay and defend were motivated, mostly, to protect their valued property and they believed that their efforts would be successful. They did not perceive themselves to be risk takers. Those intending to leave generally reported rather low levels of preparations for leaving safely. An appreciable percentage of those intending to stay and defend reported levels of preparations for safe defence which were probably inadequate for safe and effective defence.

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## 1. Introduction

### 1.1. Background and aim

Since European settlement in the 18th century, Australian communities have proved vulnerable to four kinds of disaster-level natural hazard events: cyclones, storms, floods and bushfires—or wildfires [1]. Over the period 1901–2011, 260 major bushfire events resulted in 825 known fatalities, most (88%) of which occurred in the south-east of the country [2]<sup>1</sup>. Most wildfire scientists predict that in the future there will be more frequent severe wildfires threatening life and property in

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several countries, including Australia, for three reasons: (a) global climate change resulting in reduced rainfall and higher temperatures in many regions; (b) an increase in the number of householders choosing to reside in areas of high wildfire risk—often a wildland–urban interface (or WUI [3]); and (c) government policies limiting fire and land management agencies' vegetation management activities on budgetary or environmental grounds [4–10].

From 2005 to 2009, fire and land management agencies' approaches to community bushfire safety in Australian states and territories were shaped largely by the Australasian Fire Authorities Council (AFAC) position statement about able-bodied householders being encouraged to remain on their property to actively defend their home when threatened by a bushfire: "...By extinguishing small initial ignitions, people of adequate mental, emotional, and physical fitness, equipped with appropriate skills, and basic resources, can save a building that would otherwise be lost in a fire...People should decide well in advance of a bushfire whether they will stay to defend them or leave if a bushfire threatens", [11] p. 6. This position came to be summarised as 'prepare, stay and defend or leave early' [12]. It should be noted that such a policy differed from that of most North American wildfire jurisdictions where evacuation of residents threatened by a wildfire was, and remains, the preferred community wildfire safety strategy [13]<sup>2</sup>. The AFAC position statement was developed following investigations into disastrous multi-fatality bushfires in Tasmania in 1967 and in Victoria and South Australia in 1983. It was concluded that (a) civilians were most likely to die because of either the fatal impact of radiant heat, or as a result of a motor vehicle accident, while fleeing at the last moment and (b) suitably prepared homes could be defended against bushfires while providing a safe refuge for people during the passage of the main fire front [19]. However, following the disastrous 2009 Victorian 'Black Saturday' bushfires police reports that 113 people had perished in or near their homes [20] the 'prepare, stay and defend or leave early' position came under intense critical scrutiny by the Victorian Bushfires Royal Commission (Teague et al. [21]). The position was reviewed subsequently and revised by the Australasian Fire and Emergency Services Council in 2010 to emphasise that leaving before imminent bushfire threat was the safest option for residents: "People usually have two safe options when threatened by bushfire: leaving early or staying and defending adequately prepared properties. Leaving early is always the safest option", [22] p. 1. In 2012 the policy was further revised to give more emphasis to leaving as the safest option in the event of bushfire threat:

4.2.8 The safest action to protect life is for people to be away from the bushfire or threat of bushfire as early as possible. *Leaving a high risk bushfire location is the safest action, and leaving before a bushfire threatens is always safer than remaining until a bushfire starts. Leaving becomes increasingly appropriate with higher Fire Danger Ratings. When bushfires are burning on days where circumstances such as weather conditions, topography or fuel loads may create intense fire behaviour, typically when 'Extreme' or 'Catastrophic' fire danger conditions are expected, leaving early may be the only safe action, even for people who are prepared to defend well-prepared buildings., [23] pp. 5–6.*

Notwithstanding the emphasis by fire agencies on at-risk householders leaving before a bushfire threatens, recent surveys of residents impacted by severe bushfires found that many residents of at-risk areas plan to, and do, stay and defend their property against bushfire attack [24–27]. In this paper we report a study in which households in high bushfire risk areas of south-eastern Australia were surveyed about their intentions if threatened by a bushfire. The aim of the research was to investigate psychological differences between those intending to leave and those intending to stay and defend.<sup>3</sup> The purpose was to assist Australasian fire agencies in shaping their future community bushfire safety endeavours so as to reduce risk to residents threatened by significant bushfire events.

## 1.2. Previous related research

A considerable amount of social science research has been reported about factors associated with homeowner property preparation to reduce risk of destruction by wildfire [31]. Psychological factors which have been identified include: (a) perception of level of wildfire risk [32–40]; (b) beliefs and values about self-reliance and individual responsibility for wildfire safety [33,34,36,37]; (c) beliefs and expectations about mitigation activity efficacy [35,36,41,42]; (d) attachment to home [33,36,43,44]; and (e) perceptions of community expectations and norms, and community member connectedness and sense of community [44–47].

Several post-bushfire interview-based studies have identified factors involved in householders' decisions to either leave or to remain on their property when they were threatened by a bushfire. Tibbits and Whittaker [12] concluded that residents had a much clearer understanding of what was involved in staying and defending their home than what leaving early entailed. McLennan et al. [48] analysed interviews conducted with residents impacted by the 2009 Victorian 'Black Saturday' bushfires and found that most residents who left when threatened did so because (a) they had not planned nor prepared to stay and defend their home from a bushfire, and (b) on becoming aware of the bushfire threat they decided it

<sup>2</sup> The preference by North American fire agencies for evacuation of residents in the face of wildfire threat is not without controversy. Several researchers have proposed sheltering in place or staying and defending as alternatives [13–17]. Others have argued against sheltering in place [18]. Currently no Australian fire agency recommends sheltering in place as a safe response to bushfire threat.

<sup>3</sup> The present study was part of a larger Bushfire Cooperative Research Centre project involving a survey of residents of bushfire-prone locations in south-eastern Australia. Findings reported previously have described: (a) householders' reasons for planning to wait and see what developed following an initial bushfire warning [28]; (b) householders' intentions if threatened by a bushfire and their levels of completion of a range of bushfire preparation activities [29]; and (c) determinants of householders' strengths of intentions to leave if threatened by a bushfire. [30]

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