DECIDING TO DRIVE THROUGH FLOODWATER

A qualitative analysis through the lived experience

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Royal Life Saving is a public benevolent institution (PBI) dedicated to reducing drowning and turning everyday people into everyday community lifesavers. We achieve this through: advocacy, education, training, health promotion, aquatic risk management, community development, research, sport, leadership and participation and international networks.

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Royal Life Saving Society – Australia
The drowning prevention research of the Royal Life Saving Society – Australia is proudly supported by the Australian Government.

Australian Government

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Drowning deaths known to have involved flooding across Australia, between 2004/05 and 2014/15.

Over half of these were known to be as a result of driving through floodwaters.

IN A QUALITATIVE STUDY OF PEOPLE WHO HAD PREVIOUSLY DRIVEN THROUGH FLOODWATERS COMMON THEMES BEHIND THE DECISION MADE WERE REVEALED:

Past experience
- Having successfully driven through floodwaters in the past

Individual perceptions
- Pressure to arrive at the destination
- Situation perceived to be different to warnings
- Avoiding the potential to become stranded
- Lack of appeal of alternatives (such as alternative routes)

Social and environmental context
- Pressure from other drivers to go through
- Encouragement from others in the car that they could make it
- A sense of security that there were others there to rescue them if something went wrong
- Witnessing other motorists successfully drive through

Self-efficacy judgments
- Believing they had the skills and knowledge to drive through safely
- Belief in their ability to assess and mitigate the risks posed by floodwaters
- Belief in the ability of their vehicle (e.g. 4wd, presence of snorkel, diesel powered)

Driving through floodwaters is not worth the risk.
The findings of this study will be used to develop evidence based interventions aimed at reducing the prevalence of driving through flooded waterways and ultimately save lives.
EXECUTIVE SUMMARY

More than half of unintentional flood-related drowning deaths in Australia are due to driving through floodwater. Currently, there is a critical knowledge gap in understanding why individuals choose to drive through floodwater and the decisions that may lead to such actions. We propose that a more complete understanding of individuals’ decisions to drive through floodwater needs to be considered in the context of the lived experience.

Australian drivers (N=20) who had intentionally driven through floodwater participated in semi-structured interviews. Data were analysed using a thematic analysis. Participants were community members from New South Wales and Queensland, Australia who held a current driver’s license and who had driven through a flooded road in the past three years (after the launch of the “If it’s flooded, forget it” campaign). Ten males and 10 females (N = 20) ranging in age from 19 to 64 years (Mage = 23.94; SDage = 14.25) were recruited using social media, snowballing techniques, and media releases in newspapers and online/websites.

Interviews were conducted with participants using questions designed to stimulate discussion regarding their thoughts in the prelude to driving through the flooded waterway and their experiences of the actual event. Interviews were conducted by telephone or in-person at the drivers’ convenience (average length=30 minutes). Drivers were free to speak at length with minimal interruption other than prompting for clarification.

The current study received ethical approval from the Griffith University Human Research Ethics Committee (reference # PSY/A9/15/HREC).

Four overarching themes emerged in the driver’s descriptions of factors that influenced their decision to drive through flooded waterways. These were: past experience (e.g. successfully having driven through floodwaters before), individual factors (e.g. situation perceived as different to warnings), the social environment context (e.g. pressure and encouragement from others, seeing other motorists driving through) and self-efficacy judgements (belief in one’s own ability to successfully drive through floodwaters).

Past experience

It was common among drivers with previous experience of driving through floodwater to report they had the ability to make a reliable risk assessment which led to an informed decision regarding whether it was safe to drive through a flooded waterway. In addition to the perceived ability to make an informed decision, it was also commonly described that having previously driven through floodwater afforded the experience necessary to safely drive through floodwater in the current situation. Despite the assessment at the time that the skills of driving through floodwater attained through past experience are transferable, following the incident a number of drivers described that this is often not the case given the uncertainty of conditions and lack of safety precautions in place.

Individual perceptions

Pressure to arrive at the destination

The theme emerged in driver descriptions that often there was a strong external pressure felt to arrive at their destination. The pressure that was most commonly described was the pressure to get home to check on the welfare of their family, home, and pets given the severe weather events taking place. Another commonly reported pressure was the perceived need to get to work, which has been described as compelling the driver to take substantial risks. This pressure was described as deriving more from internal rather than external influences in that the need to get to work was placed more upon one’s self rather than from a supervisor or manager, and given the adverse weather it was acknowledged that their absence would likely have been excused or relatively inconsequential.

Situations perceived as different to warnings

The theme also emerged that a number of drivers’ perceived the circumstances through which they drove through floodwater to be different to current government messages such as “If it’s flooded, forget it” and media reports of incidents. A number of drivers also reported lack of agreement with, or a lack of clarity regarding, what constitutes a flooded road as outlined by current safety messages. This prompted the need to confirm what flooded really means, particularly with respect to water depth.

Avoiding the potential to become stranded

The theme also emerged that many drivers made the decision to take the risk of driving through floodwater based on the perception that they were likely to become stranded for an extended period if they did not drive through. One driver also described that although comfortable with the alternative option, it became less desirable due to the potential for it to become particularly enduring (e.g. not being able to get home for three days due to being stranded).
Lack of appeal of alternatives
A number of drivers also reported that taking alternate routes were not appealing due to a number of factors including adding extra time to their journey, finding alternative routes were also flooded, and to avoid sleeping in the car for an extended period of time. While these descriptions indicate a deliberate consideration of alternatives (even if their appeal is minimised in this process) and driving through the floodwater, a small number of the drivers described a more impulsive and spontaneous decision making process where they just continued driving through the water without giving much thought to what they were doing.

Social and environmental context

Social influences: pressure, encouragement, and a sense of security
Another theme that emerged from drivers’ descriptions was that there was a pressure placed on them from others, and in particular other motorists, to drive through the water. While many drivers reported pressure to drive through the floodwater, a number reported experiencing a more positively framed ‘encouragement’ from significant others to drive through the flooded waterway. A number of drivers also described the experience of a sense of security being felt due to the presence of other people who would have the potential to rescue them if something was to happen.

Other motorists driving through
A theme emerged in the descriptions of many drivers that their decision to drive through the floodwater was heavily influenced by other motorists driving through the water before them. Based on driver accounts, it was clear that observing others’ success in driving through the floodwater was enough evidence for them to not weigh up the risks for themselves. It was also described that seeing others in front go through the water led to the appraisal that the behaviour was less risky than it otherwise would have been.

Perceived environmental conditions
The majority of drivers indicated that fast-flowing water should not be driven into and would likely prevent them making the decision to drive through. The depth of water was also perceived to be important with some drivers reporting that they feel comfortable driving through water up to a certain depth (e.g. 20cm of water in a four wheel drive), but were limited in explaining how they assess the depth.

The type and length of crossing were also perceived to be important. One driver described that the risk was perceived as being lower due to there not being anywhere for the vehicle to be washed off the causeway, the crossing was short, the other side was visible or familiarity with the location. Although many respondents stated they would be unlikely to drive through floodwaters with loved ones (particularly children) in the car, some drivers did drive through with such people in the car.

Self-efficacy judgements

Skills and knowledge
Often described as a key component in deriving the efficacy to safely cross the floodwater were the skills and knowledge attained from past experience. In addition, drivers often described the use of techniques for driving through floodwater or for making an assessment of the conditions. The techniques were stated to have been provided to them by trusted others.

Perceived ability to assess and mitigate risk
Drivers often made an assessment of the risk based on the conditions (e.g., speed of current, depth of water, objects in water, degradation of road). Conditions were reported to be checked either by visual observation of objects in the water or by actually walking through the water. Water depth was commonly identified as a condition examined prior to driving through the floodwater, but this assessment was often subjective with limited means described in assessing actual depth.

Vehicle efficacy beliefs
Many drivers also reported that they perceived their vehicle to be capable of driving through the water, particularly four wheel drives or diesel powered vehicles, even without prior experience of driving a four wheel drive through floodwaters.

Another driver described that the assessed depth of the water entered was within the vehicle manufacturer’s approved wading depth (the maximum driving depth of water approved by the manufacturer for the specific vehicle); however, the problem arose when the water was deeper than anticipated.

Most salient was that although there was a common awareness of the risk posed by driving through flooded waterways, the decision to take this risk emerged as being heavily reliant on one’s ability to construct a sense of self-efficacy in the lead-up to the incident. However, this sense of self-efficacy was often a misrepresentation.

Themes are visually mapped in Figure 1.
Figure 1: Thematic map of influences on decisions to drive through flooded waterways from Hamilton K, Peden AE, Keech JJ & Hagger MS (under review). Driving through floodwater: exploring driver decisions through the lived experience.

- Pressure to arrive at destination (home or work)
- Situation perceived as different to warnings
- Lack of clarity regarding what guidelines refer to
- Avoiding the potential to become stranded
- Lack of appeal of alternatives

- Social influences; pressure, encouragement, and sense of security
- Other motorists driving through
- Perceived environmental conditions

- Experience affords ability to make reliable risk assessment
- Experience affords ability to drive through more safely
- Experience perceived to be transferable to current situation

- Skills and knowledge
- Perceived ability to assess and mitigate risk
- Vehicle efficacy beliefs
CONCLUSION

This study is the first to explore drivers’ descriptions of the influences on their decision to drive through a road covered in water. Through inductive analyses of interviews in which drivers provided rich in-depth descriptions of their lived experience, the current study was able to isolate a range of commonly occurring themes which will be instrumental in planning future research and interventions aimed at reducing the prevalence of this risky behaviour.

In summary, it was identified that the overarching influences on driver decision-making were value placed on successful past experiences, individual deliberative motivational and impulsive influences, social and environmental context, and judgements of self-efficacy. It is recommended that future research further explore the identified influences on driver decision making, and target these influences in developing evidence based interventions aimed at reducing the prevalence of driving through flooded waterways. These findings can also be utilised to develop public education materials and prevention programs aimed at road users.

DID YOU KNOW?

• Between 2004/05 and 2014/15, there were 159 drowning deaths known to have involved flooding across Australia.

• Driving through floodwater still accounts for more than half (53%) of unintentional flood-related drowning deaths in Australia.

• In a qualitative study interviewing people who self-reported previously driving through floodwater, past experience, individual perceptions and the social and environmental context emerged as important influences on driver decision-making.

• Despite risk awareness, decisions were heavily reliant on the driver’s ability to construct self-efficacy in the lead up to the incident, i.e. beliefs that they would successfully be able to cross due to previous successful attempts, capability of vehicle, presence of potential rescuers, conditions being favourable to a crossing.

• Method of assessing conditions often varied but regularly did not accurately reflect the conditions once the respondent was driving through. These constructions of self-efficacy were often based on false beliefs and the method of assessing conditions often varied but regularly did not accurately reflect the conditions once the respondent was driving through.

• This study is the first to explore drivers’ descriptions of the influences on their decision to drive through a road covered in water.

• It is recommended that future research further explore the identified influences on driver decision making, and target these influences in developing evidence based interventions aimed at reducing the prevalence of driving through flooded waterways.
Policy, Programs and Advocacy

- Findings on behavioural aspects behind people’s decision making processes to be embedded into flood safety resources and public awareness materials such as fact sheets, video infographics, social media messaging and messaging through mainstream media campaigns as well as Royal Life Saving’s national Respect the River program
  - Messages should encourage drivers to turn around and go the other way so as to remove themselves from the situation containing the normative social influence. This could include stopping and calling emergency services if unable to turn around. It is important to encourage people to change their behaviour in the face of social pressure to drive through floodwater
  - This includes advocating for such information to be taught in learner driver education courses to instill a norm about this behaviour
  - Messages should provide information to drivers that risk and depth are often misjudged, even when the driver has experienced driving through floodwater before
  - Messages should encourage drivers to consider their moral obligations in thinking about the potential risk they are exposing bystanders and emergency services personnel to
  - Disseminate more widely, information on the depth of water needed to float most four wheel drives (600mm) to owners and drivers of such vehicles
  - Target these messages at those high risk groups drawn from the fatal drowning data as well as those groups known for risky driving behaviours based on optimism bias (e.g. young males)
  - Clarify the meaning of the term flooded and use consistent definitions and terminology when communicating with the driving public (e.g. should 10cm deep water in a four wheel drive not be entered into?)
  - Advocate for the inclusion of cues to action be made readily available in the environment within which the behaviour occurs
    - Cues could take the form of a reminder on the back of a car registration label, a small sticker people can place near the four-wheel drive activation button in their vehicle, or clear signs that indicate the danger placed in sections of roads prone to flooding
    - Examine feasibility of utilisation of emergency notification services which can provide messages to cellular mobile phones to warn of impending risks
  - Work with authorities responsible to promoting safe driving behaviours should develop readily available resources such as smartphone applications, websites, and fridge magnets where drivers can make a plan and store it in a proximal location
    - These messages should reduce the impact of the internal pressures felt by those driving during adverse weather. Messages should encourage drivers to preemptively plan steps they need to take in order to feel comfortable with not making it to their destination

- Encourage government departments responsible for regulating road safety take steps to restructure the physical environment as a means of physically preventing drivers from entering floodwater (i.e. when road closed signs are installed at the location, also install barricades to close off both lanes)
- Target advocacy activities to those government departments responsible for the development of legislation and enforcement of specific offences related to the behaviours associated with driving through floodwaters
  - A legislative approach should involve implementation of specific driving offences attributed to this behaviour, public awareness campaigns regarding the associated penalties and strict enforcement of regulations
- Advocating for change within advertising standards and/or the introduction of legislation mandating what can and cannot be advertised within the promotion of four wheel drives by manufacturers
  - This includes discouraging the use of imagery which glorifies vehicles driving through water

Research Agenda

- Conduct review of known cases of fatal unintentional drowning as a result of flooding
  - Identify common scenarios and risk factors to inform strategies for prevention
  - Review coronial recommendations made around flood related unintentional drowning deaths in Australia to identify common themes and prevention strategies based on expert opinion
- Explore emergency personnel experiences of rescuing people from floodwaters using behavioural theory
- Conduct qualitative interviews with those who self-report avoiding driving through floodwaters to understand the alternative reasons for not driving through floodwater
  - Compare and contrast findings between this study and the study of those who self-report driving through floodwaters
- Conduct research using Functional Imagery Training (FIT) to coax test subjects towards avoiding driving through floodwaters
  - Using mental imagery tasks may be useful in making the non-visible risks associated with driving through floodwaters more salient
- Consider conducting an observational study to observe those driving through floodwaters and the effect of road closure signage
- Consider conducting a quantitative survey-based study investigating the attitudes and beliefs of learner drivers toward driving through floodwaters
  - Use findings to advocate for changes/improvements to the education of learner drivers with respect to flooding