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

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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
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.
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
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
‘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

- Regulation & Incentive
- Consequence Management
- Education & Awareness
- Structural Intervention

Motorist Flood Deaths

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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
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
Consequence Management

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