



- Entering floodwater in a vehicle
  - Recreating in floodwater
- Developing guidelines for flood risk communication
  - AFAC SES Community Safety Group



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



., Environmental Science and Policy 76 (2017) 165-176

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# Victoria State Emergency Service

- 5000 volunteers, 200 staff
- Control agency for flood, storm, earthquake, landslide and tsunami
- Responded to 10,156 flood RFAs in last 5 years
- VICSES Values Safety drives our decisions

#### **Our Values**





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# Survey-based research



- 1. Defining floodwater
  - flood experts
- 2. Driving and playing in floodwater
  - public survey

Australia Speaks – National survey exploring experiences and attitudes towards entering floodwater









3. Encountering floodwater at work

- multiple SES jurisdictions
- VICSES, NSW SES, ACT SES, SA SES

# SES Encountering Floodwater Survey

#### Aims

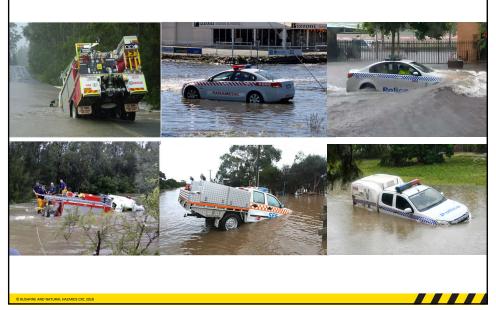
- To understand how SES personnel view risk, as it relates to water on the road.
- To understand the circumstances in which SES personnel enter 'floodwater' on the road when in SES vehicles.
- To determine factors that relate to higher risk driving into floodwater on roads.



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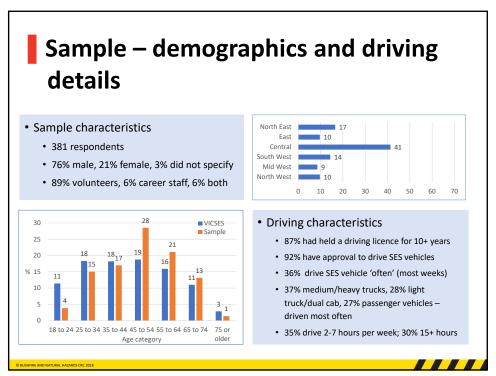
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# Why does this matter?



# Design and administration Design application (private and work) (approval, force & which type, frequency of dising) Design and deployment (private and work) (approval), force & which type, frequency of dising) Design and deployment (private which are private and device the private which are private which

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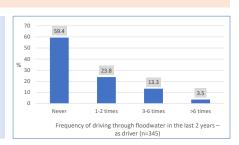
# **Experience of driving through floodwater**

#### 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

#### In the last 2 years

- 41% had driven through floodwater as a driver of a SES vehicle
- 44% had been driven through floodwater as a passenger in a SES vehicle
- 58% had driven through floodwater as a driver in their own <u>private vehicle</u>



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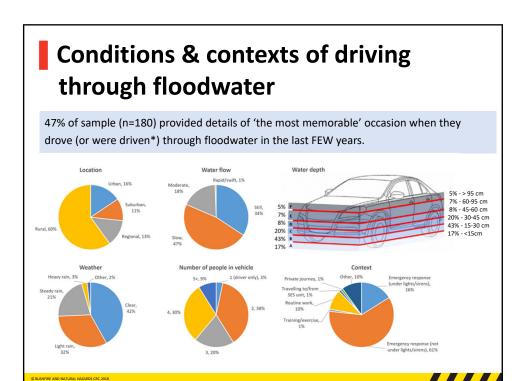
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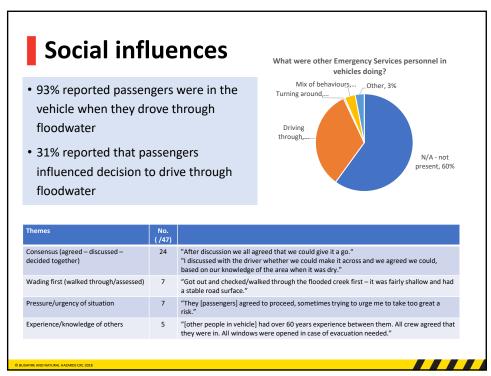
# Characteristics of those more likely to have driven through floodwater in last 2 years

#### More likely

- Gender males (p<0.01)
- Length of service greater LoS (volunteers) (p<0.001)
- Flood deployment yes (p<0.01)
- SES vehicles usually driven larger (p<0.001)
- Driving hours more hours per week (p<0.01)
- Driven through in private vehicle higher frequency (p<0.001)

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## Investigation of 'higher risk' events

#### Entering floodwater...

- · that was rapid/swift flowing
- that was 95cm or deeper
- on a ford, weir, or low water crossing that was deeper than 45cm
- that was medium/moderate flow and deeper than 45cm
- that was deeper than 30 cm in a SES passenger vehicle

#### Applying these criteria

• 19% of events (n=35/180) 'higher risk'

#### Comparison of 'higher' vs 'lower' risk

- · Higher risk events
  - Gender females
  - Location not urban
  - Passenger influence yes

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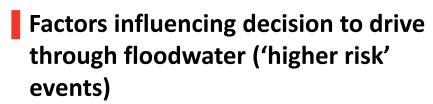
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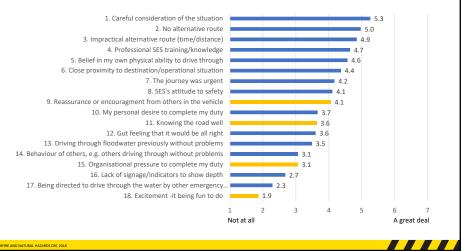
# Influencing factors for 'higher risk' events

Respondents were asked to consider 'the extent to which' a list of 18 factors may have influenced the decision to drive through floodwater in this event.



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### Concluding comments

- Study provides a 'snapshot' of driving through floodwater in SES vehicles
- Useful baseline data
- Behaviour undertaken quite frequently
- Analysis identifies some groups more likely to drive through floodwater
- Detailed events provide an aggregated view of conditions and contexts
- Small proportion of events identified as 'higher risk'
- Social influences those inside and outside the vehicle
- More areas for analysis, combine data for more robust analysis, compare with public data

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