



bushfire&natural
HAZARDSCRC

OPTIMISING POST-DISASTER RECOVERY INTERVENTIONS IN AUSTRALIA

UTILISING CENSUS DATA TO INFORM PUBLIC POLICY

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CENTRE FOR ENERGY, THE ENVIRONMENT AND NATURAL DISASTERS
DEAKIN UNIVERSITY

Date: 12 April 2018 +



About us

Project team

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



Prof. Mehmet Ulubasoglu

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Dr. Habibur (Habib) Rahman

Research fellow



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Research fellow

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About us

End users



Australian Government
Department of Home Affairs

Emergency Management Australia (Cth)



**Queensland
Government**

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



**Government of
South Australia**

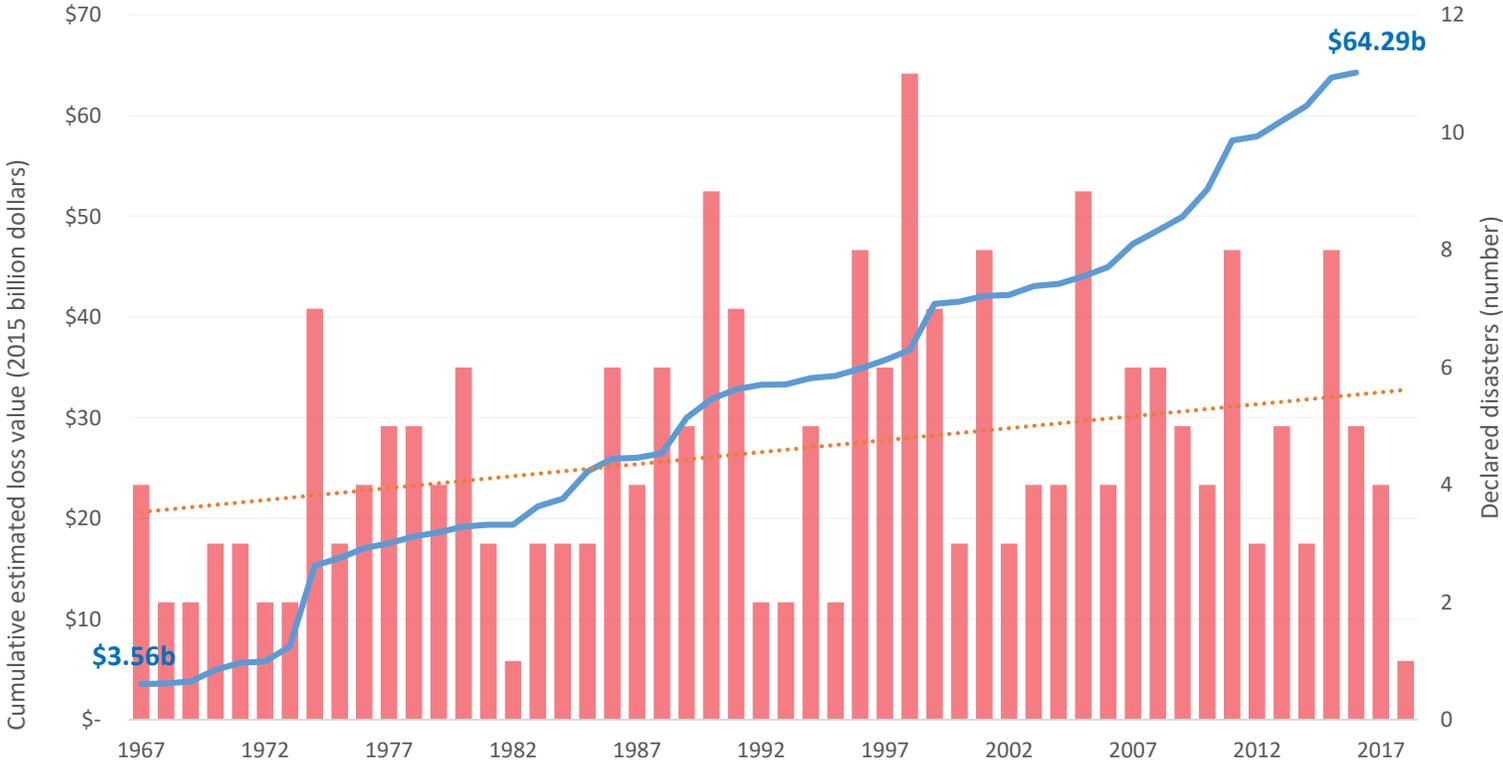
Department of Environment, Water and Natural Resources



Department of Environment, Land, Water and Planning

Research need

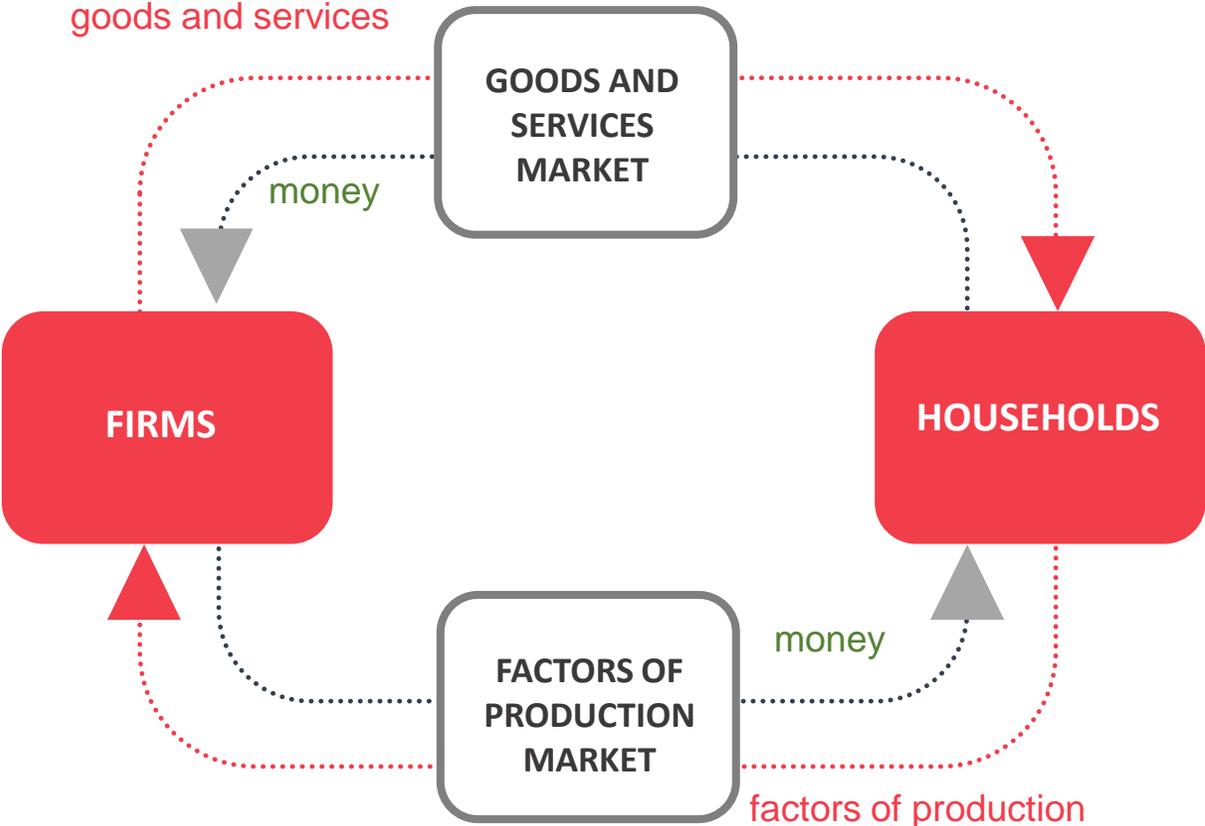
Creating a sustainable disaster recovery model



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)

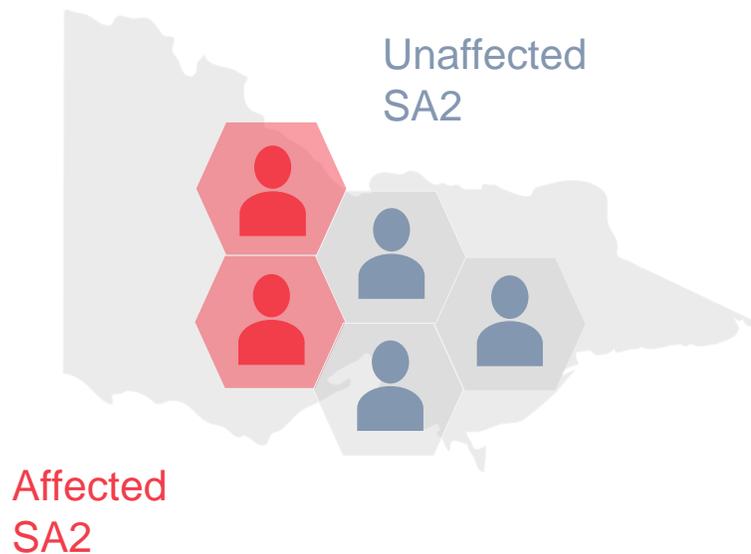
Location based analysis

- **ABS SA2 information**
- **QLD Govt flood maps (2010, 2011)**
- **Victorian Bushfire Royal Commission Report 2009**

- Disaster severity mapping (flooded, burnt SA2s)

Expert interviews

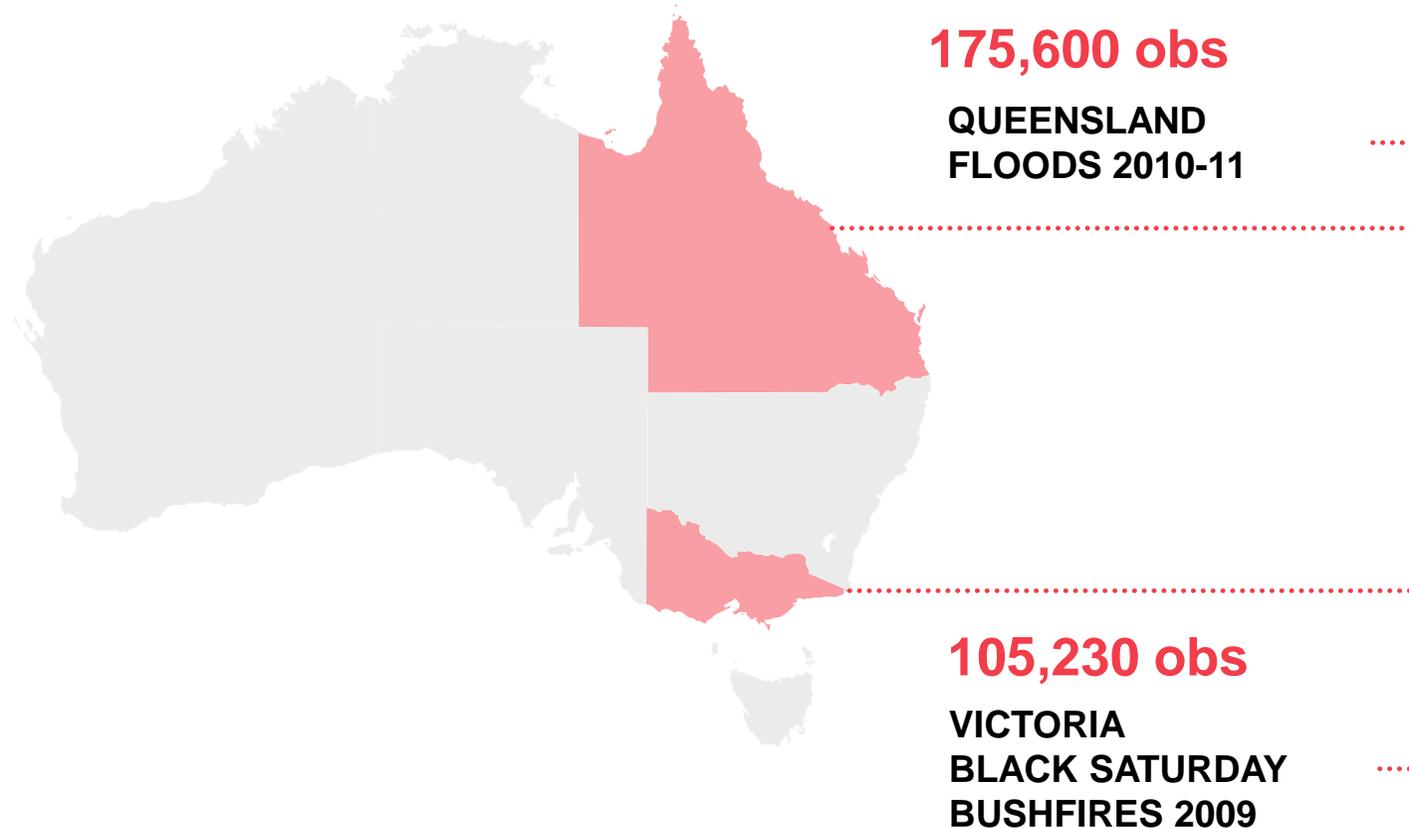
- Focus groups
- Additional case study information



Project methodology

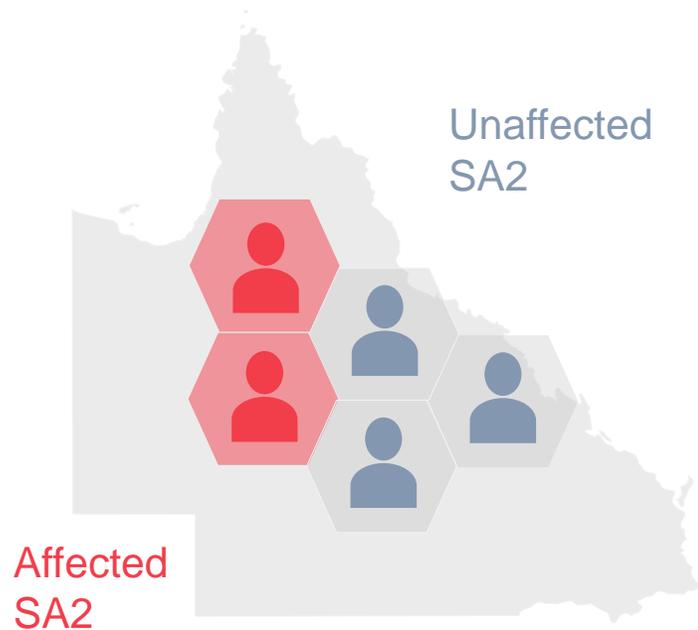
Real life case studies

Using labour force participants (ABS Census Longitudinal dataset)



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

20XX

CENSUS

2011

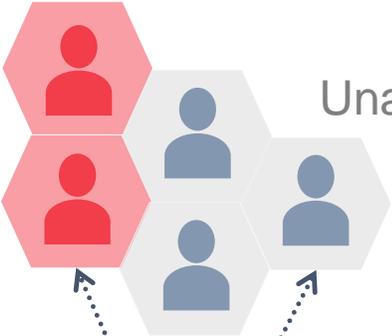
BASELINE

END-LINE SURVEY

Affected SA2

Unaffected SA2

DISASTER EVENT



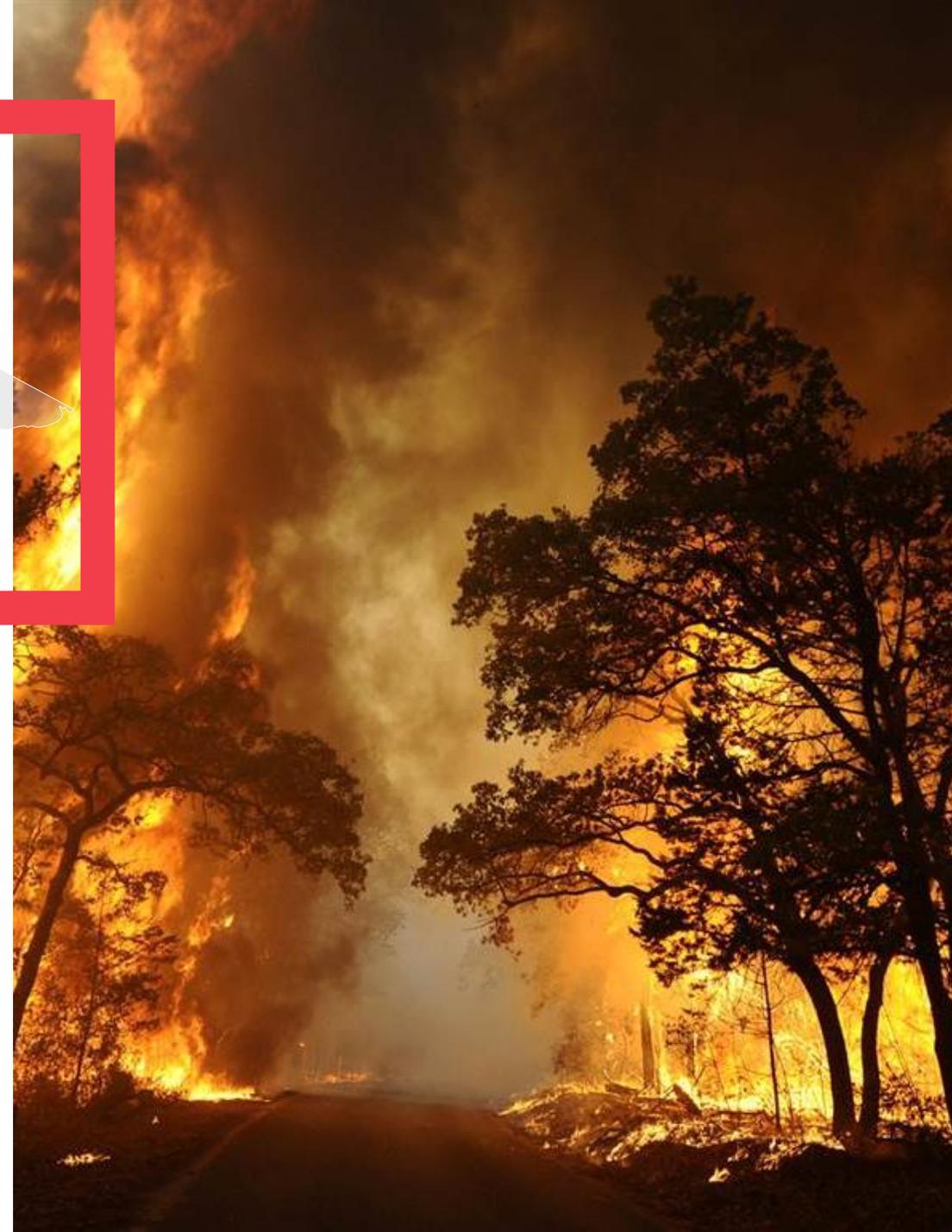
VICTORIA
BLACK
SATURDAY
BUSHFIRES:
2009



\$7b loss*

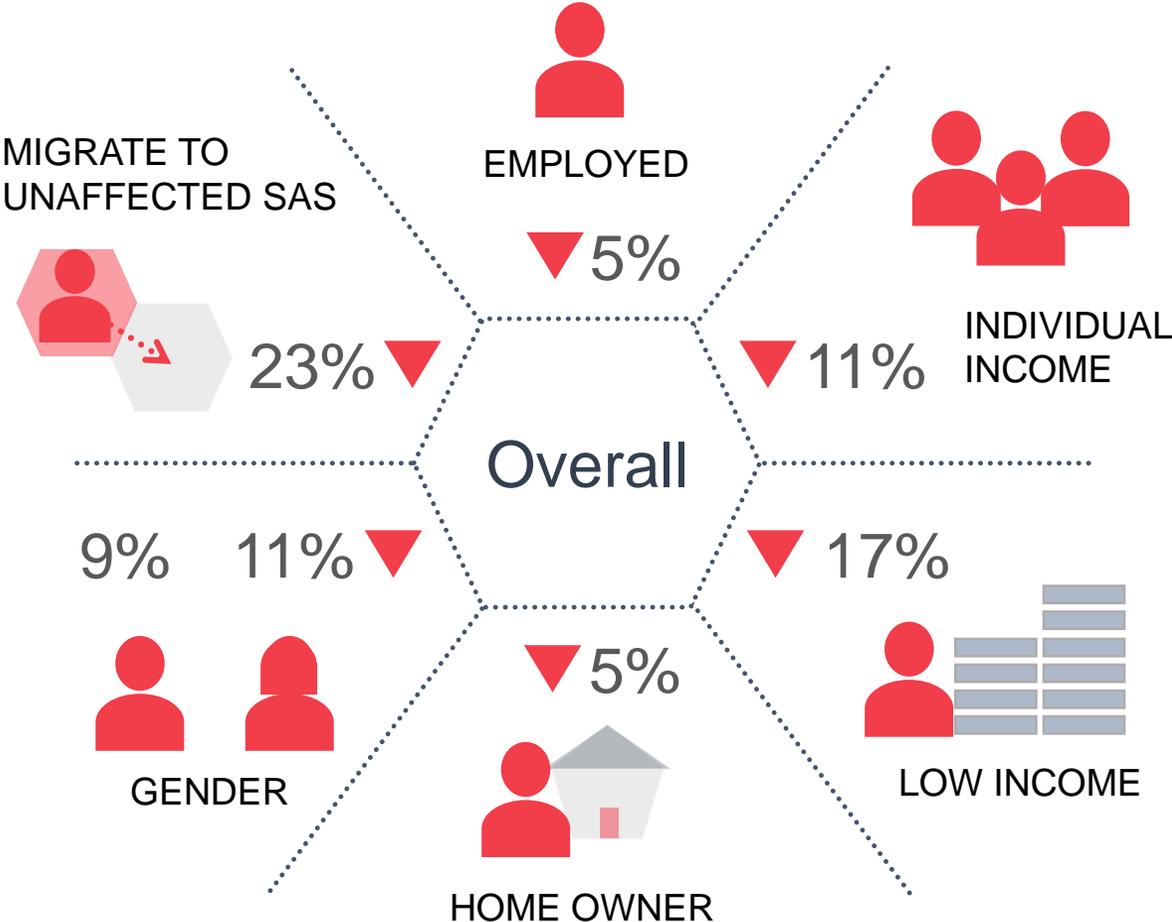
**The most devastating bushfires in
Australia's history**

*Deloitte Access Economics, 2016



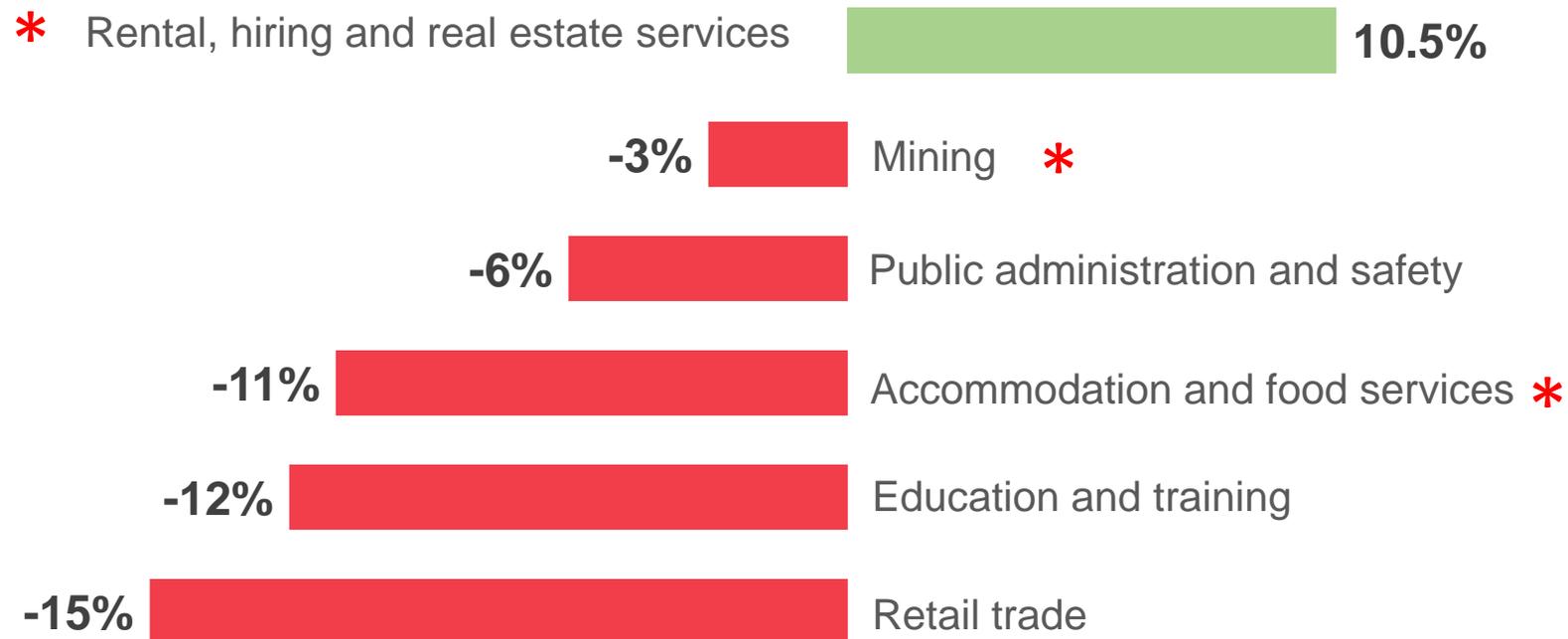
Case study: Black Saturday bushfires

Individual income, by demography



Case study: Black Saturday bushfires

Individual income, by sector of employment



QUEENSLAND
FLOODS:
DEC 2010 - JAN
2011



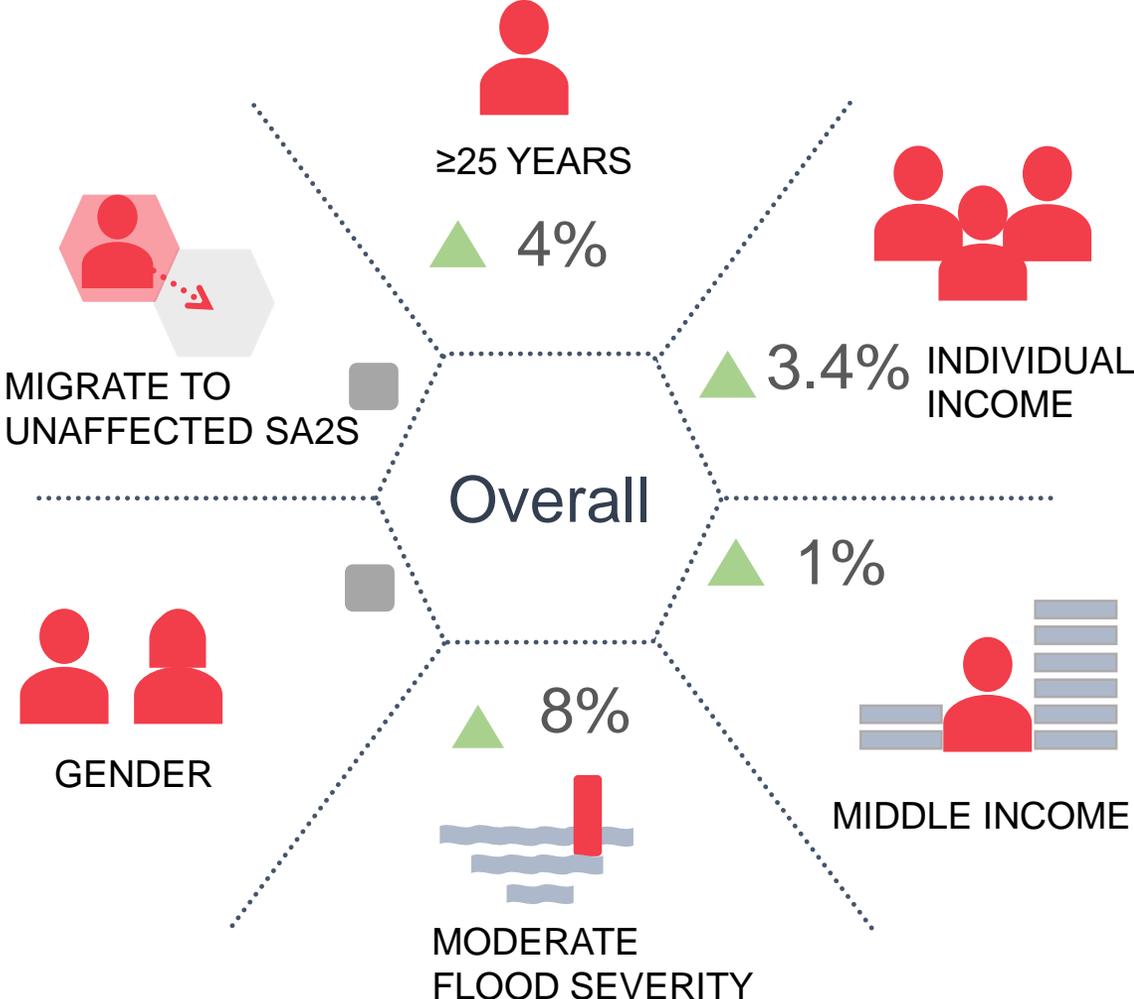
4.46m

- 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

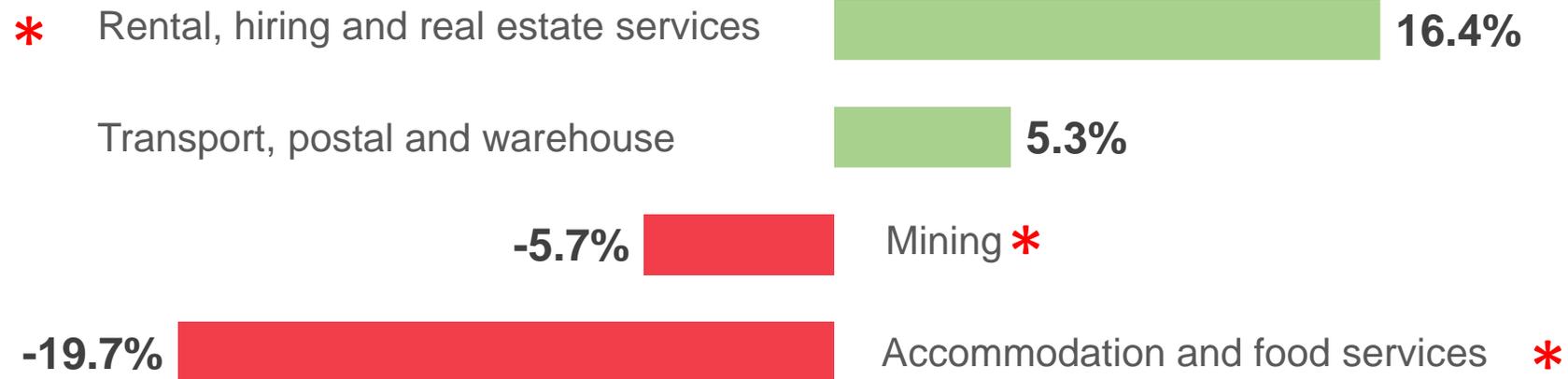
Individual income, by demography



175,600 obs

Case study: Queensland floods

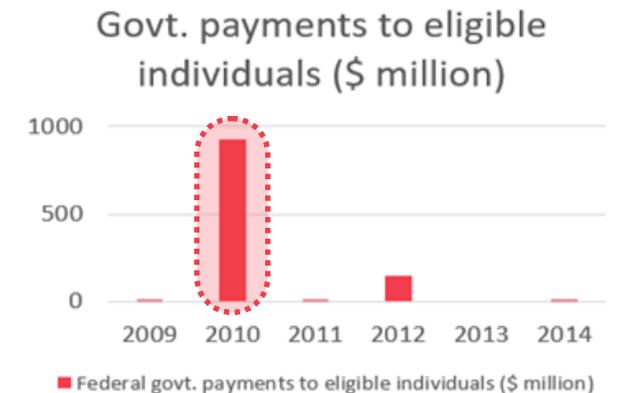
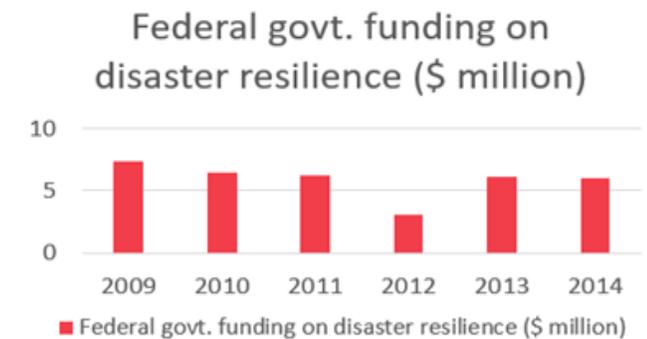
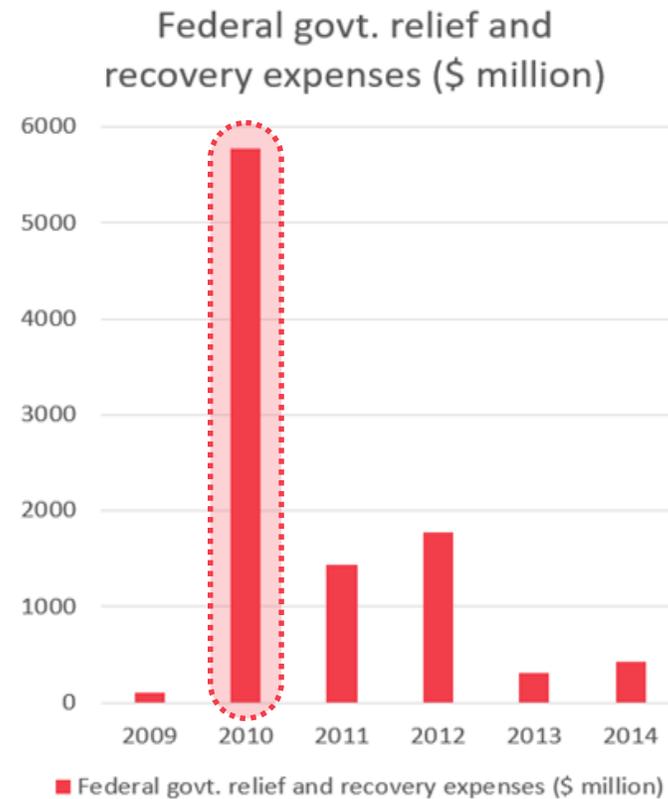
Individual income, by sector of employment



Case study: Queensland floods

What could explain the results?

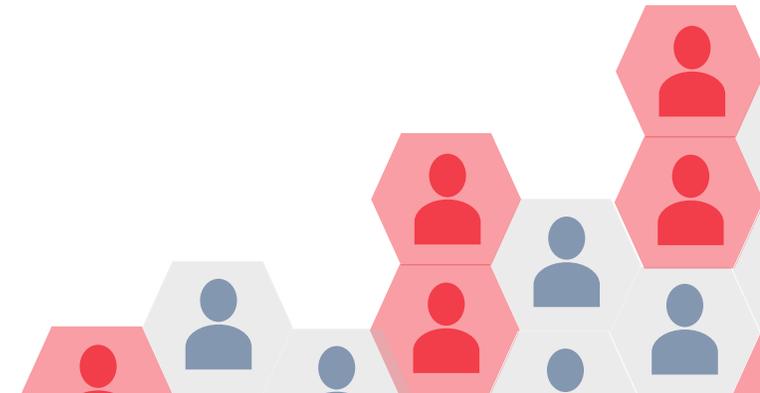
1. Urban, economically sensitive area
2. Government recovery expenditures successful at alleviating impact of floods on some individuals
3. Results are consistent with economic literature and experience of other disaster-hit cities (e.g., New Orleans)
4. Other factors likely at play that explain differences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



Optimising post-disaster recovery interventions in Australia

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



Optimising post-disaster recovery interventions in Australia

Policy implications - NDDRA

Is there potential to do better?

NDDRA 2017

“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)

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

OUR RESEARCH

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

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

Project timeframes

2014-15

2015-16

2016-17

2017-18

2018-19

2019-20

RESEARCH

REVIEW LITERATURE

- Floods, Bushfires and sectoral economic activity in Australia 1978-2015

- QLD Floods
- VIC Black Saturday Bushfires

- Cyclone Oswald

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
- Cyclone Oswald 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

- RAF & AFAC Conferences

- RAF & AFAC Conferences

- Focus groups
- Proof of concept
- RAF & AFAC Conferences

- Policy briefings
- RAF & AFAC Conferences
- End-user meetings

- Policy notes and briefings

POLICY BRIEFINGS

- End-user meetings

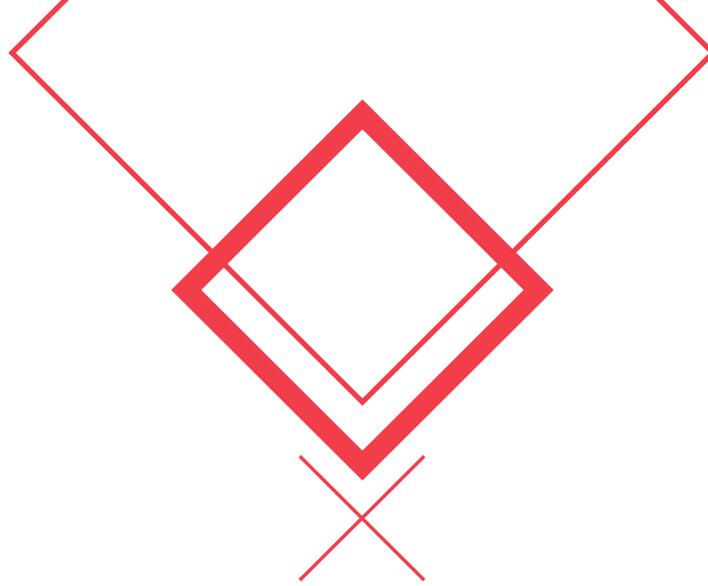
- End-user meetings

- End-user meetings

- RAF & AFAC Conferences

RESEARCH UTILISATION

- End-user meetings



THANK YOU

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