

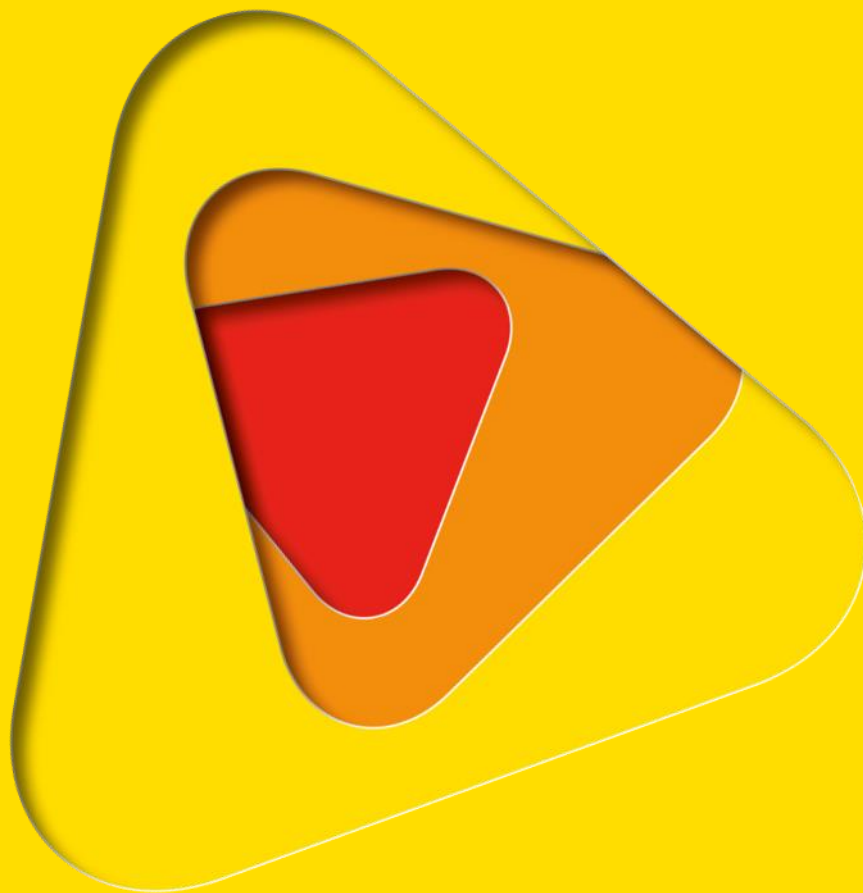


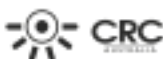
AN ANALYSIS OF HUMAN FATALITIES AND BUILDING LOSSES FROM NATURAL DISASTERS

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Macquarie University, Risk Frontiers
Bushfire and Natural Hazards CRC

Annual Report 2014





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Risk Frontiers, Macquarie University

The Elevator Pitch:

Given the increasing complexities and occurrences of natural hazards, community resilience is an essential social outcome across all phases of the Prevention-Preparedness-Response-Recovery (PPRR) disaster spectrum. By taking a scientific approach to the collection and analysis of accurate information and intelligence, governments and agencies can engage and communicate about disasters. Furthermore, individuals, households, businesses, and community networks can make decisions to prevent, prepare for, respond to and recover from natural hazards.

To further this goal, this project will provide an analysis of building damage by hazard and state/territory due to natural hazards since 1900, a longitudinal analysis of the social and environmental circumstances in respect to fatalities by hazard and location and an examination of trends over time in terms of exposure and vulnerability. It is envisaged that these trends will be interpreted in the context of emerging issues (e.g. ageing population, population shifts, climate change) and how these issues might push those trends in the future. It will inform a wide range of end users, such as emergency agencies, to advise and update policy, practice and resource allocation.

Introduction:

The goal of the project is to measure and gain a greater understanding of the impacts of natural hazards in terms of the toll of human life, injuries and building damage in order to provide an evidence base for emergency management policy and practice.

The foundation for this work will be the use of the Risk Frontiers' data base PerilAUS. The database contains historical data (dating back to the earliest days of European settlement) on the incidence (magnitude, affected locations, etc.) and consequences (property damage and fatalities, etc.) of such events. In particular, the data contains many of the names of the deceased which enables the collection of more detailed information on the circumstances of the death from coronial records.

In addition to PerilAUS the Insurance Council of Australia's Disaster List, which lists the insurance cost of natural disasters since 1967, will be used to compile information relating to the costs of building losses due to natural hazards in all states and territories in Australia.

The Project:

Project objectives

1. An analysis of fatalities, in terms of demographics, social and environmental circumstances surrounding deaths.
2. An analysis of people otherwise affected by natural hazards – injured, near-misses, rescued.
3. An analysis of building damage and losses arising from natural hazard events over the last century.

The hazards to be studied include: floods, cyclones, earthquakes, heatwaves, severe storms and bushfires.

Major Outcomes Anticipated

- A longitudinal and geographical examination of trends in the exposure and vulnerability of people and buildings.
- An understanding of the impact of changes to policy and procedures on life and property loss.
- An interpretation of trends in exposure and vulnerability in the context of emerging issues (e.g. ageing population, population shifts, climate change), in order to determine potential future trends.
- Development of hazard-specific risk communication from the analysis of fatalities and injuries.
- Evidence-based data to assist with appropriate emergency management and government decision making.

Project deliverables

In addition to the quarterly and annual reports the following deliverables will be produced by the team.

Due Date	Project Milestone
30-Mar-14	Submit journal article on an overview of heatwave fatalities based on current knowledge
28-Nov-14	Report on data quality and completeness of historical natural hazard building losses
31-Dec-14	Report on data quality for fatalities from flood and the social and environmental circumstances surrounding each fatality
29-May-15	Report and submission of journal article on flood fatalities alongside a presentation of the results to relevant end-users
31-Dec-15	Report on data quality for fatalities from tropical cyclone, earthquake, heatwaves and severe storm and the environmental and social circumstances surrounding each fatality
31-May-16	Workshop with end-users and stakeholders to discuss fatality and building loss data
31-July-16	Report and journal article on fatalities from tropical cyclone, earthquake, heatwaves, bushfire, and severe storm in Australia
31-Dec-16	Report and journal article of a detailed analysis of all historical natural hazard building losses (by state and time period), alongside a seminar
30-Mar-17	Report on the analysis of injury, near-miss and rescue data
15-Jun-17	A report on the impact of changes to policy and procedures related to natural hazard risk

What's been happening in the project:

The project kicked off during the first quarter of 2014. The following activities and outcomes have been undertaken:

Ethics approval was granted by the Macquarie University Ethics Committee for the project.

Detailed work has been commenced to improve the collection of named fatalities (as well as injuries, near misses, and rescues) held within Risk Frontiers' PerilAUS natural hazard database for all hazards, but particularly floods.

Two visits have been undertaken to the Victorian and the South Australian state archives offices to further improve the collection of flood fatalities. Email contact has been made with all state archives offices to understand what data is available and what needs to be done to access this; responses have been received from the ACT, Western Australia, Queensland and New South Wales offices.

A paper providing a general overview of heatwave fatalities based on the current data within PerilAUS over the period 1844-2010 has been accepted by the journal *Environmental Science and Policy*. It was considered that this paper be produced and published as a matter of urgency. Many reports and news articles have lately referred to the fact that heatwaves have killed more people than any other natural hazard; however, as far as we know, PerilAUS holds the only longitudinal evidence of this. The Bushfire and Natural Hazard CRC was added as an affiliation to the paper and a copy of the paper provided to the CRC. Work will continue to be completed during this project to update the details of the heatwave fatalities.

In May the project sent out a first newsletter to end-users (as well as anyone else who had shown an interest in the project). The newsletter was prominently displayed on the BNHCRC website, and covered:

- Project objectives
- Major outcomes
- Project deliverables
- List of project End Users
- Progress update and relevant news
- A request for assistance by the researchers from newsletter readers
- Researchers' contact details

Publication list:

Coates L, Haynes K, O'Brien J, McAneney K J and Dimer de Oliveira F (2014) A longitudinal examination of extreme heat events in Australia 1844-2010: exploring 167 years of social vulnerability, *Environmental Science and Policy* (accepted for publication).

List of current integrated project team members:

Project Leaders	Dr Katharine Haynes Dr Rob van den Honert
Researchers	Dr Ryan Crompton Lucinda Coates Dr Deanne Bird
Students	Emma Phillips Avianto Amri
Cluster Lead End User	Simon Opper (NSW SES)
End Users	Christopher Lee (OEH, NSW) Bob Stevenson (SES, SA) Melissa O'Halloran (NSW RFS) Michael Morgan (SAMFS)

Damien Killalea (TFS)
Jennifer Pidgeon (DFES)
Ed Pikusa (SAFECOM)
John Richardson (Red Cross)