



THE UNIVERSITY OF
WESTERN AUSTRALIA | A CENTURY OF
ACHIEVEMENT



bushfire CRC

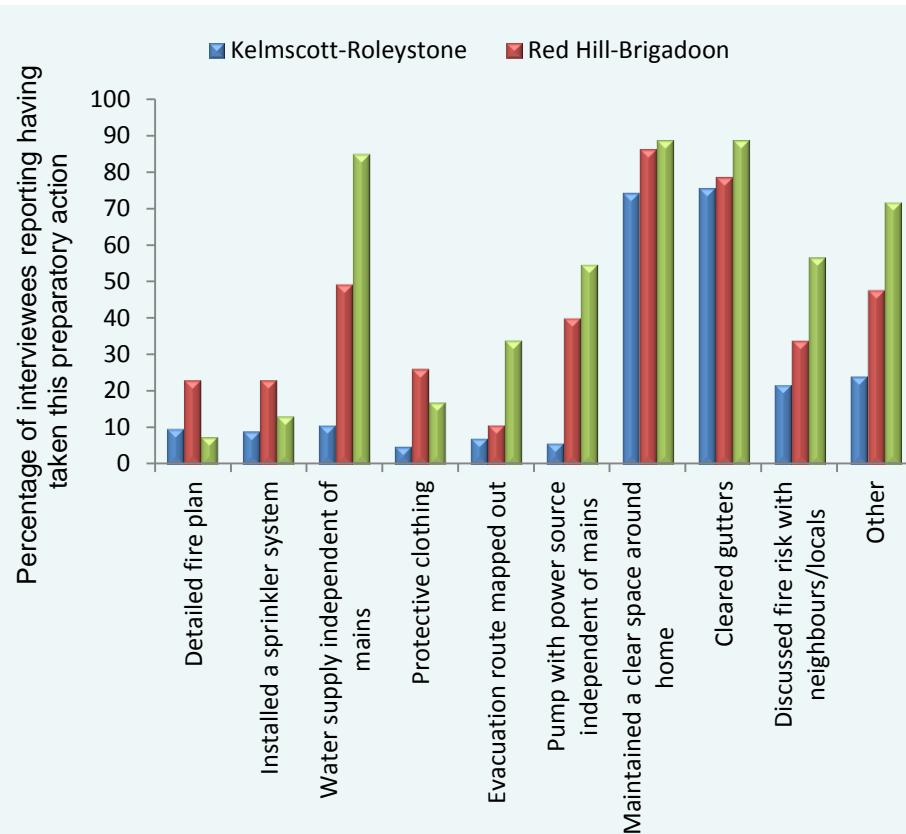
Community level influence on individual behaviours with respect to bushfire readiness & decision making in the face of immediate threat

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ACHIEVE INTERNATIONAL EXCELLENCE



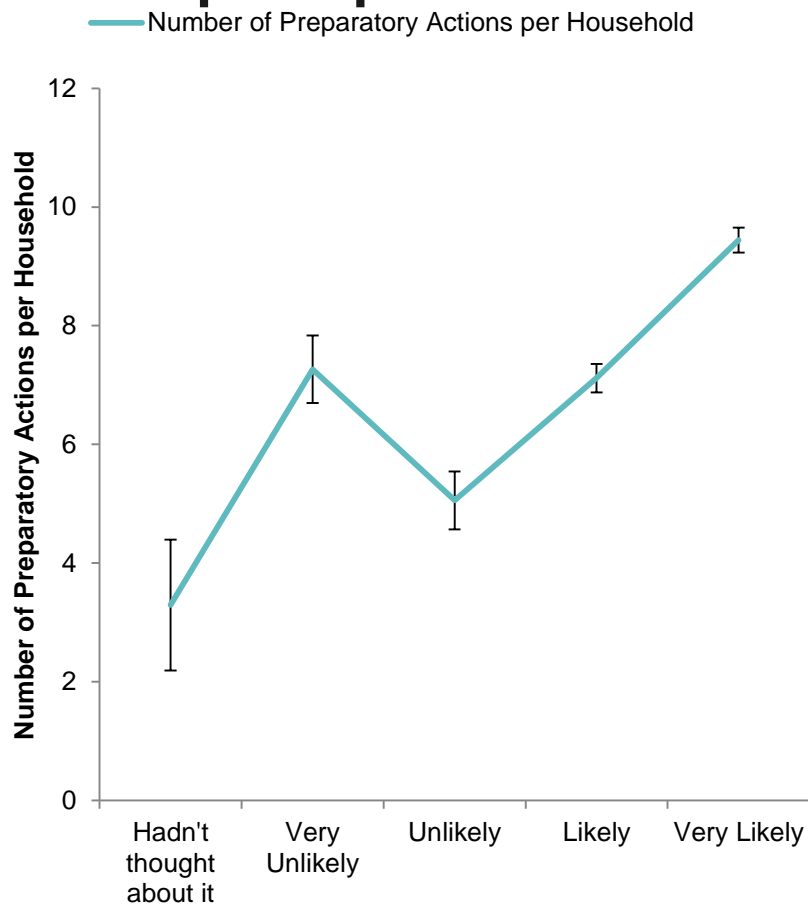
Large Differences in Community Preparedness



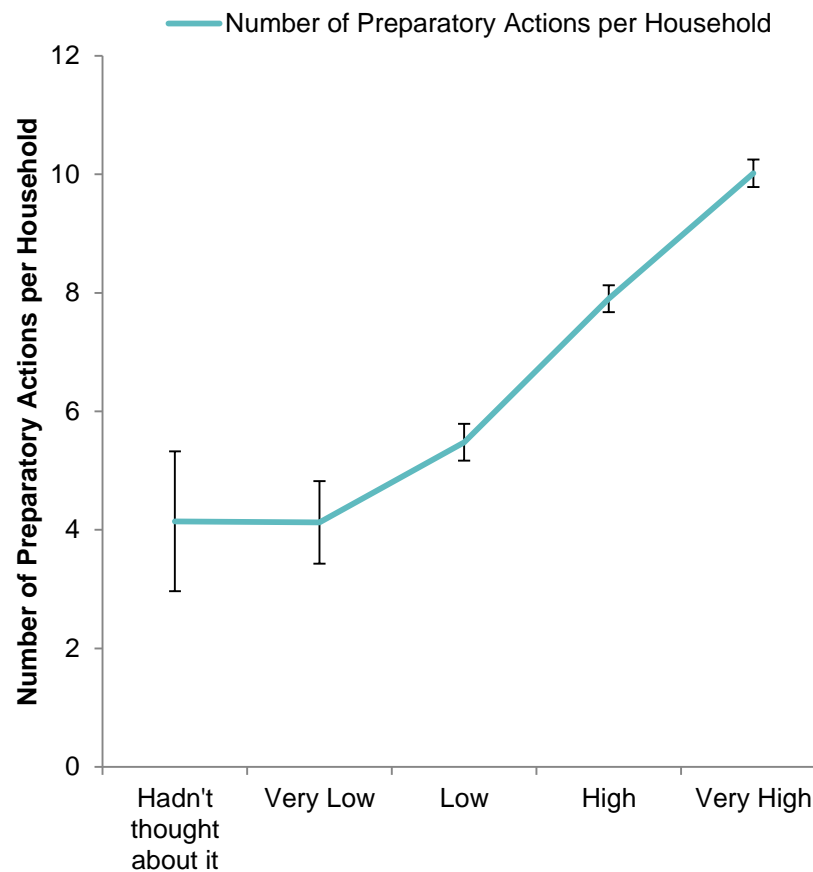
- Large differences observed between communities in terms of preparation
- Differences in terms of expectations
- If so, what causes these community wide differences?
 - Interconnectedness?
 - Sense of place?
 - Demographics
 - Shire visibility



Although communities differed there is a linear relationship between perceptions of risk and preparation



Likelihood

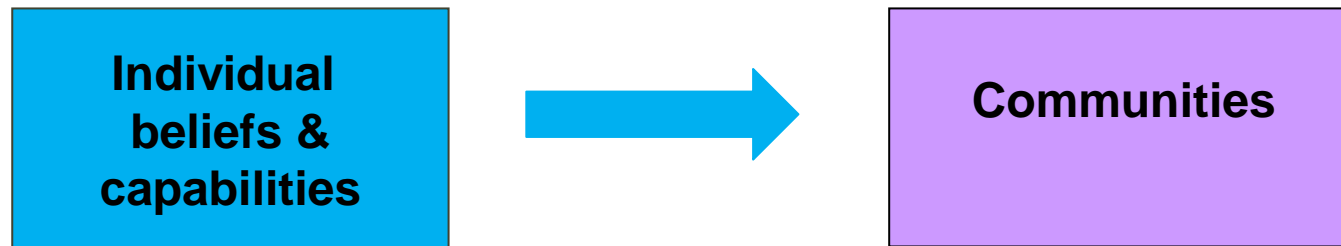


Threat



Individuals

- Individuals differ in a multiplicity of ways:
 - Age, Income, education, personality
- These characteristics influence an individual's
 - Interpretation of the hazard
 - Perception of the risk it poses
 - Their decision to act (or not act)

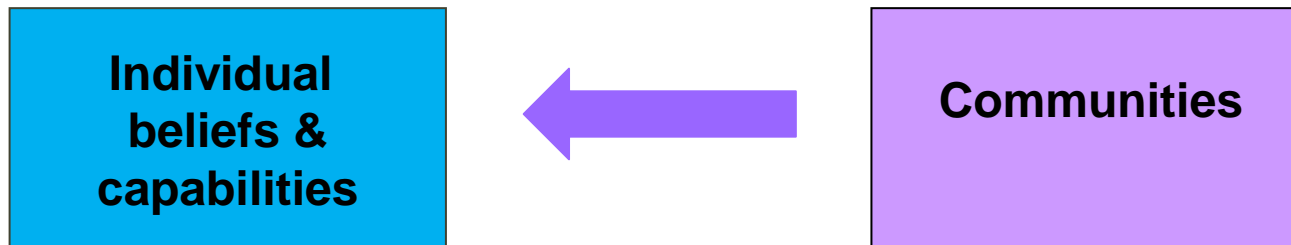


- Collectively, these actions influence the community



The GAP: Community Level Factors

- Gap in research regarding community level characteristics and how they influence individuals.
 - Communities create the conditions that individuals use to interpret situations
 - Conditions can either facilitate or constrain an individual's perception of the risk and their decision to act.





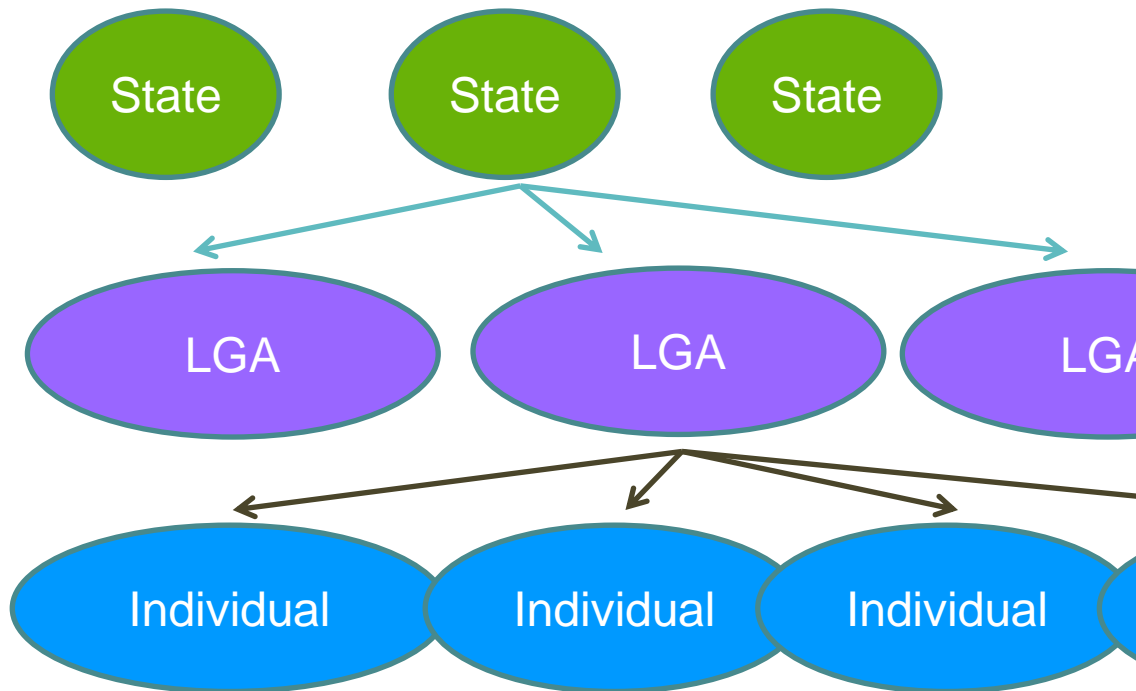
What community level factors contribute to community level differences & influence individual preparedness?

Why?

- Communities are a significant resource for risk management
- level of people's active involvement in community networks = key predictor of preparedness across different hazards
- community structures are vital for the dissemination of preparedness



Interactions: Multi-level



State

- Trust in organisations conducting controlled Burns

government to
public

- Primary

Individual

- Personality Factors
- Property Location
- Property Characteristics
- Ideology

Deciding/Acting/Preparation



Selection of Communities

Chosen using
FESA &
WALGA
Information

10 Local Government Areas: Fire Affected South-



5 High Prepared



5 Poor Prepared



2 Urban Fringe
Armadale
Bunbury

3 Rural
Busselton
Denmark
Donnybrook



2 Urban Fringe
Chittering
Mandurah

3 Rural
Nannup
Manjimup
Collie

Selected Households Outside of Main Town Site



Questionnaire

- Developed from literature and preliminary analysis of interviews in fire prone areas.

Preparedness

- Interest is sources of variance that lead individuals to take Preparatory Action: Hence DV is Individual Prep
- Measure created by Dunlop & McNeil
 - Collection of National Prep Activities List
 - Refinement through testing in 6 communities

Individual
Preparedness
Actions (DV)

Demographics

Individual
Experiences &
Actions

LG Actions

Community Level
Variables



Questionnaire – Individual level

➤ Demographics

- Age, Employment, Income, Household Composition
- Type of property, livestock/pets, time on property

➤ Individual Experiences and Actions

- Previous experience living through bushfire
- Attachment to Place of Residence (Town and Property)
- Involvement in Community Bushfire Prevention Activities
 - Volunteer Bushfire Brigade
 - Emergency management committee



Questionnaire – Community level

➤ Local Government Actions

- Local Government Prevention & Enforcement Activities
- Local Government Education Materials

➤ Community Level Factors

- Social Capital (Onyx & Bullen)
 - Participation, Social Proactivity, Trust & Safety, Connections: Neighbours & Family
- Aggregated Risk Perception
- Aggregated confidence in Local & State Government Services



Response Rate

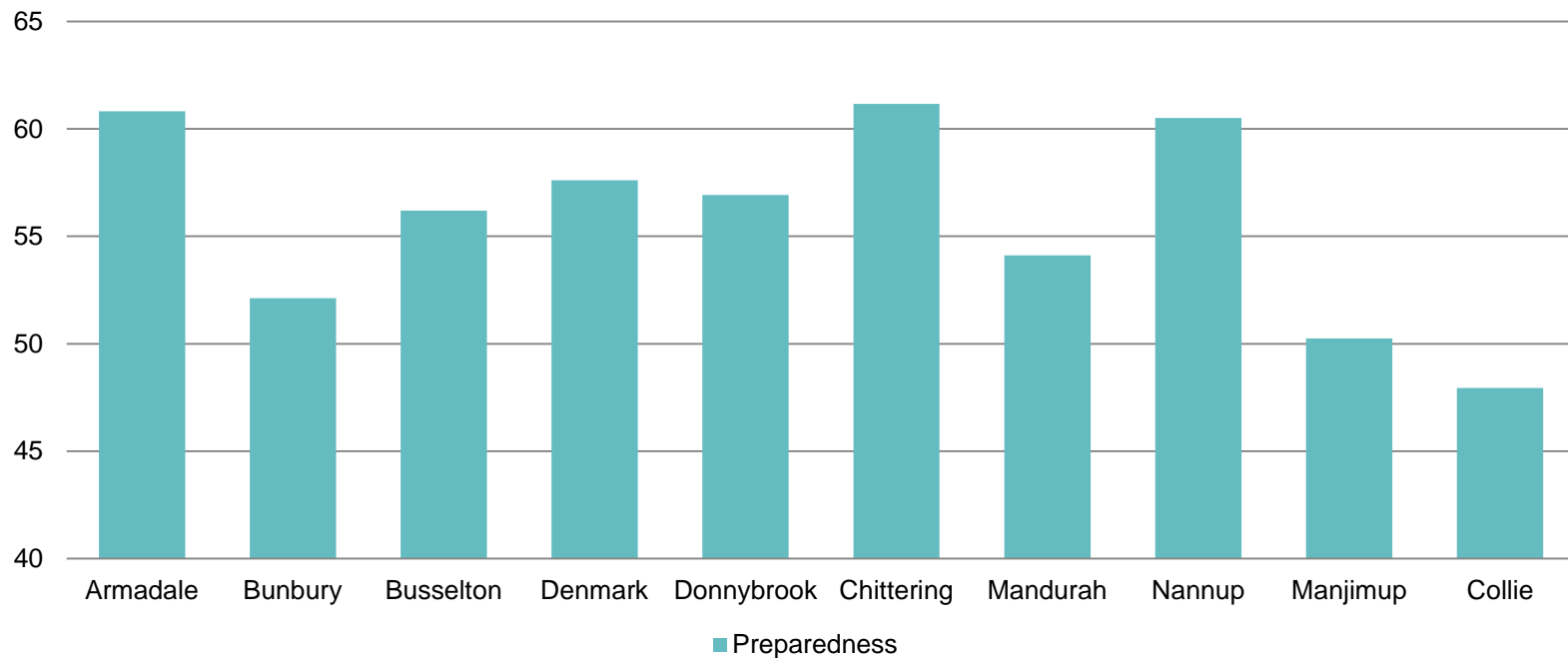
Area	City/Shire	No. Sent Out	No Received	%Received	Households in LGA	Prop. LGA Surveyed
1	Armadale	1000	201	20.10%	25045	3.99
2	Bunbury	1000	148	14.80%	14769	6.77
3	Busselton	866	102	11.80%	15848	5.46
4	Denmark	1000	209	20.90%	1437	69.59
5	Donnybrook	795	143	18.00%	2453	32.41
6	Chittering	677	128	18.90%	1892	35.78
7	Mandurah	899	139	15.50%	35372	2.54
8	Nannup	135	24	17.80%	857	15.75
9	Manjimup	974	112	11.50%	4931	19.75
10	Collie	1000	117	11.70%	3943	25.36
Other	(undisclosed)	0	19			
Total		8346	1342	16.10%	106547	7.83



Preparedness (DV)

Communities significantly differ on preparedness ($F(9,1313)=6.92, p<0.001$)

Preparedness





Individual & Community Level Variance

- Communities differ significantly on a range of different variables
- Social Capital ($F(9,1311)=9.41, p < 0.001$)
 - Risk Perception ($F(9,1251)=10.07, p < 0.001$)
 - Prior Bushfire Experience ($F(9,1291)=6.50, p < 0.001$)
 - Involvement in Community Bushfire Prep Activities ($F(9,1297)=8.44, p < 0.001$)
 - Confidence in Local Government (re Fire) ($F(9,1256)=5.22, p < 0.001$)



High & Low Prepared Communities

- Only moderate support for initial selection of communities
- Individual Level: High prep communities:
 - Scored sig. higher on Preparedness (H:57.1, L:53.9, $p<0.001$)
 - Had more participation in Community Prep Activities (H:0.28, L:0.15, $p<0.001$)
 - Bushfire Ready Group (H: 0.13, L: 0.03, $p<0.001$)
 - Volunteer Bushfire Brigade (H: 0.13, L:0.09, $p<0.05$)
- Community Level: High Prep Communities:
 - Had less confidence in Local Gov. (H: 1.36, L: 1.40, $p<0.05$)
 - No different on Property Inspections (H: 0.62, L: 0.57, ns.)
 - Issued the same No. of Compliance Notices (H:0.04, L:0.06, ns.)
 - Issued same No. of Fines (H:0.016, L:0.021, ns.)



Contrasting Two Communities

Armadale		Collie
Highest Preparedness (61)	$p < 0.05$	Lowest Preparedness (48)
High Risk Perception	$p < 0.05$	Low Risk Perception
High Personal Fire Exp.	$p < 0.05$	Low Personal Fire Exp.
Low Confidence in Government LG: 3.65 DEC: 19.15 DFES: 16.84	All $p < 0.05$	High Confidence in Government LG: 4.49 DEC: 25.04 DFES: 19.86



Individual & Community Level Variance

- Hierarchical Linear Modelling
- Only Null Model thus far
 - Investigates whether the amount of variance in Preparedness that is contained at the community level is significant.
 - Variance between individuals within a community = 373.19
 - Variance between communities = 17.32, $p < 0.001$
- Intra-class correlation coefficient = 0.044
 - 4% of the variance in preparedness is at the community level
 - Small but significant; suggests multi-level modelling is needed
 - Further analyses will attempt to explain this variance with Community Level predictors



Individual Preparedness

- While the more complex community level analyses have not yet been completed, on an individual level (not looking at communities) we are able to explain a significant amount of the variance.
- When demographic variables have been accounted for, significant predictors of preparedness are:
 - Social Capital (additional 7.3% of variance)
 - Being involved in a Community Preparedness Activity (+ 2.8%)
 - Place Attachment (+ 2.1%)
- In total this model accounts for 22% of the variance in preparedness



Local Government Actions

- Awareness of the local government inspections is linked to no significant additional preparedness behaviours ($t(1,1283)=1.6$, ns.)
- Having had your property inspected is linked to no significant additional preparedness behaviours ($t(1,1281)=1.43$, ns.)
- Having receiving a notice for failure to comply is linked to no significant additional preparedness behaviours ($t(1,1279)=0.242$, ns.)
- Having been fined for failure to comply is linked to no significant additional preparedness behaviours ($t(1,1274)=0.319$, ns.)
- Being in receipt of bushfire preparedness media is linked to no significant additional preparedness behaviours ($t(1,1310)=0.976$, ns.)



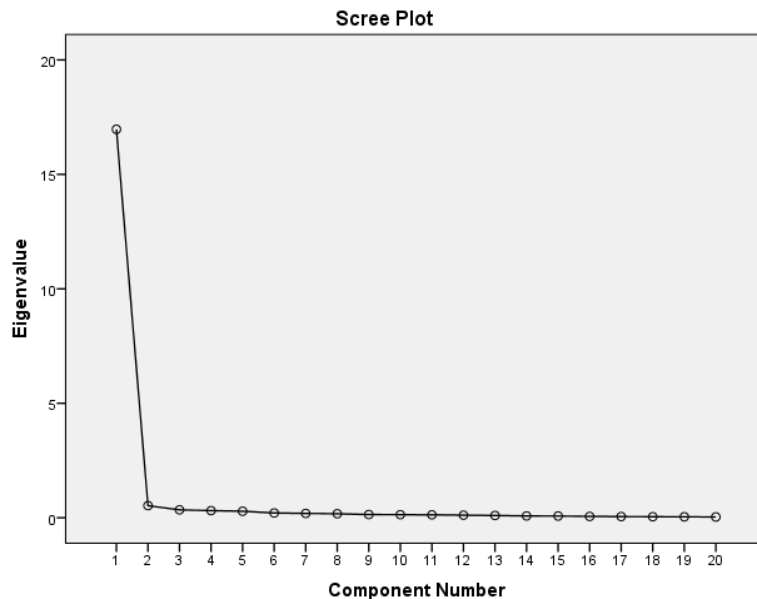
National Questionnaire

- Next questionnaire to range of communities across other fire affected states
 - Ability to model not only LGA variance, but also State level variance
- Questions need to accommodate differing State legislation regarding bushfire responsibility.



- Do other States show similar effects to WA.
- Do the differing roles of LGA's across states impact preparedness?

Scale Development: Local Government Questions



- Future questionnaires will be refined based on the lessons learnt here.
- 85% of the variance in responses accounted for by a single factor
- Very high correlations between disparate questions. Either:
 - Good LG's are good at everything, OR
 - individuals do not have the information to make a distinction, hence provide an 'overall impression'
- Similar effect between DFES & DEC