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An analysis of human fatalities from flood hazards in Australia, 1900-2014

Katharine Haynes, Andrew Gissing, Lucinda Coates, Chas Keys

Risk Frontiers, Macquarie University, NSW

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An Australian Government Initiative



Objectives



To analyse the impacts of:

floods, cyclones, bushfires, earthquakes, heatwaves and severe storms (wind, hail, lightning, tornados, flash floods)

in terms of:

- demographics, social and environmental circumstances surrounding deaths
- people otherwise affected– injured, near-misses, rescued
- building losses and damage – over the last century

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Major outcomes



Evidence-based data to assist with appropriate emergency management and government decision making:

- a longitudinal and geographical examination of trends in the exposure and vulnerability of people and buildings
- an interpretation of these trends in the context of emerging issues (e.g. ageing population, population shifts, climate change), in order to determine potential future trends
- an understanding of the impact of changes to policy and procedures on life and property loss.

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Current objective



To examine flood fatalities from 1900 to present:

- Update the number of named flood fatalities within PerilAus – via Factiva and Trove
 - Number of flood deaths 1207 → 1874
- Retrieve coronial inquests, crucial to augmenting the detail surrounding fatalities.
 - name, age, occupation, where found, date of death
 - actions of deceased; reasoning behind decisions
 - knowledge/ forewarning of flood dangers; preparedness; ability to swim; blood alcohol level
 - details of weather; state of river; type of flood

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Preliminary results

- Of the current 1,874 flood fatalities - 78% male and 22% female
- State breakdown: Queensland (39%), NSW (37%) and Victoria (11%)
- Children and young adults are the most vulnerable group
- The majority die as they cross a watercourse or bridge
- Over the last 20 years at least 81 people have died driving through floodwater
 - accounts for 43% of all flood fatalities over this period
 - 35% of these were driving 4WD vehicles

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VEHICLE JOB 978

3. Indentation where deceased [redacted] was wedged



'IT'S JUST ONE OF THOSE THINGS THAT YOU READ IN THE PAPER, YOU DON'T EXPECT IT TO HAPPEN'

Why are people driving through floods?

- Maintain everyday behaviour
- Being in a rush
- Have driven through floodwater before without harm
- Think it is fun
- Evacuating
- Simply don't think about the risk



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Key themes from analysis

- Age and gender of drivers
- Familiarity of drivers with the road network
- Mental and physical condition
- Blood alcohol levels
- Risk perception and previous experience
- Vehicle type

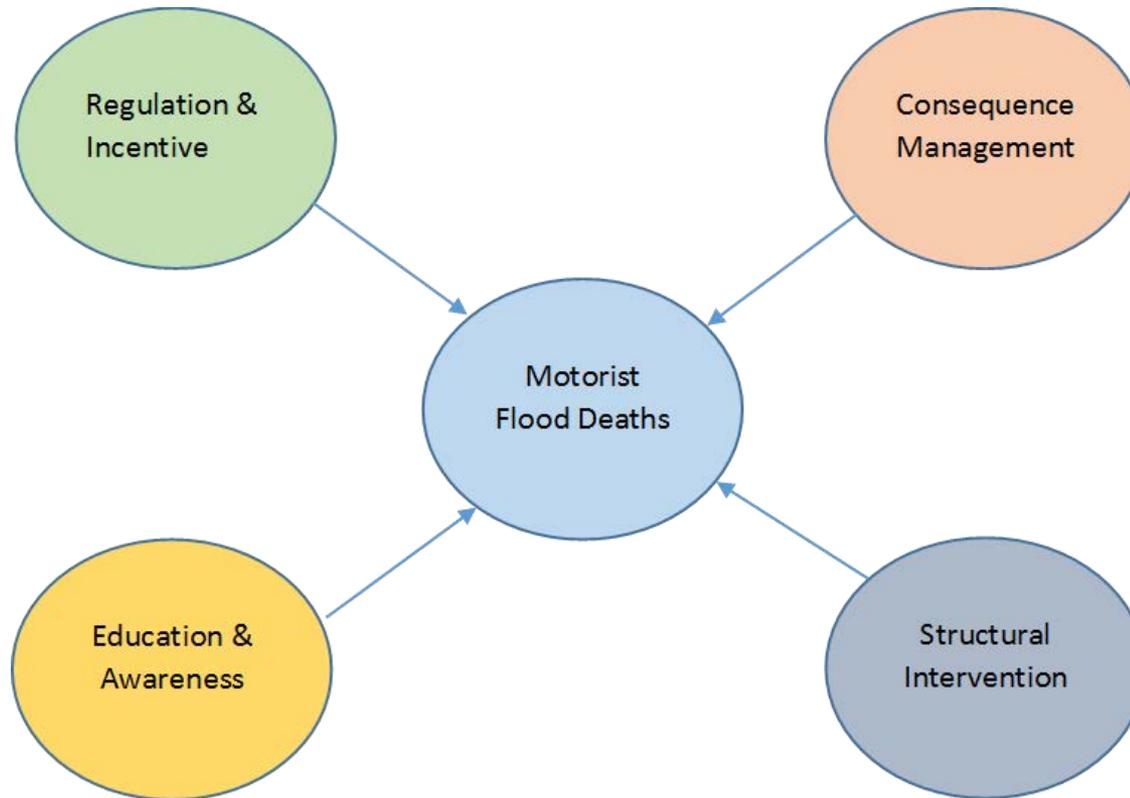


Shoalhaven August Floods

- 84% of motorists ignored road closure signs and travelled through floodwater
- Large majority of drivers were male
- Most frequent vehicle type were 4WDs
- Age varied



New approach needed



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Education



- Improvement suggestions:
 - Roadside markers to reflect risk not depth
 - Education in driver training
 - Education of other ESO's to be better role models
 - Key partnerships with other agencies eg. NRMA
 - Better use of VMS

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Regulation and Incentive

- Suggested improvements:
 - Fine motorists that drive through floodwater
 - Motorists pay for their rescue
 - Insurance companies not obliged to pay claims
 - Intelligence driven through social media



Structural intervention

- Existing strategies focused on road closure barricades
- Improvements to consider:
 - Manning barricades in high risk areas
 - Automated gates
 - Road design
 - Autonomous vehicles
 - Lighting at high risk locations



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Consequence Management

- Flood rescue is the primary strategy
- Need to better understand the influence of rescue resourcing on deaths
- How quickly do deaths occur?



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Conclusion and next steps

- Need a holistic multilayered approach – not just education.
- Need to involve a variety of stakeholders.
- Need to understand the effectiveness, and potential costs of each of the proposed risk treatments.
- What are other problems that need to be considered?

THANK YOU!



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Contact:

Dr Katharine Haynes

ph: +61-404 938 981; email: katharine.haynes@mq.edu.au;
[@katharinehaynes](https://twitter.com/katharinehaynes)

Andrew Gissing

ph: +61- 408 211 697; email: andrew.gissing@mq.edu.au; [@AndeGiss](https://twitter.com/AndeGiss)

Lucinda Coates

ph: +61-2-9850 6312; email: lucinda.coates@mq.edu.au

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