

EFFECTIVE COMMUNICATION OF HOUSEHOLD BUSHFIRE RISK THROUGH WEB-BASED GEOVISUALISATION

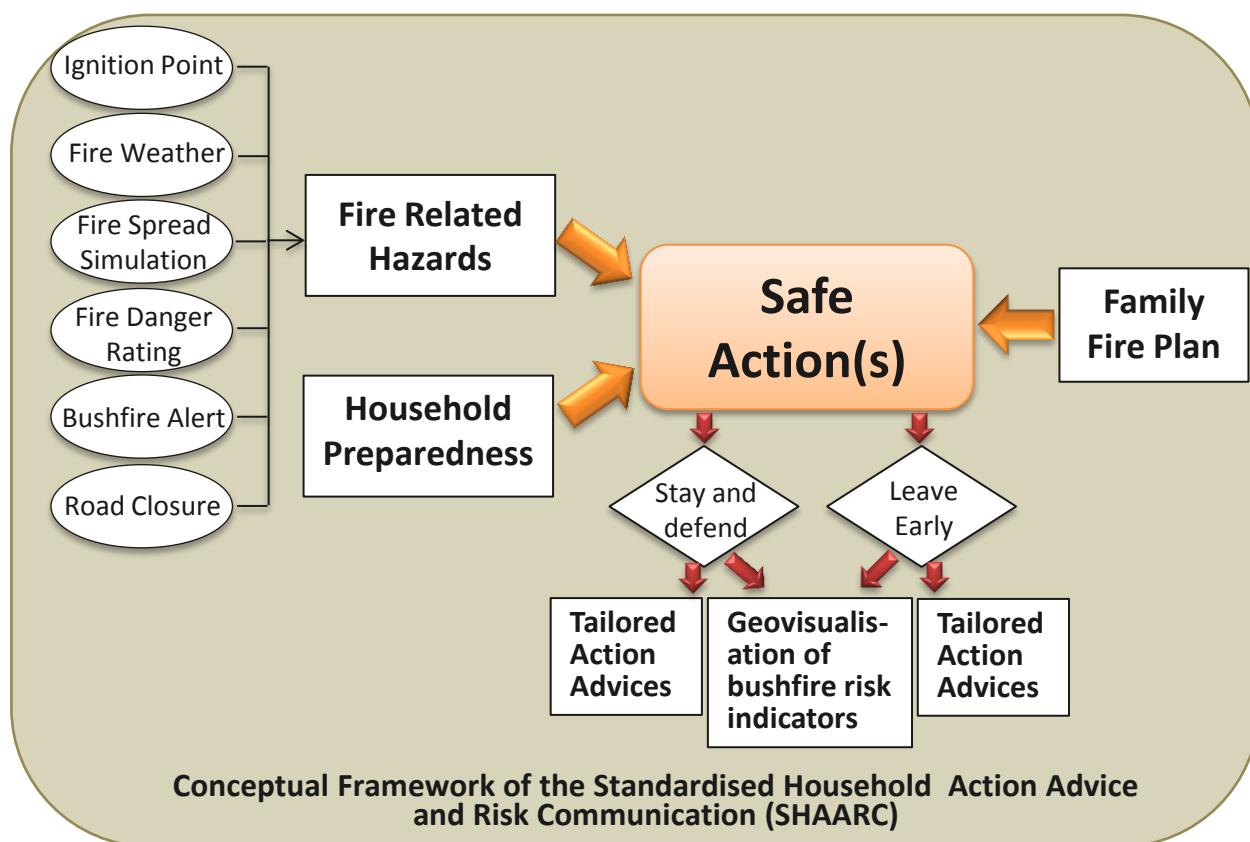
Yinghui Cao¹, Bryan Boruff¹, and Illy McNeill²

¹ School of Earth and Environment, The University of Western Australia, WA ² School of Psychology, The University of Western Australia, WA

Background:

Post-disaster studies of Australian severe fire events (e.g. Whittaker et al. 2009, McLennan and Elliot 2011) have identified that the absence of clear and household relevant risk information is one of the critical factors that undermines householders' decision-making during the onset of a fire threat. Based on the measure of bushfire threat and the predefined household conditions, a WebGIS based model can be used to present household specific bushfire risk information and corresponding action advices efficiently and effectively during a bushfire event. A *Standardised Household Action Advice and Risk Communication (SHAARC)* framework was conceptualised to:

- ❑ allow users to directly perceive their own risk more timely and accurately;
- ❑ promote the choice of appropriate actions under stress; and
- ❑ provide early triggers for safe actions before the fire strikes.



Two Components of SHAARC framework

1. The Household Action Advice Model

- i. What factors are necessary in characterising household-specific risk on a bushfire danger day?
- ii. How should an appropriate action be determined for an individual household based on the relevant bushfire risk indicators?
- iii. How to define the required household preparedness for staying and defending?

2. GeoVisualisation-based communication

- i. How can each element be spatially visualised to effectively enhance residents' risk perception and facilitate proper response?
- ii. Does the communication of tailored action advices enhance residents' risk perception and promote proper response?

Methodologies and Results (to date)

1. Review relevant bushfire community safety policies and research.

- Identified a range of household related bushfire risk indicators;
- Designed an operational decision-tree for a *Household Action Advice Model* to determine the appropriate actions (e.g. stay and defend or leave early) for a household;
- Collected an inclusive checklist of preparatory actions (over 100 in total) from agency-distributed materials.

2. Explore the critical nature of each preparatory actions for staying and defending under different Fire Danger Ratings (FDR) through a survey of bushfire experts across Australia.

- The results from 36 valid responses demonstrated the promise of identifying a list of critical preparatory actions for staying and defending. Householders can only stay and defend if they have completed all the critical actions associated with a given FDR.

3. Conduct a workshop with a taskforce of community fire safety experts to clarify the necessity of the preparatory actions with the aim of defining the preparatory conditions for staying and defending under each Fire Danger Rating level.

- A checklist of critical preparatory actions, non-critical actions and controversial actions were initially identified from the workshop results, and further examined by the taskforce individually in the form of a follow-up survey. The results will provide a national baseline for developing a checklist-type measure of required preparedness for staying and defending.

4. Conduct users' needs assessment with residents of fire prone areas to understand what risk indicators (including the tailored action advices) are important, and what geovisualisation methods are effective in enhancing users' risk perception, facilitating their decision-making process and promoting appropriate responses.