FLOOD RISK COMMUNICATION RESEARCH INTO PRACTICE BRIEF 3 APRIL 2020

When is water on the roads dangerous?

Perspectives of emergency service professionals

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Statement of purpose: The Research into Practice Brief series provides concise summaries of research findings for end-users and practitioners. This brief provides an overview of interviews conducted with emergency services professionals who communicate about flood risk. The professionals represent State Emergency Services in each jurisdiction around Australia.

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BACKGROUND

Risk communication can be defined as "communication intended to supply lay people with the information they need to make informed, independent judgments about risks to health, safety, and the environment" (Morgan et al., 2001: 4). The effectiveness of risk communication in terms of reducing risky or unsafe behaviours is influenced by a range of factors, including the extent to which experts and publics have a shared understanding of the risks at hand (Smillie and Blissett, 2010). In this brief we explore the perspectives of emergency service professionals who communicate about flood risks. The aim of this study was to understand their views on the risks associated with water on roads and how this could be reduced.

Although flood risk campaigns in Australia advise the public to never enter floodwater (e.g., "If it's flooded, forget it"), there is evidence that the public continues to enter floodwater in vehicles and on foot. This is suggestive of both the importance and challenge of flood risk communication (Taylor et al., 2019). Indeed, analysis of fatalities caused by natural hazards in Australia shows that floods are the second most deadly natural hazard in Australia (following heatwaves) in terms of the total number of fatalities 1900-2015, and that entering floodwaters in a vehicle, particularly in 4WDs, is an increasingly common high-risk behaviour (Haynes et al., 2017). Understanding the perspectives of emergency service professionals who communicate about flood risks provides a foundation for exploring similarities and differences in the understandings of flood risk and the acceptability of entering floodwater held by emergency service professionals and communities (Boase et al., 2017; Bruine de Bruin and Bostrom, 2013).

METHODS

In this study a modified version of the mental models research approach to risk communication (MMARC) was used to conduct the interviews (Morgan et al., 2001). This approach is "based on the idea that people's views of a concept are based on a complex web of information, drawn from personal experience and external sources" (Boase et al., 2017: 2133); that is, people's views are based on their "mental model" of a concept. Understanding the "mental models" of hazards and risks held by different groups (e.g., professionals and communities) provides a useful foundation for more effective risk communication (Morgan et al., 2001). Interviews are semi-structured and use open-ended questions and prompting to elicit participants' perspectives on a given topic and to encourage them to elaborate their ideas without constraints (Morgan et al., 2001). The sample for this study consisted of 10 emergency service professionals who were from state emergency services in each jurisdiction around Australia. All interviewees were staff in roles that focus on community engagement. Interviews were between 30 and 90 minutes in duration and focused on the topic of entering floodwater. To provide some preliminary insights to the key themes emerging from these interviews, an inductive analysis was conducted (Thomas, 2006). The findings related to two key themes in this initial analysis, water on roads and risk and risk perception and communication, are presented within this brief. The findings from the full MMARC analysis, that will include a comparative analysis of 18 interviews conducted with members of the public, will be presented in an academic publication.

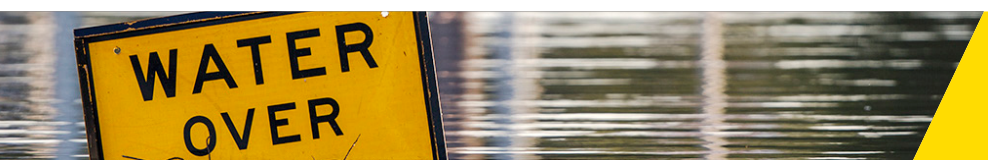
WATER ON ROADS AND RISK

Interviewees described a range of variables and factors that make the water "dangerous" and that they would use to assess the level of risk attached to entering the water in a vehicle. These included the depth and flow of the water, presence of debris (or animals) in the water, visibility of the road, type of road, familiarity with the location, cause and type of flooding, as well as the characteristics of the vehicle being driven, among others. Interviewees suggested that it is difficult for drivers to accurately assess the risk posed by water on the road precisely because there are so many variables that influence the risk, some of which cannot be readily seen when encountering floodwater:

> *Well, every flood is different. You can't predict... the behaviour of flood, hence [you can't estimate] the risk straightaway. You don't know...the force or the power or the danger of the water because it is dirty. You can't see what's happening underneath it. (Interview 7)*

This complexity also makes it difficult to generalise the danger posed by water on the roads:

> *So, there's a lot of variables and there are lots of examples where [driving into water on the road] is very dangerous, and I think there's equally as many examples as to where it can be – I wouldn't say necessarily safe but calculated risk and undertaken safely. (Interview 5)*



The majority of interviewees cited their professional role, experiences, and anecdotes as key to informing their understanding and perception of the risk, and their behaviour. For example:

> *So being an emergency services employee, I probably view floodwater in a very different way than what the general public do and as such would not enter floodwater at all. The reason for that is because of the amount of exposure I've had to the issue of floodwater. I think about things that many members of the public wouldn't... The flooding in [town] many years ago, a mother and her son lost their lives... and when you are exposed to stories like that, it has a lasting impression on your thought processes. (Interview 3)*

> *Yeah, I guess being in the industry, I understand that [the risk of floodwater on roads], I get that. And because I have good understanding of it over so many years, I wouldn't drive through floodwater. I wouldn't risk it. But it's because I'm in it. I live it and breathe it, and I understand the risks... It's not something that I've just seen on a television ad or a radio PSA or something. (Interview 7)*

Image: New South Wales State Emergency Service

RISK PERCEPTION AND COMMUNICATION

Although many variables affect the level of risk posed by water on roads, interviewees argued that the safest advice for the public is to never enter floodwater. This reflects concern that any advice related to how to drive through floodwater may encourage more drivers to take risks and may produce organisational and reputational risks:

> *...everyone wants to know like "how do I do it safely?"... but [giving advice about how to drive through floodwater safely] does go against what we try and tell people because we don't want to give people permission to do [it]. We don't want to give people permission and say, "look, here's a list of instructions about if you're going to do this, do as we say," because if something was to happen, like we never wanted people to enter the water. It's a tricky one. (Interview 4)*

> *From where we sit though, to start talking about the depth of water, velocity of water, the power of water, you've automatically complicated the issue and you've left it to the individual out there to assess whether they're safe or not, if they're going to drive into the floodwater. So, once you start having that conversation, it's a no-go for us. It's much easier just to say, "never enter floodwater no matter what – drive, ride, walk, play, whatever, fly – don't go into floodwater," is an easier message that we can communicate, easier for people to digest and understand... And I tend to think the more we complicate the floodwater risk, the more questions people start to ask themselves to justify actually entering the water in the first place. (Interview 7)*

Interviewees suggested that one of the major challenges is changing people's awareness and perception of the risk:

> *I think there is a gap between what the community's perception of the risk is and what the actual risk is (Interview 1)*

> *...when people talk about flooding or driving through flooded water, that doesn't necessarily elicit the same kind of feel that, say, driving through fire does. Flood is not seen as a risk in that same way which is an obstacle for people. (Interview 4)*

> *It needs to start with the risk awareness. We need to increase people's understanding of their risks to floodwaters and that's severely lacking, we know that people might know the risks somewhat, but dismiss them, because it's the whole, "it won't happen to me." (Interview 6)*

> *In general, people don't understand it. They don't frown upon it. It's not something that they see as a real bad thing. (Interview 7)*

Indeed, in some states and territories water on the roads in remote and regional areas is almost a "part of the life" such that current advice to never enter is "ignored" (Interview 6) and it would be difficult to prevent people driving through water on the roads:

> *[There] are a lot of roads around here that are flooded for most of the year, but they're pretty safe to get through as long as you know what you're doing. And it gets pretty hard to get around [our*

jurisdiction] if you weren't allowed to cross, for instance, the more remote communities that get blocked off completely by these flooded roads. (Interview 10)

Given this context, interviewees discussed the importance of not just campaigns, but also local and contextualised advice, and longer-term behavioural and cultural change in relation to how the public interacts with floodwater:

Where the default thought goes through someone's mind is, "no, I should not drive through floodwater," that would be the long-term outcomes that you'd be looking for. And we've seen them with smoking, we've seen it with other campaigns, where long-term thinking needs to change and that would be the aim of something like the campaigns that you see because there're always people that make excuses about driving through floodwater. The long-term changing thinking will see that eliminated over time. (Interview 3)

IMPLICATIONS

These findings highlight the complexity of understanding and communicating the risk of water on roads. This complexity arises from the many variables that influence how dangerous any instance of floodwater on a road is, and the reality that in regional and remote areas driving through floodwater is 'a part of life.' A major challenge identified by interviewees is that risk is underestimated by the public, particularly in comparison to other hazards (e.g., fires). Given this, top-down campaign messaging is considered important, but localised engagement and long-term culture change are considered critical to reducing the number of drivers who attempt to drive through dangerous floodwater.

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FLOOD RISK COMMUNICATION

This research is funded by the Bushfire and Natural Hazards CRC and is led by Dr Mel Taylor. This project will develop an understanding of the motivations, beliefs, decision making processes and information needs of at-risk groups for flood fatalities, specifically those who drive or recreate in floodwater.

For more information, please see: www.bnhcrc.com.au/research/floodriskcomms

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