Disaster and economic resilience in Small Regional Communities: The case of Toodyay

Research advisory forum / **2019**

Prof Mehmet Ulubasoglu /

Department of Economics
Centre for Energy, the Environment and Natural Disasters
Deakin University

@bnhcrc   @bnhcrc

Aims

WHO IS AFFECTED?

- What are the economic impact of natural disasters on individuals?

- If there was an effect, did it differ according to who they were (demographic attributes) and industries they worked in
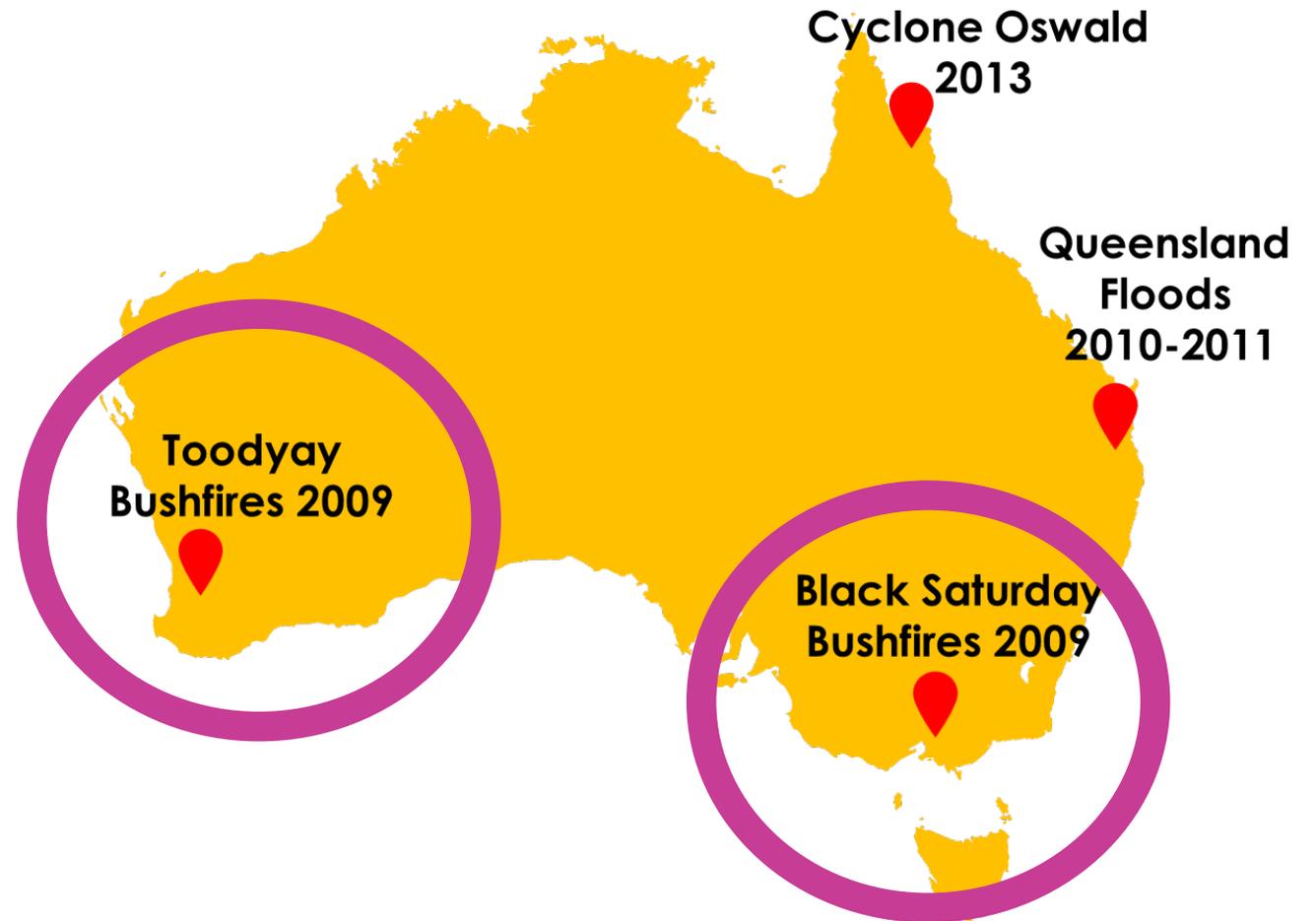
HOW ARE THEY AFFECTED?

- What was the disaster's effect on the income trajectory of individuals in the disaster-hit areas?

WHAT CAN BE DONE TO HELP?

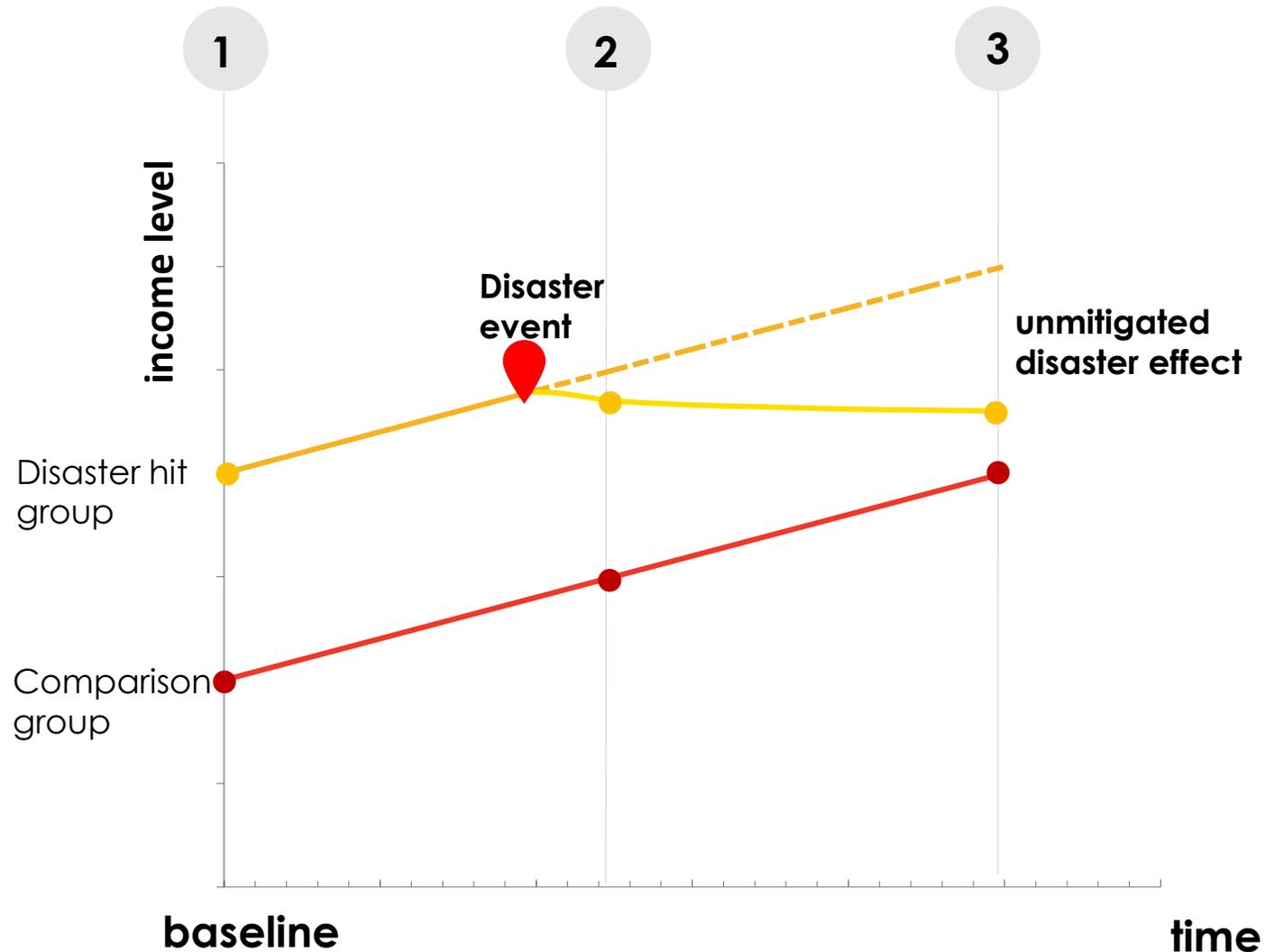- How can we optimise and inform a sustainable disaster recovery model?

Case studies

- **Four case studies** of various types and sizes to illustrate the value of this model

- **End-users** guiding research design for each case study are corresponding state agencies

Cyclone Oswald 2013

Queensland Floods 2010-2011

Toodyay Bushfires 2009

Black Saturday Bushfires 2009

Measuring the impact

- Difference-in-difference model
- ABS Census 2006, 2011 and 2016

The Big Five

1. **Looking at averages is informative, but the devil is in the details**. Socioeconomic characteristics and sectors of employment matter and dictate the effect on individual income that disasters can have

2. **Clear patterns emerge on who in the community are affected by disasters**

3. **Disasters can cause permanent migration** of individuals from their communities

4. **Reduced income and financial capabilities** are critical factors behind deteriorating mental health of disaster-hit individuals

5. **There is room to rethink** how we build a sustainable disaster recovery model on limited budgets

Black Saturday Bushfires

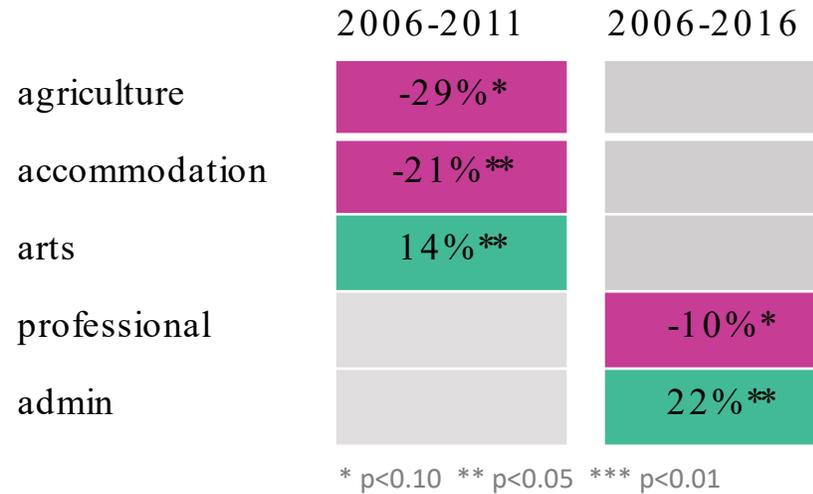**Average** Individual income losses, by income group

Overall

individuals

2006-2011	-6%*
2006-2016	-5%*

Income group

low   medium   high

-10%*		-9%*
-6%*	-5%*	
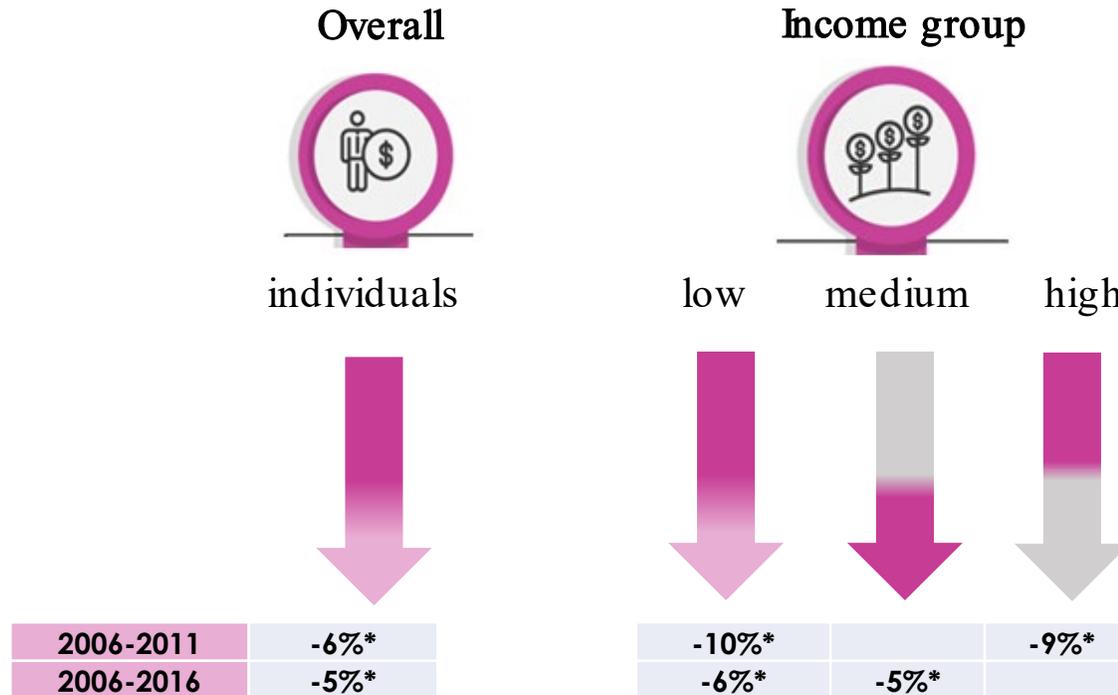
* p<0.10 ** p<0.05 *** p<0.01

Black Saturday Bushfires

Average Individual income losses by sectors of employment
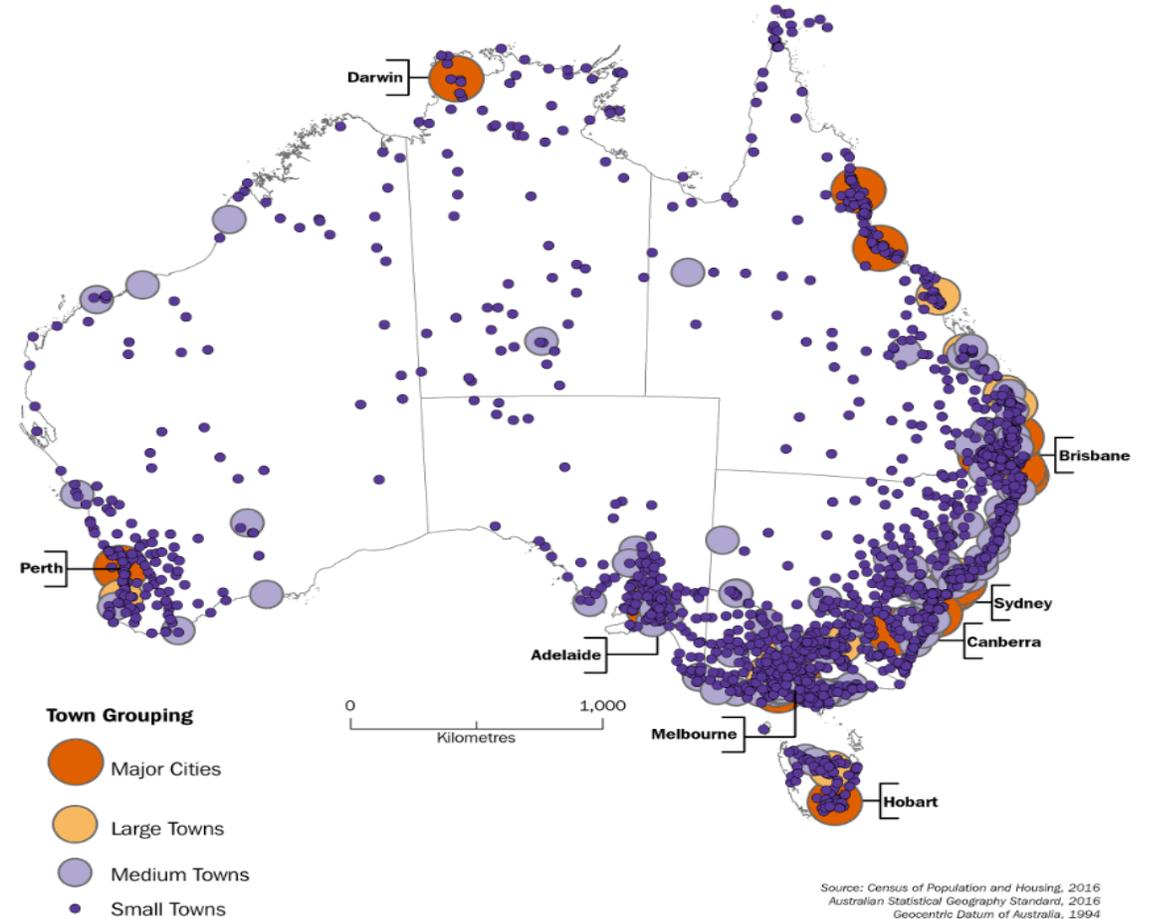
Strong evidence of effect

	2006-2011	2006-2016
agriculture	-29%*	
accommodation	-21%**	
arts	14%**	
professional		-10%*
admin		22%**

* p<0.10 ** p<0.05 *** p<0.01

Some evidence of effect

construction	6%	
transport	-34%	
media	17%	
public		6%
education	-4%	
health	6%	-15%

1.3 < t-stat < 1.6

When your data can't model!

Toodyay bushfires

Small towns like Toodyay form 9.7% of Australia's population

Town Grouping

- Major Cities
- Large Towns
- Medium Towns
- Small Towns

Source: Census of Population and Housing, 2016
Australian Statistical Geography Standard, 2016
Geocentric Datum of Australia, 1994

Toodyay bushfires

Modelling hampered by small sample size

INDIVIDUAL INCOME

<25 YEARS (base year)

GENDER

LOW INCOME

14
Hours to bring fire under control

2%
% Toodyay SA2 burnt
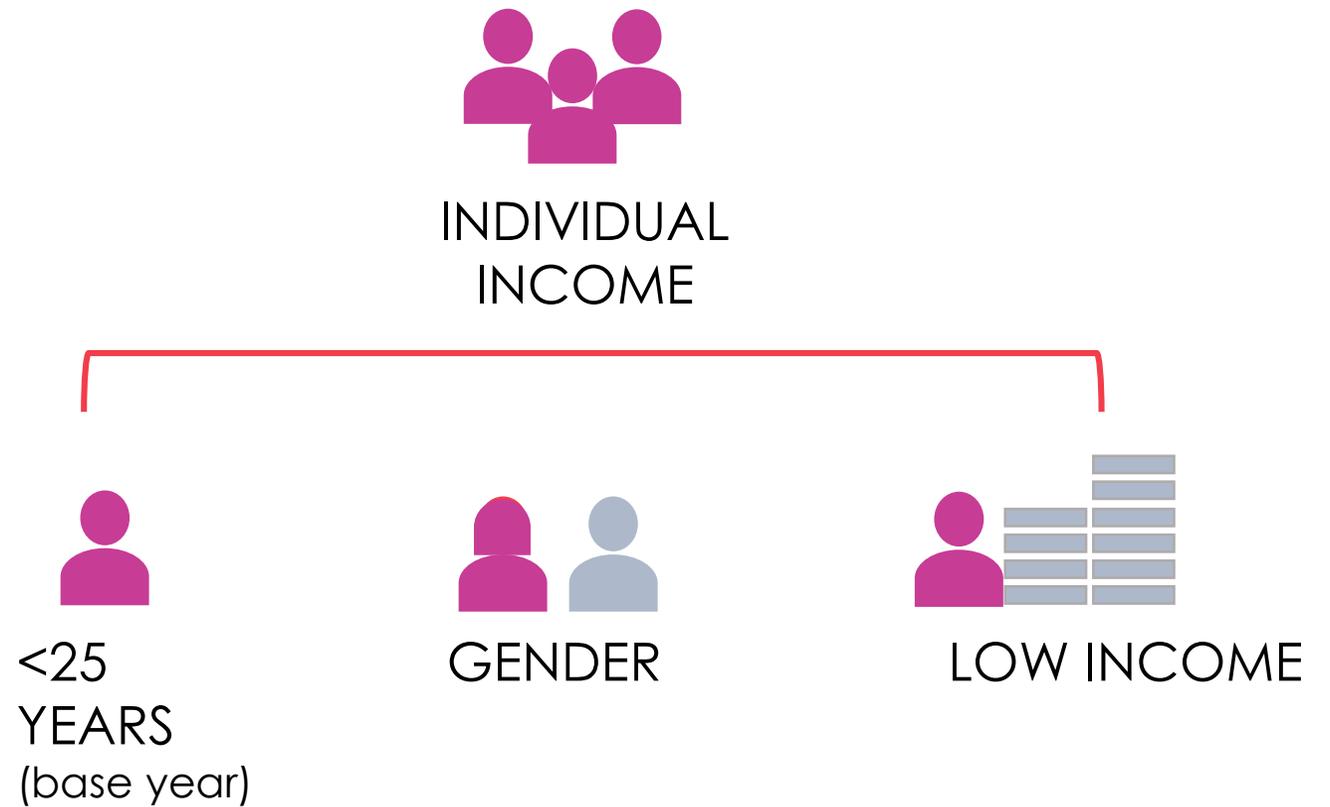
Toodyay bushfires
Demographic profiling uncovered valuable insights

60%
Employed residents work outside of Tooday

29%
Public assistance distributed within first three months

Thankyou

Prof Mehmet Ulubasoglu
m.ulubasoglu@deakin.edu.au