

# Cost and outcomes associated with participating in the Community Fireguard Program : Experiences from the Black Saturday bushfires in Victoria, Australia



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## ABSTRACT

There is increasing recognition of the importance of shared responsibility between community and government in supporting community preparedness in disaster risk reduction programs. However, there is limited evidence to support decision making about how best to allocate resources. This paper presents an economic analysis of the Community Fireguard Program coordinated by the Country Fire Authority in Victoria, Australia. The economic analysis evaluates the costs and benefits of the Community Fireguard program (estimated in 2012 Australian dollars) to determine the efficiency of the program in terms of its outcomes of loss of life and property loss in the event of a bushfire. We take a societal perspective, including all costs and benefits regardless of who bears the costs, who receives the benefits or who provides the resources. The analysis uses data from a previous review of the program and estimates of costs and benefits over ten years, assuming each region faces a 10-year risk of major bushfire and the CFG group learnings would last ten years. Totalled over ten years, the cost per Fireguard Group for the program is \$10,884, with a range of \$2697–\$19,071, and in the event of a major bushfire the predicted savings from reduced property loss is \$732,747 and from reduced fatality \$1.4 million. Even if the risk of major bushfire event in a region were one in 100 years, the estimated cost savings in a 100-year period is \$217,116 per group. The value of the psychosocial impacts was not calculated, as quantitative data are currently not available.

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## 1. Introduction

Investment in disaster preparedness is a key element of reducing the physical, emotional and economic impact of disasters [37,48]. Preparedness is listed as one of the four priorities for action in the Sendai Framework for Disaster Risk Reduction [44], and is particularly important given the likelihood of increasing disaster incidence and severity [14]. 'Preparedness' can apply to a wide range of physical and

psychosocial strategies, and can be implemented at different levels from individual, community, organisational, through to societal [18,30]. There is also a chronological aspect. For example, some elements of preparedness will involve ongoing maintenance, some will be time critical, and some will relate to longer term recovery rather than survival of the hazard event. Risk communication messages are often not successful in conveying a common understanding of the recommended preparedness strategies and when they should be implemented [18].

Enhancing the role of community in development and implementation of preparedness programs can increase the cost-effectiveness of the process [2], and the success and positive experience of the outcome [40]. This underpins the shared responsibility model which advocates for individual community members, community organisations, government and agency stakeholders to each contribute to disaster risk reduction [15,17,19,35,46]. However, there is considerable debate about how to implement the 'shared

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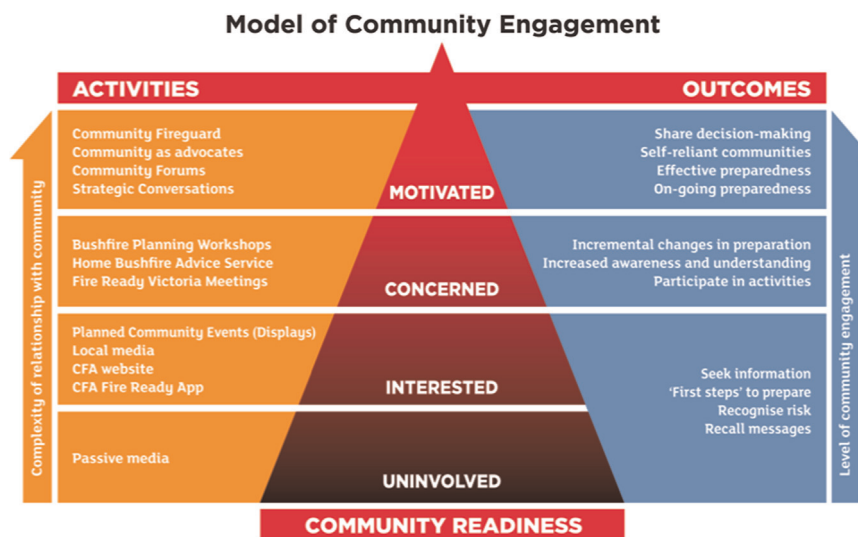


Fig. 1. Model of CFA community programs based on levels of readiness.

responsibility' model because of the challenges in identifying the respective responsibilities, and in achieving connections within and between the different sectors [19].

There is limited empirical evidence about the impact and associated cost benefit of community based programs supporting individual preparedness. This makes decision making about appropriate allocation of program funds challenging. It has been established that provision of information alone about disaster risk and what can be done to manage that risk, does not affect whether people will prepare [38,43]. This demonstrates the importance of community-based preparedness education programs that can enhance knowledge transfer and behaviour change. These then operate as part of the wider range of disaster risk reduction measures addressing the natural, built, social, political and economic infrastructure.

Community members' responses to community-based preparedness education varies depending on their own experiences and circumstances, their outcome expectations, and their understanding of respective responsibility for disaster mitigation [6,22,39,41,42]. There is potential for tension between program participants and non-participants in relation to decisions and actions taken (or not taken) with respect to disaster preparedness and response [31]. These issues highlight the complex requirements of community preparedness education programs and the importance of evaluating their impacts and cost-effectiveness.

The combination of landscape, vegetation, climate and weather conditions in Victoria, Australia makes it highly prone to bushfires [19]. It is estimated that bushfires were responsible for 522 civilian (i.e. non fire fighter) fatalities between 1900 and 2008 [25]. This does not include the 173 lives lost in the Black Saturday bushfires of 2009. The economic costs of bushfires are difficult to determine because of the range of financial impacts and the combination of immediate and ongoing costs. Based on insurable losses only, the Black Friday fire of 1939 is estimated to have cost \$750 million, the 1983 Ash Wednesday fires \$400 million and the 2009 Victorian fires over a billion dollars [5]. The Royal Victorian Bushfires Commission noted the extreme difficulty in quantifying the cost for the 2009 Victorian fires but estimated overall costs would exceed \$4 billion [46].

The long history of bushfires in Victoria has contributed to the development of emergency management policies and services. The Community Fireguard Program was developed by the Victorian Country Fire Authority (CFA) in response to a recognised need for shared responsibility that emerged following the 1983 Ash

Wednesday fires in Victoria, Australia [7].

This paper presents an analysis of the costs and outcomes of the Community Fireguard Program delivered by the CFA in Victoria, Australia, based on Fireguard members' experiences of the Black Saturday bushfires of 2009. We conducted a cost benefit assessment with the aim of measuring the cost of the program against the economic outcomes achieved. This assessment was conducted with the understanding that the CFA have broader responsibilities beyond Community Fireguard, including a range of programs which would all need to be reviewed to ensure their contribution to organisational objectives justifies the use of available resources. This assessment is intended to inform broader debate about program selection in a challenging economic and environmental context.

### 1.1. Program description

At the time of its launch in 1993, Community Fireguard was a new concept that aimed to encourage groups of neighbours to address proactively their bushfire risk. It was the only community education program conducted by the CFA at the time. It is now part of a suite of programs/initiatives designed to increase bushfire safety (see Fig. 1) [16].

The Community Fireguard Program was not conceived as an information dissemination tool but rather as community education, based on [27] adult learning principles [27] which include:

- Adults are internally motivated and self-directed
- Adults bring life experience and knowledge to learning experiences
- Adults are goal orientated
- Adults are relevancy orientated
- Adults are practical
- Adult learners like to be respected.

Community Fireguard was also based on community capacity building principles. The term 'community capacity building' has a range of definitions but for the purposes of this paper is defined as "The development of a set of attributes that enable a community to define, assess, and act on issues they consider to be of importance" [29]. Community-based disaster preparedness programs such as the Community Fireguard program encourage local people to prepare themselves for a bushfire with the support of a facilitator with relevant expertise. This builds the local capacity of the

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