OPTIMISING POST-DISASTER RECOVERY INTERVENTIONS IN AUSTRALIA

UTILISING CENSUS DATA TO INFORM PUBLIC POLICY

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About us

Project team

Over 8 years combined experience in economics of natural disasters, government service delivery and regulation

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About us

End users

Emergency Management Australia (Cth)

- Queensland Reconstruction Authority
- Inspector General of Emergency Management (engaged stakeholder)

Department of Environment, Water and Natural Resources

Department of Environment, Land, Water and Planning
Research need

Creating a sustainable disaster recovery model

Source: ICA Dataglobe
Research need

Understanding economic impacts on
Project objectives

Evidence-based decision making

support the decision-making process in the design of post-disaster recovery interventions by:

• identifying sector-specific economics effects of natural disasters at the individual and firm level

• identifying who is in need of disaster assistance

• informing recovery and relief funding arrangements so that better decisions can be made to minimise negative effects of disasters

• guiding budget allocation across economic sectors in pre-disaster mitigation and post-disaster recovery phases
Project methodology

Robust data and insights

Economic + demographic variables
- ABS Census Longitudinal Dataset (2006,11)
- HILDA Dataset
- Income
- Sector of employment (19)
- Demographic background
- Socio-economic status
- Social impact (family violence, health, wellbeing and crime)

Location based analysis
- ABS SA2 information
- QLD Govt flood maps (2010, 2011)
- Victorian Bushfire Royal Commission Report 2009
- Disaster severity mapping (flooded, burnt SA2s)

Expert interviews
- Focus groups
- Additional case study information
Project methodology

Real life case studies

Using labour force participants (ABS Census Longitudinal dataset)

175,600 obs
QUEENSLAND FLOODS 2010-11

105,230 obs
VICTORIA BLACK SATURDAY BUSHFIRES 2009
**Project methodology**

**Advanced economic modelling**

**DIFFERENCE-IN-DIFFERENCE MODEL**

**Affected versus unaffected**
- Did recovery expenditure help affected return to normal income path?

**Within affected groups**
- Who did recovery expenditure help (if at all)?
- Did severity of disaster matter?
- Did socioeconomic factors matter?

**All groups**
- Comparator groups
- Robustness checks
Project methodology

Difference-in-difference model

CENSUS
2006

BASELINE

Affected SA2

Unaffected SA2

CENSUS
2011

END-LINE SURVEY

DISASTER EVENT
VICeTORIA
BLACK
SATURDAY
BUSHFIRES:
2009

$7b loss* 
The most devastating bushfires in Australia’s history

*Deloitte Access Economics, 2016
Case study: Black Saturday bushfires

Individual income, by demography

- Migrate to unaffected SAS: 23% down
- Employed: 5% down
- Gender: 9% down, 11% down
- Home owner: 5% down
- Low income: 17% down
- Individual income: 11% down

Overall: 11% down

105,230 obs
Case study: Black Saturday bushfires

Individual income, by sector of employment

- Rental, hiring and real estate services: 10.5%
- Mining: -3%
- Public administration and safety: -6%
- Accommodation and food services: -11%
- Education and training: -12%
- Retail trade: -15%
4.46m

- In Brisbane, the river peaked at 4.46m on 13 January, 2011, flooding more than 28,000 homes and leaving 100,000 without power.
Case study: Queensland floods

Individual income, by demography

- MIGRATE TO UNAFFECTED SA2S: 4%
- GENDER: 8%
- MODERATE FLOOD SEVERITY: 1%
- INDIVIDUAL INCOME ≥25 YEARS: 4%
- INDIVIDUAL INCOME: 3.4%
- MIDDLE INCOME: 1%

Overall: 175,600 obs
Case study: Queensland floods

Individual income, by sector of employment

- Rental, hiring and real estate services: 16.4%
- Transport, postal and warehouse: 5.3%
- Mining: -5.7%
- Accommodation and food services: -19.7%
Case study: Queensland floods

What could explain the results?

1. Urban, economically sensitive area
2. Government recovery expenditures successful at alleviating impact of floods on some individuals
3. Results are consistent with economic literature and experience of other disaster-hit cities (e.g., New Orleans)
4. Other factors likely at play that explain differences with VIC bushfire results
Case studies summary

What we’ve learnt

- **Government post-disaster recovery intervention is needed** to alleviate the economic impacts of natural disasters

- **The extent of government individual assistance required depends on:**
  - the type, intensity and location of the disaster
  - socioeconomic factors, particularly an individual’s sector of employment

- **While generally successful, Australian government post-disaster recovery intervention can be made more efficient**
Policy implications

Combined with our focus group interviews and upcoming firm level analysis, our approach can inform:

• The National Impact Assessment Model
• NDRRA Determinations
• Monitoring and Evaluation Framework for Recovery Programs
States are encouraged to provide same type and level of assistance to individuals who are affected by the same or similar eligible disasters.” (Source: NDRRA Determination 2017, pp. 35)

Can we use disaster type and “disaster severity” information to help better direct recovery assistance?

NDRRA currently addresses some economic sectors exclusively, e.g., NDRRA Determination addresses “Primary Producers” and “Public Infrastructure” separately

Given employees in different sectors are affected differently, is there any room to address other economic sectors in the NDRRA?
## Project Timeframes

### RESEARCH
- **2014-15**
  - Floods, Bushfires and sectoral economic activity in Australia 1978-2015
- **2015-16**
  - QLD Floods
  - VIC Black Saturday Bushfires
- **2016-17**
  - QLD Floods
- **2017-18**
  - Cyclone Oswald
- **2018-19**
- **2019-20**

### DEVELOP ESTIMATION MODEL
- DATA ACCESS

### RESULTS
- **NATIONAL**
  - Research
  - Analysis
  - Journal submission
  - Journal revision
- **INDIVIDUALS**
  - QLD Floods: Individuals analysis
  - QLD Floods: Individuals Report
  - VIC BSB Individuals analysis
  - VIC BSB Individuals report
- **FIRMS**
  - QLD Floods: Firms analysis and report
  - VIC BSB: Firms analysis and report
  - Cyclone Oswald Firm analysis

### POLICY
- **STAKEHOLDER ENGAGEMENT**
  - RAF & AFAC Conferences
  - End-user meetings
- **POLICY BRIEFINGS**
  - RAF & AFAC Conferences
  - End-user meetings
  - RAF & AFAC Conferences
  - End-user meetings
  - Focus groups
  - Proof of concept
  - RAF & AFAC Conferences
- **RESEARCH UTILISATION**
  - RAF & AFAC Conferences
  - End-user meetings
  - RAF & AFAC Conferences
  - End-user meetings
  - Policy briefings
  - RAF & AFAC Conferences
  - End-user meetings
  - Policy notes and briefings
  - RAF & AFAC Conferences
  - End-user meetings
THANK YOU

Hear more at our breakout session
Blackwattle and Melaleuca Room, 4:45pm