WHY GETTING PEOPLE TO WRITE AN EMERGENCY PLAN MAY NOT BE THE BEST APPROACH

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Abstract

Many government agencies and not-for-profit emergency organisations throughout the world encourage those community members and businesses at risk to write disaster survival or emergency plans. In Australia, community flood education and engagement programs such as FloodSafe promote the preparation of home and business emergency plans. In some cases, agencies use the writing of these plans as an indicator of community preparedness.

There has been little research conducted into the efficacy of personal or business emergency plans, although there is evidence to show that business damages could be reduced by having an emergency plan. On the other hand, some social research into recent disasters such as the 2013 Blue Mountains bushfires has shown low rates of written household emergency plan uptake and usage. In these disasters there were no lives lost, even when the vast majority of people had no written emergency plan. The uptake of written household emergency plans around the world tends to be very low, although extensive resources are used to promote them.

An examination in this paper raises further concerns about focussing on written flood emergency plans including 'leading' responses through a set plan template, the need for the writer to understand the technical subtleties of local flooding, and that the plan may not cover all flood risks and locations that a person may experience.

The paper concludes by examining alternative learning approaches including those that involve safe decision-making in a range of flood scenarios. It promotes the use of social and experiential learning (e.g. community/agency exercises, scenario problem-solving, oral histories, simulation) along with clear warning messaging, as a potentially more effective means of enabling safe responses and resilience.

Introduction

Community flood education and engagement have long been accepted as important measures to help mitigate the impacts of flooding, protect life and property during a flood, and guide the flood recovery process.

In Australia, there are three categories of measures to mitigate the impacts of flooding (Department of Transport and Regional Services, 2002):

1. Flood modification aims to avoid loss by keeping the water away from development. This is the traditional form of mitigation, provided by structural measures (e.g. levees, detention basins, dams) aimed at modifying the flow of floodwater.

2. Property modification aims to avoid or minimise loss by keeping development away from the floodwater using land use planning or building design, siting and materials.
3. Response modification aims to modify human behaviour through activities such as education/engagement, warning systems and preparedness planning.

It has become increasingly apparent that flood modification measures by themselves cannot protect communities in all flood events. As a result, in recent times, the emphasis of floodplain management has moved from the implementation of structural solutions such as levee banks to non-structural solutions such as flood warning, education and land-use management (Victorian Flood Warning Consultative Committee, 2005).

Community education/engagement is now being viewed as an important 'response modification mechanism' to prepare people for flooding and recovery in these situations. Some researchers in emergency and floodplain management believe that improvement in community education/engagement is 'the single most important action that could be taken to improve flood warning and associated response in Australia' (Elliott et al., 2003).

Furthermore, community disaster education and engagement are strongly encouraged in Australia's National Strategy for Disaster Resilience which was adopted by the Council of Australian Governments (COAG) on 13 February 2011.

While the Strategy focuses on priority areas to build disaster resilient communities across Australia, it also recognises that disaster resilience is a shared responsibility for individuals, households, businesses and communities, as well as for governments.

The Strategy (COAG, 2011) identifies seven groups of actions to build community disaster resilience in Australia including those related directly to community disaster education and engagement such as 'communicating with and educating people about risks' and 'empowering individuals and communities to exercise choice and take responsibility'.

The National Strategy for Disaster Resilience Community Engagement Framework (Australian Emergency Management Institute, 2013) provides guidance for those working in emergency management to effectively engage with the community to promote the actions in the Strategy.

The promotion of written emergency plans

As part of disaster preparedness, many government agencies and not-for-profit emergency organisations throughout the world now use community education and engagement to encourage those individuals, families and businesses at risk to write disaster survival or emergency plans. These written plans usually cover precautions that need to be taken prior to an emergency (e.g. have an emergency kit, raise possessions in a flood), and appropriate actions (e.g. evacuation) in response to an event. In some cases, the plans extend to identifying recovery actions.

Many of these organisations provide guiding documents and templates for the writing of emergency plans. For example, the USA's Federal Emergency Management Agency (FEMA) has a 200-page guide 'designed to help the citizens of this nation learn how to protect themselves and their families against all types of hazards' (FEMA, 2004).

There is constant messaging by government emergency agencies and not-for-profit emergency organisations through social media about the need to write an emergency plan. In some cases, agencies use the writing of these plans as an indicator of community preparedness.

In Australia, there is also widespread encouragement for people, families and businesses to have written emergency plans or similar. For example, the NSW Rural Fire Service (RFS) encourages people on its website to write a 'Bush Fire Survival Plan that can help you make important decisions about what to do during a fire - like when to leave, what to take and what to do with animals'. It even provides a MyFirePlan app to help people prepare a plan.

Australian community flood education and engagement programs such as FloodSafe promote the preparation of home and business emergency plans. For example, the NSW State Emergency Service's home emergency plan 'is an interactive tool households can use to plan for floods, storms and tsunami. The plan asks simple questions about where you live and who you may be responsible for. Based on your responses, action lists of what can be done now, just before, during and after floods, storms and tsunami are created'.

There is generally little explanation of the reasons for having such a plan. Some agencies provide brief explanations, for example, the Queensland Government which offers the reason for having a household emergency plan as:

> 'It's important to plan ahead and be prepared so that during an emergency you and your household know what to do, where to go, how to keep in touch with each other and how to contact emergency services as required'. (Department of Community Safety, 2010)

However, there has been little research conducted into the efficacy of household or business emergency plans, although there is evidence to show that business damages are reduced by having an emergency plan. For example, Gissing (2003) found potential benefits of planning related to businesses in Kempsey, NSW. He found that if comprehensive flood action plans had been developed before the flooding of Kempsey in 2001, damage could have been reduced by an estimated 80 percent. A study by Wright (2001) of businesses in suburban Adelaide found lower, but still significant, economic benefits from preparedness measures using pre-planning and education. The study found that nearly 60 percent of the total direct flood loss exposure could be reduced by mitigation and emergency planning measures.

This paper will focus on some concerns with using written personal and household emergency plans as the endpoint or sole outcome of community flood education and engagement programs. It will not discuss the value of business or other sector emergency plans. The reason for this focus is that personal and household emergency plans usually relate to the majority of properties and all people living in a floodplain. Moreover, the business emergency plans primarily aim to minimise damage and regain function, whilst the household plans aim mainly for personal safety.

Concerns with written home emergency plans

There are some theoretical and practical concerns about relying on personal and household emergency plans for community preparedness and response.

1. Emergency services appear to assume that if each individual carries out appropriate precaution and response actions the community will be safe (and resilient). This will lessen the burden on search and rescue capacity during an emergency.

However, this perception of 'many individual actions make light work' is not strongly supported by sociological research into disasters. This research shows the added importance of 'social capital' – the bonds between people, not only families – in aiding response and recovery.

> 'Examples abound in the disaster literature that support the basic contention that people with strong networks and relationships fare better within all phases of the hazard cycle from planning to reconstruction'. (Murphy, 2007)

The response phase presents the most socially complex phase of the disaster spectrum (Dynes, 1991). Disasters usually affect entire communities or large segments of social units and are present when the established social systems of the community abruptly cease to operate. Social systems continue to operate while new ones emerge because they have greatest knowledge of the community, and because they need to initiate response (the community as first responders) and recovery themselves as many of their needs will not be met by outside agencies.

Haines, Hurlbert and Beggs actually found that disaster victims and their social networks mostly become resources (1996). For example, a study of the Flint-Beecher tornado of 1953 showed that most of the 927 casualties were rescued by spontaneous local rescue groups. These informal teams tended to be based on some previously existing social relationship in the community, such as the family, the neighbourhood, the school, friendship bonds and work associations (Form et al., 1956).

The formation and use of social capital in a flood event is not normally encouraged in written emergency plans.

2. There is an assumption that all individuals and families are capable to write, update and implement a flood emergency plan. This assumption does not take into account vulnerable people that may not be able to write a plan or feel that they are unable to execute such a plan. According to Howard, Blakemore and Bevis (2014):

> 'The international and local literature emphasizes that natural disaster risk is elevated for particular groups in the community. These include people with a low income, families with young children, elderly populations, people with a disability and Culturally and Linguistically Diverse (CALD) community groups. These groups are at increased risk due to limitations in their access to, and control over resources and capacities essential to plan, prepare and recover from disaster.'

Even the customary preparation of the emergency kit as part of the emergency planning may be difficult for some people. For example, research from the US shows that many low-income urban residents lack sufficient funds or even the storage space to maintain an adequately stocked disaster kit (Eisenman et al., 2009).

3. A robust flood emergency plan should include planned responses related to flood warning lead times and river heights. Some home flood emergency plan templates provided in Australia do not require 'triggers' (e.g. gauge levels) for personal and family response action, although it could be argued that this information is crucial to taking early, informed action including raising belongings and self-evacuating.

However, people may find it difficult to identify these triggers for action due to the availability and technical difficulty of the flood information e.g. in floodplain management plans, local council emergency plans. In some catchments, this information is provided and interpreted in FloodSafe or similar flood education guides.

4. For flash flooding – flooding with a warning lead time of less than six hours (Bureau of Meteorology, 1996) – safe response may be counterintuitive to the concept of a 'home' emergency or safety plan. According to Haynes et al. (2009), some flood-related deaths in Australia (25% of the total) occur among people trapped inside buildings. Details are not well documented and these deaths could be the result of the building filling with flood water to a depth occupants cannot survive, or because those trapped inside are swept away when the building fails.

> 'For these reasons, remaining in buildings likely to be affected by flash flooding is not low risk and should never be a default strategy for pre-incident planning or incident action planning, even if the buildings are considered likely to withstand the impact of flash flooding. Where the available warning time and resources permit, evacuation should be the primary response strategy'. (Australasian Fire and Emergency Service Authorities Council, 2013)

To include in their home emergency plan the need for early self-evacuation for flash flooding, rather than shelter-in-place ('entrapment') in the home, may be difficult for individuals and families that could perceive the home as a safe place. However, evacuation too late may be worse than not evacuating at all because of the dangers inherent in moving through flood waters, particularly fast-moving flash flood waters.

Also evidence from some flash flood events such as the 2007 Newcastle NSW floods has shown the tendency of people to want to return through floodwaters to the supposed safety of home and to be with family (Molino Stewart, 2007). Again, it could be difficult for people to negate this 'homing instinct', and understand and plan for staying out of floodwaters until they quickly recede.

5. The emergency plan templates lead users through a generic set series of questions provided by emergency organisations. However, disasters do not follow preordained scripts. There is a saying in the flood industry that 'no two floods are alike' at a particular location. Even in situations where there is extensive flood experience and local knowledge, those seeking to respond invariably confront unforeseen situations.

Adherence to a set emergency plan may not allow individuals and households to develop new courses of action, bring to bear new resources, or combine actions and resources in new ways. According to Tierney (2014):

> 'Disaster plans often turn out to be inadequate in light of the effort that responding requires; resources that were counted on are destroyed by the disaster itself or fail to materialise; new and unexpected dangers emerge. Even in cases where planning activities have been sound and extensive, surprises emerge that call for improvisation and creativity.'

6. Home emergency plans do not cover locations away from the home where there have been most flood deaths. According to a Queensland University of Technology (QUT) study, use of a motor vehicle was involved in almost half (48.5 per cent) of the 73 deaths found to be directly related to flooding in Australia from 1997 to 2008 (Queensland University of Technology, 2010).

The study also found that more than 90 per cent of the flood-related deaths resulted from individual choices to either engage in inappropriate risk-taking or enter flooded waterways on foot or in a vehicle. Most were not trapped by floods.

According to Haynes et al. (2009), up to 75% of flash flood deaths in Australia occur while people are outside buildings attempting to leave or return, and directly exposed to floodwater.

Some agencies such as FEMA have attempted to cover some away from home situations with plans, including a commuter emergency plan and linking with school and workplace plans (FEMA, 2015).

7. Only a small percentage of flood-affected residents in Australia have written home emergency plans. For example, seventeen percent of people from catchments in the regularly-flooded North Coast of NSW said they had a flood emergency plan when surveyed after the 2009 floods (Molino Stewart, 2010). Only 9.1 percent of respondents surveyed after the 2012 floods in the north-east of Victoria said they had prepared a written emergency plan for their household (Office of the Emergency Services Commissioner, 2012a). Only 8 per cent of the respondents surveyed after the 2012 Gippsland, Victoria floods had prepared a written plan for their household (Office of the Emergency Services Commissioner, 2012b).

Validation investigations by this author related to some of this social research has shown that the actual levels may be up to half of that self-reported in the surveys.

Even for bushfires, where there have been large resources expended promoting written bushfire survival plans, there are relatively low levels of written plans. For example, in social research related to residents impacted by the devastating 2013 Blue Mountains NSW fires, only seven percent indicated that they had a written bushfire plan. 'This low figure is consistent with that found in other comparable studies' (Wright et al., 2014).

Discussion

This is not the first attempt at questioning the direction of disaster education and engagement including the desired endpoint of written emergency plans. For example, for the United States, Usher-Pines et al. (2012) posit 'that the biggest problem with the existing approach to citizen preparedness is that the entire effort relies on largely untested and therefore unverified assumptions'. These authors add that:

> 'Despite extensive messaging about the importance of citizen preparedness and countless household surveys purporting to track the preparedness activities of individuals and households, the role individual Americans are being asked to play is largely based on conventional wisdom. We argue that if the assumptions that underlie current efforts to boost citizen preparedness are faulty, they will not strengthen national preparedness; in fact, they could undermine it.' (Usher-Pines et al., 2012)

Similarly, there is a need to further test the assumptions underlying the promotion of written home flood emergency plans in Australia. This should include evaluating whether or not having a written emergency plan leads to safe and resilient decisions during and after a flood event.

Another underlying issue for household emergency plans is the acceptance of 'shared responsibility' promoted in Australia's National Strategy for Disaster Resilience. The Victorian Bushfires Royal Commission in its Final Report (2010) uses the expression 'shared responsibility' to mean:

> ‘increased responsibility for all. It recommends that state agencies and municipal councils adopt increased or improved protective, emergency management and advisory roles. In turn, communities, individuals and households need to take greater responsibility for their own safety and to act on advice and other cues given to them before and on the day of a bushfire.’

What does shared responsibility mean in practice and how is it manifested in household emergency plans? At this stage, there appears to be little done in Australia to relate the two. Research by McLennan and Handmer (2013) based on a stakeholder workshop found that sharing responsibility for disaster resilience was primarily perceived as sharing control.

> ‘Collectively, government and community/NGO speakers at the workshop emphasised that in order for parties in these two stakeholder groups to share responsibility for disaster resilience, they must also share control over risk management decisions, actions and processes’. (McLennan and Handmer, 2013)

This may mean that the expected roles of citizens need to be re-thought in household emergency plans. For example, they should acknowledge and encourage the role of citizens in helping others in an emergency. According to Craig Fugate, administrator of FEMA, ‘Neighbours are almost always the most effective and immediate first responders’ (Fugate, 2009). Efforts for citizen preparedness should therefore ‘extend to promoting bystander involvement and community action in the face of shared threats’ Usher-Pines et al. (2012).

The very low levels of written emergency plans are consistent with higher but still relatively low levels of preparedness based on other measures such as hazard knowledge, property protection, life safety protection and insurance cover (Sutton and Tierney, 2006).

Several researchers have identified barriers to the uptake of preparedness behaviours such as writing an emergency plan. For example, through a comprehensive literature review, Finnis (2004) identified the following barriers to the uptake of these behaviours:

- Risk perception - where people do not internalise the risk of a hazard (‘That event is never going to happen’)
- Unrealistic optimism – the illusion of personal invulnerability that can cause a denial of risk (‘It’s never going to happen to me’)
- Response efficacy – people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. (‘I don’t have the time/money/skill to prepare’, ‘There are more important things to think about’, ‘I can’t be bothered’)
- Outcome expectancy – the perception of whether personal action will effectively mitigate or reduce a problem or threat (‘No amount of preparedness will help’)
- Normalisation bias – Viewing a hazard as a common event that will not vary in impact (‘XXX has floods all the time, and I survived those’)
- External locus of control – people believe that forces outside of their control are the ruling forces (‘Disasters are an Act of God’, ‘If it is meant to happen…’)
- Transfer of responsibility – believing that others are responsible for preparedness and response (‘The emergency agency will be there to help me’)

A better approach?

Although there are barriers to any type of preparedness, a better and more realistic approach to flood preparedness education and engagement that encourages situational awareness and safe decision-making could include:

1. Regular communication from emergency agencies that people should stay out of floodwaters, if possible. This should not only be relayed as it is with flood warning messages but also during quiescent times. It should include the sub-messages of 'not driving, walking etc. through floodwaters' and also the idea of early evacuation particularly for flash flooding scenarios. As noted above, safe decisions relating to these risks will help ensure minimise deaths and injuries.

2. Social learning in communities across groups that encourage people to form social capital and help each other, and particularly the vulnerable in the community, during and after floods. The social learning activities could include post-disaster community meetings, resilience forums, workshops, 'meet-the-street' events and world cafes (Dufty, 2014).

3. Experiential learning where people are provided with 'experiences' to think through how they will respond to a range of flood scenarios. Knowledge of triggers for action (e.g. certain gauge heights) is an important learning outcome from this process. Examples of this type of learning include gaming, simulations, virtual reality training, community/agency exercising and problem-solving workshops (Dufty, 2014). The use of oral histories and memories of past flooding can be used to help people learn how to prepare and respond to future floods (McEwen et al., 2012).

4. Tailored learning to different preparedness psychological profiles in the community. Dufty, Taylor and Stevens (2012) identified three main psychological profiles for people living in flood-affected communities. Each has different learning needs and thus community flood education and engagement should provide for each profile and not a 'one-size-fits-all' approach.

5. Reflection and pre-planning. Although written emergency plans may not be well supported by communities, it is useful for people to reflect by themselves and together on what they would do in response to flood warnings. This informal planning appears to have been an important safety factor in recent bushfires in Australia. Of the residents impacted by the 2013 Blue Mountains fires (where 200 homes were destroyed but no lives lost), 83 percent were able to describe their pre-fire plan, although only seven percent indicated that they had a written bushfire plan. One-third of residents intended to stay and defend their properties (Wright et al., 2014).

As with written emergency plans, there is a need to evaluate this approach and its suggested methods. The evaluation should not only include assessment of the uptake of such preparedness activities, but also their appropriateness and effectiveness in a flood event.

Conclusion

From the above examination, there are concerns with the current direction of flood education and engagement programs that encourages the writing of emergency plans as the main preparedness activity for individuals and households.

These plans do not:

- Encourage people to form and utilise social capital – a proven way of improving disaster response and recovery.
- Help all vulnerable people and groups prepare for a flood.
- Always include triggers for appropriate responses related to flood gauge heights and flood warning lead times.
- For flash flooding, encourage people to self-evacuate early and not 'shelter-in-place' if possible.
- Help people to think of a range of flood scenarios that may impact on them and how they can adapt to each.
- Cover out-of-home situations where decision-making is most risky.

Also, the concept of 'shared responsibility' promoted by the Australian Government appears to be not well incorporated within household emergency plan templates.

A better approach is suggested based on available evidence which includes:

- Clear messaging about staying out of floodwaters
- Social learning to help form social capital and to help others during and after a flood event
- Learning that help people 'experience' and think about how to respond to flood scenarios
- Tailored learning to different psychological profiles
- Reflection to decide on preparations and responses to a flood including triggers for actions.

It is strongly recommended that emergency organisations evaluate all community education and engagement programs to see which ones are the most appropriate and effective.

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