

Behaviour around floodwater: Dilemmas for floodwater safety and risk communication

BNHCRC Research Forum
27 August 2019

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MACQUARIE
University



bushfire&natural
HAZARDSCRC

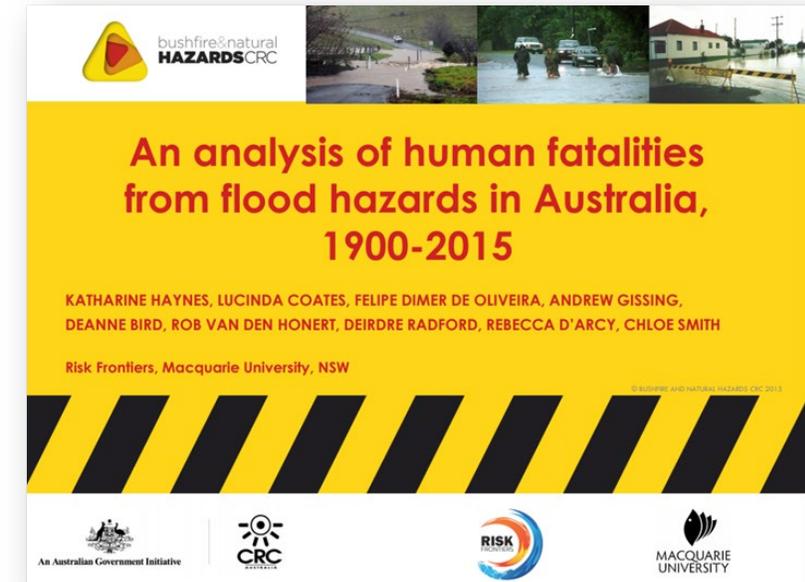


Australian Government
Department of Industry,
Innovation and Science

Business
Cooperative Research
Centres Programme

BNHCRC project: Flood risk communication

- Understanding behaviour in and around flood water
 - Highest risk behaviours
 - Entering floodwater in a vehicle
 - Recreating in floodwater
- Developing guidelines for flood risk communication
 - AFAC SES Community Safety Group



see also Haynes et al., *Environmental Science and Policy*
76 (2017) 165-176

<https://www.bnhcrc.com.au/research/floodriskcomms>

Identification of the dilemmas

- Evidence-driven
 - Academic literature
 - Current research findings
 - Surveys (Public, SES personnel)
 - Interviews
 - End users
 - Discussions/Meetings
- Structure
 - Panel (ANZDMC)
 - Research - Expert opinion

The collage features three main research outputs:

- Journal Cover:** International Journal of Disaster Risk Reduction 31 (2018) 953-963. Title: Driving into floodwater: A systematic review of risks, behaviour and mitigation. Authors: Mozumdar Arifa Ahmed^{a,*}, Katharine Haynes^{b,c}, Mel Taylor^{a,c}. Includes Elsevier logo and journal homepage: www.elsevier.com/locate/ijdr.
- Research Paper Abstract:** Encountering floodwater at work: Factors contributing to decisions to drive into floodwater. Authors: Mel Taylor^{1,2}, Katharine Haynes^{1,2}, Mozumdar Ahmed¹, Matalena Tafa^{1,2}. Includes sections for Rationale, Aims, Results, Approach, and How Deep? How Fast? Results include: 695 respondents in this analysis; 35% had driven through floodwater in an SES vehicle as a driver; 49% had driven through in a private vehicle; 272 respondents provided detailed information about a recent experience of driving/being driven through floodwater in an SES vehicle; 22% reported that passenger's influenced decision to drive through.
- Presentation Slide:** Vehicle-related flood deaths in Australia, 2001-2017. Authors: Mozumdar Ahmed¹, Katharine Haynes^{1,2}, Mel Taylor^{1,2}. Includes a bar chart showing age patterns of fatalities by age group and gender.

Panel Acknowledgement

- Josh McLaren - NSW SES
- Sascha Rundle - ABC
- Peter Readman - QFES
- Danny Rose - Tweed Shire Council / Floodplain Management Australia
- Diana Ferguson – VICSES
- David Bruce (MC) – BNHCRC
- Mel Taylor and Matalena Tofa - Macquarie University / BNHCRC





■ Dilemma 1

What do we actually mean by floodwater?

Defining Floodwater



How do we define floodwater?

Fundamental question for flood risk communication



Do both these photos show dangerous floodwater?

Definition

- Water across the road surface
- Little to no visibility of the road surface markings under the water (i.e. uncertainty of road quality/integrity and possibly depth)
- Water on normally dry land – flowing or still

Expert opinion

- Identify dangerous features
- Economic drivers – issues of consistency across states, and rural communities
- Issues managing road closures
- When safe to open?

KNOW THE DANGERS

All Queenslanders should be aware of the dangers connected to floodwater or swift flowing water. No one can predict what lies underneath the surface.





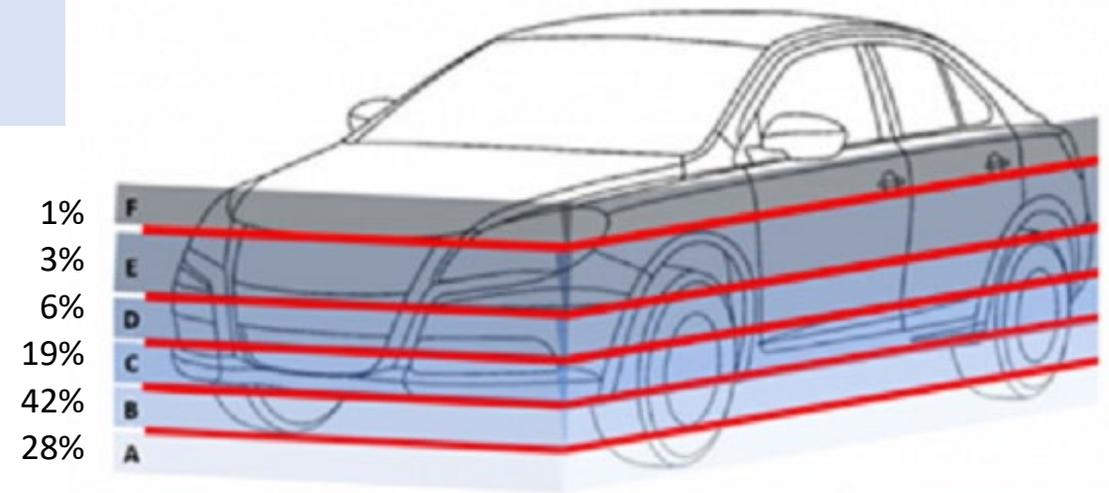
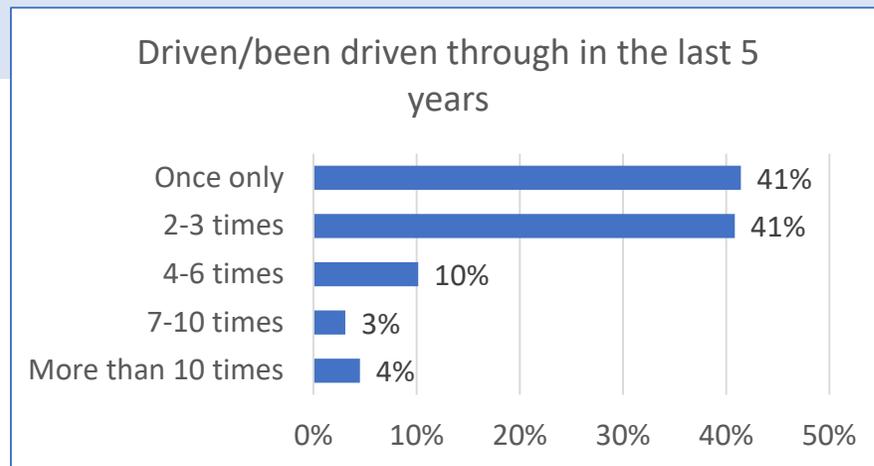
Dilemma 2

Despite advice and warnings, people are still entering floodwater.

Experience of driving into floodwater (Public)

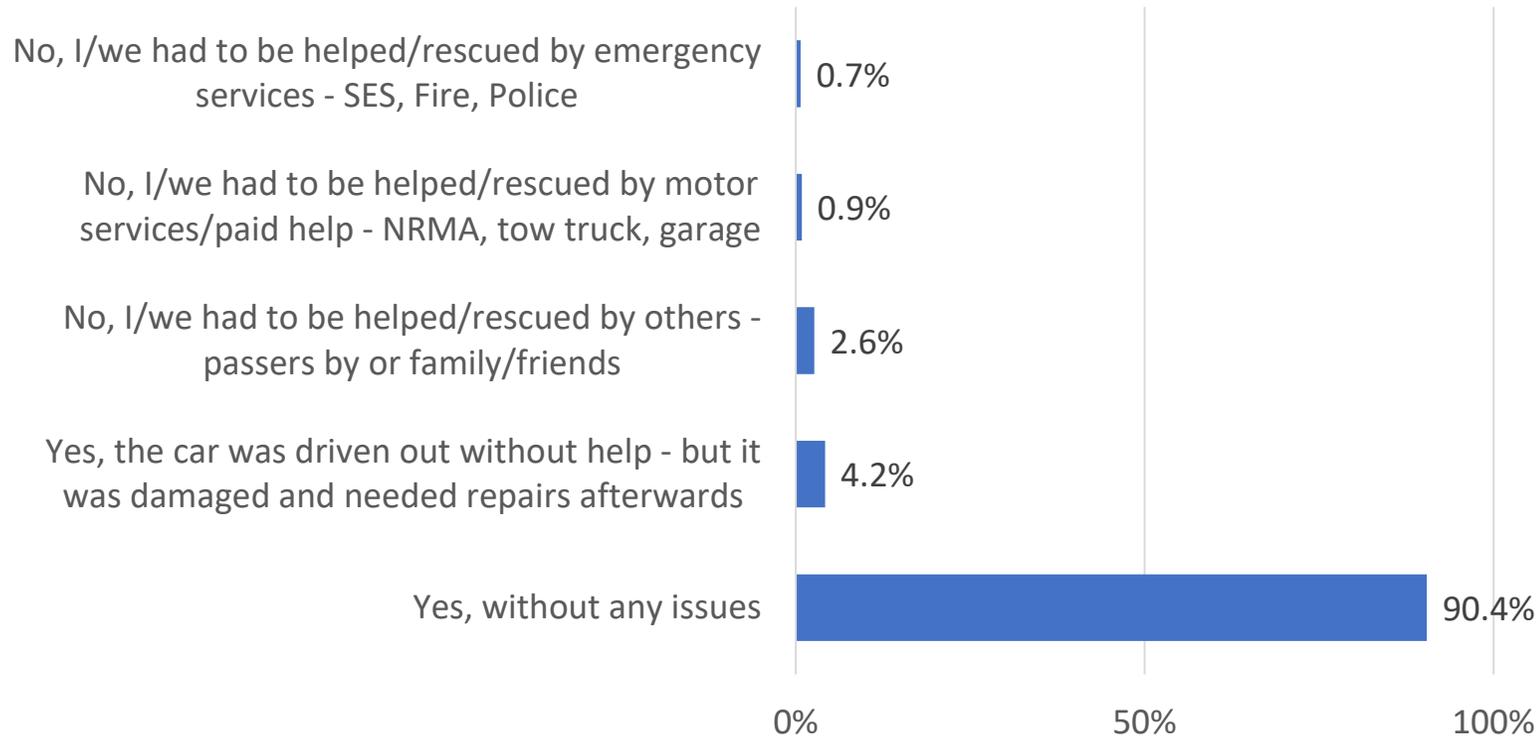
56% - ever driven/been driven through floodwater

- More likely – if male, rate driving ability high, undertaken advanced driving course, higher weekly driving hours.



Outcomes of driving into floodwater (Public)

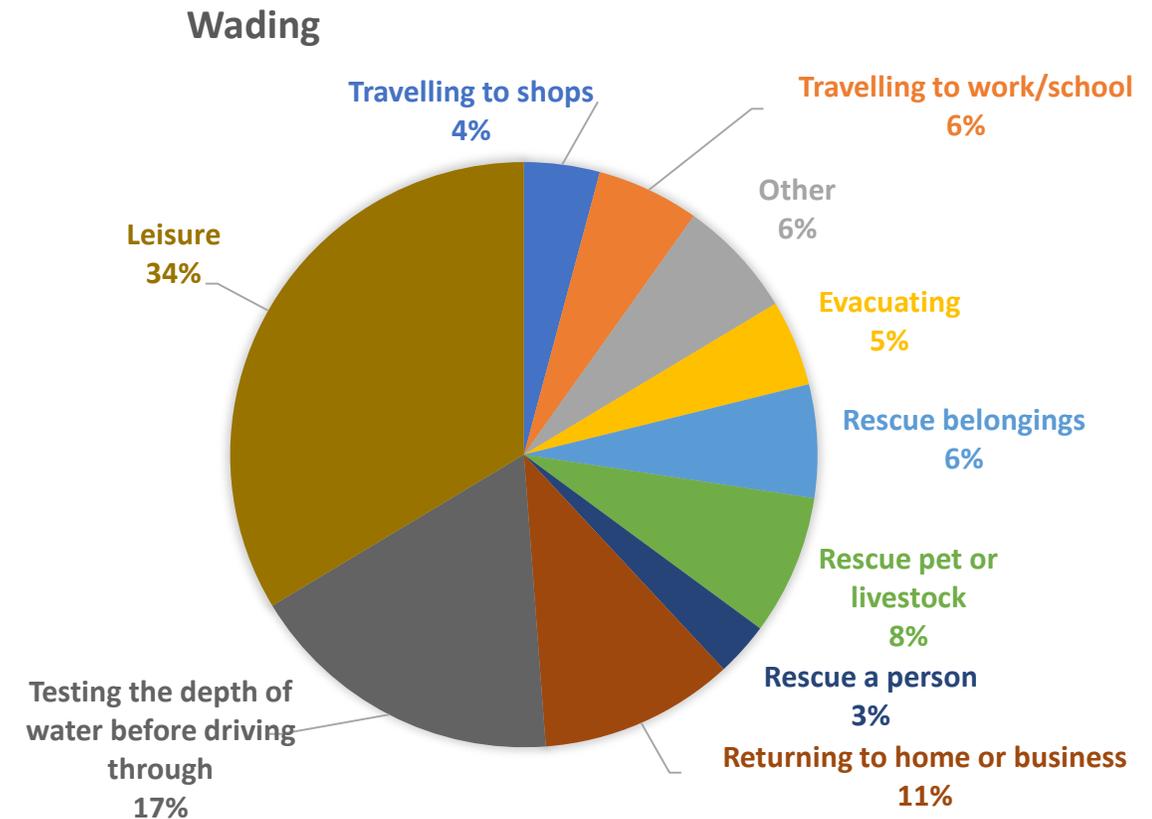
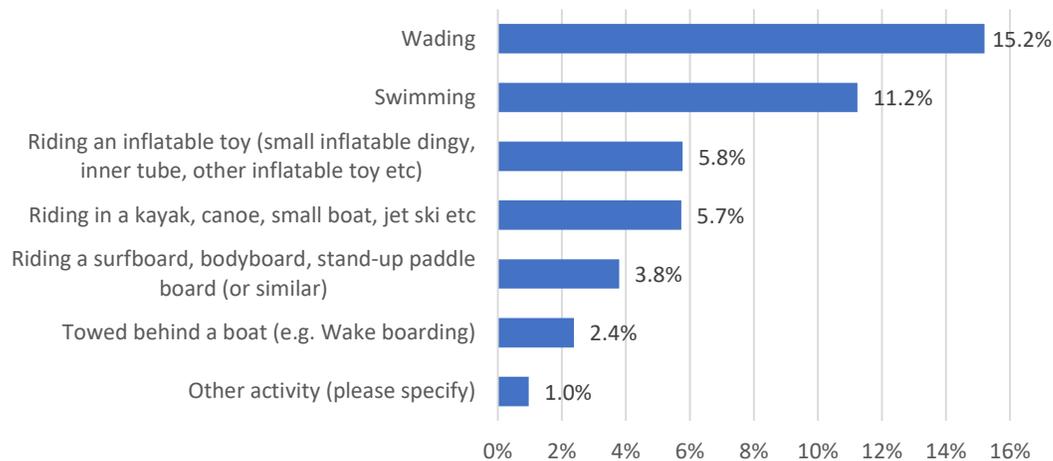
Did you succeed in driving through floodwater on this occasion?
(n=1172)



Entering floodwater on land (Public)

- Floodwater on land
(where it normally isn't, e.g. flooded park or street)
- 28% had engaged in activities in floodwater on land

Activities in floodwater on land



Expert opinion

- Mixed response to blanket 'If it's flooded forget it' warning
 - Advantage – awareness
 - Disadvantage - exceptions
- Issues around risk perception, re. comparative judgements
- Need to localise and visualise risks better
 - AR approaches





Dilemma 3
Is it OK for emergency services (& other professionals) to enter floodwater?

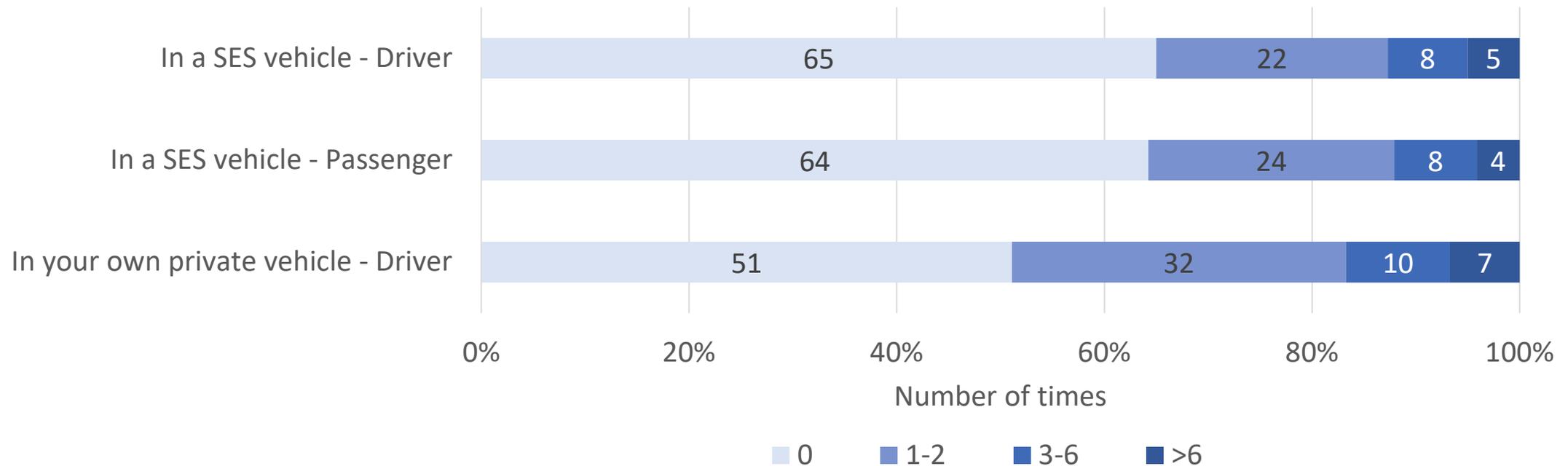
SPECIAL COVERAGE SPECIAL COVERAGE SPE

WILD WEDNESDAY



SES

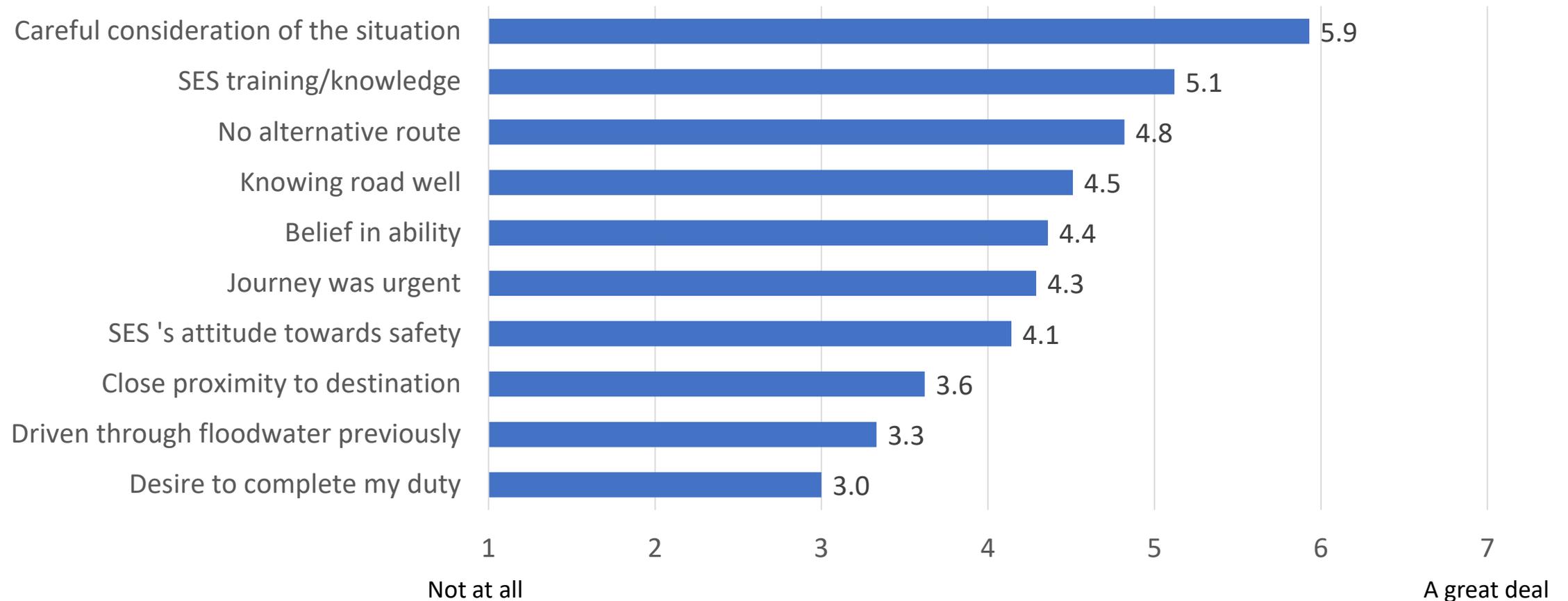
How many times have you driven (been driven) through floodwater in the last two years...



Can you recall an event in which you drove (or were driven) through floodwater in the last few years?

Driving through floodwater

Top 10 contributing factors to decision to drive through floodwater (of 18)



Expert opinion

- Difficult to measure impact, but not positive image – potential for reputational damage
- Pressure to get the story / complete duty
- WH&S issues driving changes ('safety before story')
- SOPs and guidance

Standard Operating Procedure

SOP028 VICSES Vehicles Entering Floodwater
Version 1.0

PURPOSE
To guide the decision making process for VICSES members entering floodwater whilst driving VICSES vehicles.

AUDIENCE

	Subject Matter Operator (Competency Holder)	Crew Members	Crew Leaders	Unit Management	Regional Operations (RO/RAC)	State Operations (SOP) (e.g.)	Other (Public and State Staff)
Basic Awareness	n/a					✓	✓
Working Knowledge		✓		✓	✓		
In-Depth Knowledge			✓				

BACKGROUND
Driving a vehicle through water is a hazardous activity, and the risks associated with it increase when flash, riverine and swell water flooding impacts roads and other vehicle routes.
As one of the key safety messages delivered by VICSES to the community is to 'never drive, walk, swim or play in floodwater', we need to ensure that our members give due consideration to this message within communities. It is only in exceptional circumstances where there is a threat to life that members should enter floodwaters whilst driving a VICSES vehicle.

POLICY
The State Emergency Management Priorities, operational requirements, and community expectations may result in an event that requires VICSES members to enter a flooded (water over) roadway.

1.1. Decision to Enter Floodwater in a VICSES Vehicle
Before entering floodwaters, members should consider other options as part of their risk assessment. The decision to enter floodwater in a VICSES vehicle should not be made lightly, as there are a number of risks involved in this operation.
VICSES will only operate vehicles in floodwater where there is an imminent threat to life, and the most effective route to the incident involves using a vehicle entering floodwater.



Dilemma 4
Water is fun!

Risk and Water

So every time it rains, you see people on that surfboard in the flooded streets or the floating down the hill or in a tube, **all those things and the media love it.** It looks great on a front page of a paper or on the six o'clock news and it looks fun, so **there is a direct emotional link to fun and turning that bad situation into a good situation by embracing it.** And so fighting that is very, very difficult...



...I don't want to be killjoy. It's a real fine line because I think they were some images or footage in the [region] where we had paddocks, paddocks and paddocks flooded... and so the parents were in four-wheel drive, dragging the kid behind the vehicle on a boogie board. It looked like loads of fun. **Yes, it looked like loads of fun. Is it dangerous? Probably. Am I being killjoy by saying don't do it? Yeah, I am.**

Risk and Water

Playing in water is a **national pastime**... These spaces [rivers, dams, parks] are generally quite fun, and we want you to recreate here, but in other times the potential to 'not be fun' is there. It's a hard one to reconcile, I think, especially if there's a lack of recreating spaces within a community.



I think a lot of people would just because they don't necessarily see there's a risk. **They just think water equals fun**, so I'm gonna take advantage of the opportunity.



You wouldn't drive into a bushfire...

So why drive into a flood?



If its flooded, forget it!



**IF YOU KNEW WHAT WAS IN IT,
YOU WOULDN'T GO IN IT.**

Never enter floodwater or storm drains.
Learn more at www.ses.nsw.gov.au



Expert opinion

- Acknowledge cultural/societal aspects
- Approaches taken to what's IN the water
- Targeting younger people
 - Educational/approaches
 - Animations, songs
 - Humour
- Value of narratives (survivors'/victims' stories)



Life of who? Poo

Life of Poo





What's next?

Thank you!

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COOL STUFF TO DO
IN THE RAIN



DUMB STUFF TO DO
IN THE RAIN



DON'T DRIVE INTO FLOOD WATER
STAY HOME AND PRACTICE SICK DANCE MOVES.