Community Engagement for Disaster Risk Reduction

MOUNT ALEXANDER CASE STUDY 2022-23

THE UNIVERSITY OF MELBOURNE

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ABOUT THIS REPORT

This report summarises preliminary findings from initial engagements with participants in the Community Engagement for Disaster Risk Reduction (CEDRR) project from the Mount Alexander case study. CEDRR is a University of Melbourne project led by Associate Professor Brian Cook.

The Mount Alexander case study partnered with the Castlemaine Goldfields Football Club, Girl Guides Castlemaine, and the Castlemaine Lions Club as an intermediary with the research team to recruit participants on our behalf. In return for their members participation in CEDRR, they were compensated $25 AUD for each completed survey-interview engagement. Over 250 members of these community groups signed up to participate in the case study, with a total of 179 participants completing the initial engagement from November-December 2022. Participants are currently being engaged by the research team to participate in follow-up interviews, which are due for completion by the end of May 2023.

Using hybrid quantitative and qualitative survey-interviews, this research aims to better understand participants' perceptions of risk, household risk preparedness, the impact that participation in CEDRR can have on household risk mitigation, and whether participation 'spills over' to non-participants. The goal of this report is to summarise and discuss preliminary findings of the initial survey-interview engagements.

EXECUTIVE SUMMARY

- A total of 179 participants completed the initial survey-interviews.
- Most participants (82%) had experienced a flood event in their lifetime but only 27% considered their home to be at risk of flooding.
- The most common risk reduction action(s) taken by households include house/garden maintenance (n=144), insurance (n=138), and home safety equipment (n=103).
- Common flood risk mitigation actions included landscaping and digging trenches to improve drainage and divert water away from houses (n=45) and cleaning and/or replacing gutters and / or downpipes (n=20).
- Regarding future risks, participants were most concerned about the risk of bushfire (n=85), followed by climate change/extreme weather events (n=56), and then flooding (n=46). Health-related risks (n=37) and financial/economic risks (n=37) were also common concerns.
- Participants identified that more information (n=38) or resources (n=18), around flood risk (n=6), would be useful to support risk mitigation action for their household.
- Participants identified greater support from council (n=16) or broader levels of government (n=21) as being useful for prompting risk mitigation action.
- Importantly, participants also noted the importance of supporting local community groups and community resilience initiatives to prompt action (n=32).

THE CEDRR PROJECT

BACKGROUND

CEDRR originated as a collaborative project between Dr. Cook and the Victoria State Emergency Services (VicSES). Early versions of CEDRR received support and in-kind contributions from the University of Melbourne, Melbourne Water, the Victoria State Emergency Service, and the Australian Red Cross. As of May 2023, CEDRR case studies have been undertaken across The City of Kensington; the City of Melbourne (Cornes & Cook, 2018); Whittlesea Local Government Area (Cornes et al., 2019); Kialla City of Greater Shepparton, and the City of Banyule (Cook in Press).

This case study aims to better understand local communities' perceptions of, and preparedness for, flood risk in ways that support mutual learning and resilience from the ground-up. Mount Alexander is the second case study within this larger project. Following the Banyule pilot study (Cook et al., in Press), which trialled the CEDRR methodology using remote methods of engagement (i.e., phone and zoom),

The Mount Alexander case presented here trialled an 'invited' participant recruitment pathway by partnering with local community groups to recruit participants. Once a community group agrees to partner with CEDRR, their organisational committee invite their membership via email and 'word of mouth' to participate. This means that community groups act as an intermediary with the research team to recruit participants on behalf of CEDRR. In return, participants can fundraise towards their chosen community group ($25 for each completed engagement). This approach was inspired by previous CEDRR findings that suggests learning about risk and translating that learning into action

is more likely to occur by building relationships of care with participants instead of 'educating' them on what to do (Cook and Melo Zurita 2019).

AIMS

The CEDRR project aims to empower local community groups to become more resilient, informed, and prepared for disasters and emergencies, especially in the context of flood risk. CEDRR aims to better understand and support community resilience from the 'ground up', by listening to, learning with, and reflecting alongside the community.

The Mount Alexander case study aims to better understand the local community's perceptions and preparedness for risk at the household scale, measure the impacts of engagement on participants, and to follow and account for possible spillover effects to non-participants. This case study also aims to understand the effectiveness of the invited approach to participant elicitation, whilst delivering meaningful research outcomes back to the community and its local service providers.

METHODS

The CEDRR program engages with participants using a bespoke online survey tool (https://communityriskreduction.org.au/) to conduct initial survey-interviews, and then follows-up with participants 4-6 months later. The initial survey-interview is structured but employs a participatory relationship building methodology (Cook & Overpeck, 2019) adapted from Hicks (2011) ten principles of relationship building (Appendix 1), which places active listening, humility, and dignity at the heart of respectful relationships.

In November of 2022, the CEDRR team partnered with the Goldfields Football club, Girl Guides Castlemaine, and the Castlemaine Lions Club to test the 'invited' recruitment pathway. Establishing these partnerships draws on pre-existing relationships with the community groups, working within social networks and mobilising social capital (Pfefferbaum et al., 2017) to achieve mutually beneficial outcomes. Over 800 club members were invited, with additional participants signing themselves up via a CEDRR article printed in the Castlemaine Mail (Figure 1) – a local newspaper – via referral to the research team by CEDRR participants.

CASTLEMAINE MAIL Friday, October 21, 2022-7

Advertorial

Community engagement for disaster risk reduction (CEDRR):

Flooding in Mount Alexander

The recent storm and associated precipitation in Mount Alexander have brought questions of flooding into focus. The combination of land-use change, development, and climate change all contribute to a worsening flood risk situation for our region, which will affect more of us in the coming decades. While the waters rushing through the Botanical Gardens and cars driving through floodwaters at Campbells Creek will receive much of the attention, there will also be many residents whose gutters failed, whose drains backed up, or who were somehow affected by the waters at the household scale. My own woodshop and office were flooded (see below) and, along with many other locals, I was spent this last weekend cleaning up.

With flood risk in the Shire likely to worsen over the coming decades, there is a need to better understand the actions that locals are taking, or not taking to mitigate risk. Local knowledge and past experience are critically important aspects of risk management, which is the focus of a research project called 'Community Engagement for Disaster Risk Reduction' (CEDRR), which is about to begin in Mount Alexander.

CEDRR is a project designed to record and analyse local perceptions of risk and risk management at the household scale, with a focus on flood risk. The project is currently seeking participants for a 20-30 minute survey conducted remotely and, six months later a 5-10 minute follow-up. We are especially interested in hearing from people who have experience with minor or major flooding, either recently or in the past. As a way of contributing to the community, each person who participates in the research will generate $30 for either the Castlemaine Girl Guides or the Goldfields Football Club.

One member from each household in Mount Alexander Shire is welcome to participate. If you wish to enrol, please use the QR code on this page, or contact cedrr-enquiries@unimelb.edu.au

Dr. Brian Cook
brian.cook@unimelb.edu.au
Associate Professor
The School of Geography, Earth and Atmospheric Science
The University of Melbourne

https://melbourneuni.au1.qualtrics.com/jfe/form/SV_6nZc590xln3F7Cu

Figure 1: Local media for the project (Castlemaine Mail 21.10.22)

Participants were contacted at least three times by the CEDRR research team to organise a convenient time to conduct the initial survey-interview. Preference was given to meeting via a video conference call platform (i.e., Zoom or Microsoft Teams), but at the request of participants, surveys could be conducted over the phone. Research assistants guided participants through the online survey tool, seeking participants' permission to audio record the resulting conversations and reflections. Participants were notified of the privacy policy, their agency to ask for further information and resources, and their capacity to end the survey at any point, if they wished. Support services were also offered before and after the conversation.

In the initial survey-interview, participants were asked about their past experiences and future expectations of hazards and emergencies, their perceptions of their household's exposure to risk and their perceptions of personal and community vulnerability to risk. Further questions were asked about previous household risk mitigation actions and the likelihood of increased future risk reduction behaviours. Participants were also surveyed about their perceptions of community and neighbourly connectedness, care for wellbeing, and the ability to draw on others for support in times of emergency. Lastly, demographic questions provided a basis for qualitative discussion and insight.

The quantitative data from the initial survey-interviews was recorded in Qualtrics using the bespoke online CEDRR tool. Qualitative data was audio recorded and transcribed using Otter AI. These datasets and transcripts are de-identified, re-matched, and inductively analysed for themes by members of the CEDRR research team.

RESULTS AND DISCUSSION

A total of 179 participants completing the initial CEDRR survey-interview.

DEMOGRAPHICS

Participants were typically aged 35-54 years old.

How old are you?	**N=179**
18-24	6 (3%)
25-34	6 (3%)
35-44	50 (28%)
45-54	62 (35%)
55-64	22 (12%)
65-74	24 (14%)
75+	9 (5%)

More than half of the sample identified as female.

To which gender do you most identify?	**N=179**
Female	102 (57%)
Male	73 (41%)
Other	3

Only 2 participants identified as Aboriginal and/or Torres Strait Islander.

Do you identify as an Aboriginal and/or Torres Strait Islander person?	**N=179**
Yes	2
No	176 (98%)
Prefer not to answer	1

Most participants were born in Australia (n=134), with the second largest demographic cohort being born in the United Kingdom (n=21).

What country were you born in?	**N=179**
Australia	134 (75%)
Canada	2
China	4
France	1
United Kingdom	21 (12%)
Germany	1
India	1
Netherlands	3
Papua New Guinea	1
Philippines	1
Poland	2
South Africa	2
Sweden	1
Thailand	1
United States of America	2
New Zealand	2

Participants predominately spoke English at home, with a couple households speaking Cantonese, Mandarin, and German. Secondary languages spoken by participants included AUSLAN, Polish, Dutch, and Spanish.

What language(s) do you predominantly speak at home?	**N=179**
Cantonese	2 (1%)
English	174 (97%)
German	1 (1%)

Mandarin	2 (1%)

Secondary languages	**N=179**
AUSLAN	3
Bosnian	1
French	1
Welsh	1
Spanish	2
Dutch	2
English	2
Polish	2

Household income was widely distributed, with the majority of households earning between $45-180k per year.

What is your yearly household income?	**N=179**
$1- $14,000	1
$18,201 - $45,000	19 (11%)
$45,001 - $90,000	36 (20%)
$90,001 - $120,000	28 (16%)
$120,001 - $180,000	38 (21%)
$180,001 - $250,000	21 (12%)
$250,001 and over	16 (9%)
Prefer not to answer	20 (11%)

Most (89%) participants owned their home.

Do you rent/own/other your living space?	**N=179**
Own	159 (89%)

Rent	17 (9%)
Sub-let	1
Other	2 (2%)

On average, participants had lived in their current home for 11.5 years.

How long have you lived at your current address?	**N=179**
<1 year	15
1-5 years	35
6-10 years	56
11-20 years	42
21-30 years	18
31-40 years	6
41-50 years	4
50+ years	1

RISK PERCEPTIONS

In general, participants rated their 'risk appetite' as moderate to low. Most participants described themselves as either: 'risk neutral' (i.e., comfortable with risk that is taken for a good reason (n=76)); or 'pareto risk' (i.e., only taking risk when there is a substantial reward (n=54)).

On a scale of 1 to 10, how much of a risk taker are you?	**N=179**
1 = Minimax (risk minimisation at any cost)	4 (2%)
2-3 = Risk averse (prefer the safest path)	25 (14%)
4-5 = Pareto risk (only take risk when there is a substantial reward)	54 (30%)
6-7 = Risk neutral (comfortable with risk that is taken for a good reason)	76 (42%)

8 = Risk seeking (comfortable with high risk but in a calculated manner)	16 (9%)
9 = Maximax (maximising the chance of the best experience regardless of risk)	1
10 = Maximisation (always seeking the most risk)	0
Unsure	3 (2%)

Just over half (51%) of participants felt that their household was only exposed to a 'few' high-risk days per year. Interestingly, a substantial proportion (16%) felt that their household was never exposed to high-risk events.

Over a year, how many days of high risk is your household exposed to?	**N=179**
None	29 (16%)
Few	91 (51%)
Some	40 (22%)
Many	11 (6%)
Most	5 (3%)
Unsure	3 (2%)

RISK REDUCTION

Most (61%) participants felt that they had put in either 'some' (35%) or 'little' (26%) effort to reduce risk at their household.

How much effort have you put into risk reduction for your household?	**N=179**
None	10 (5%)
Little	46 (26%)

Some	63 (35%)
Much	33 (19%)
A great deal	27 (15%)

The most common risk reduction action that participants had taken included house/garden maintenance (n=144), insurance (n=138), and home safety equipment (n=103).

What actions or steps have you already taken to prepare for a large-scale emergency?	**N=179**
I have prepared or planned with my family	103
I have prepared or planned with community organisations	39
I have safety equipment at home	107
I have done relevant maintenance on my garden / property	144
I have insurance	138
I have done nothing	6
Other	52

'Other' responses included a range of fire prevention activities, such as: garden design and irrigation (n=10), building in-line with regulations (n=8); and fire preparation activities such as 'keeping an eye' on emergency apps and news outlets (n=6) or communicating with neighbours on high-risk bushfire days (n=4). Multiple participants described growing their own food as an important action that their household took to prepare for large-scale emergencies (n=4). A number of participants had also planned or prepared for large scale risk with local community organisations such as 'West End Resilience' (n=3) and 'The Mount Alexander Shire Accommodation and Respite Group' (n=1).

FLOOD RISK

The majority (82%) of participants (n=147) had experienced either a minor or major flood event across their lifetime, with flash flooding (n=77) and drainage issues (n=57) being the most common types of flood event experienced.

Have you experienced a minor or major flood event in your lifetime?	**N=179**
Flash	77
Drainage	57
Riverine	49
Gutters	36
Never	32
Other	12
Sewerage	8
Coastal	6

In general, participants (n=131) considered the risk of household flooding to be low.

Do you think your home may be at risk of flooding?	**N=179**
Yes	38 (21%)
No	131 (73%)
Don't know	11 (6%)

Yet, just over half of participants (54%) had previously taken flood mitigation measures at their household.

Have you taken any actions to mitigate flood risk in your current or previous households?	**N=179**
Yes	96 (54%)
No	79 (44%)
Don't know	4 (2%)

Flood mitigation actions taken by participants ranged from minor to major actions. The most common mitigation action included 'landscaping' and digging trenches to improve drainage or divert water from their homes (n=45):

> *"We've done that on purpose from a landscaping point of view. Yeah, yeah. We have trenches around the house. We have trenches in our garden. So in this most recent flood event, we did go out and just dig a few more trenches. We're quite used to doing that. It just, sort of, to drain water away from the house" (#00093).*

The second most common flood mitigation action participants described was 'cleaning and/or replacing gutters' and downpipes (n=20):

> *"Because we know that if we don't clean the gutters out then they're going to overflow and we also know that the garage gets flooded" (#00024).*

> *"And we've had to expand like our downpipe so that water. It wasn't quite right. And we've got that fixed" (#00001).*

Some participants had sandbagged their properties during flood events (n=4), often with the help of neighbours and the wider community, as described below:

> *"Because we've just had some flooding at my house. And all the support I got was through the WhatsApp group of my neighbours, you know? Some of*

whom went to the SES and got sandbags, some of whom, you know, came and helped out moving things" (#00056).

Others had purchased or used a pump to divert water away from their house (n=6).

"And so when we first moved in – we've got a cellar – and when we first moved in, it used to fill up and so we bought a pump and we pump it out, when it happened hasn't really happened in the last few years, though" (#00012).

Lastly, some participants had 'elevated' or purchased their houses with flood in mind (n=7), as demonstrated in the two quotes below:

"When we built the house, we built it on stumps, so it's extra elevated" (#00058).

"We looked at it [flood overlays] before we before we bought this house" (#00087).

FIRE RISK

More than half of participants considered their home to be at risk of fire.

Is your home situated in a fire prone area?	**N=179**
Yes	95 (53%)
No	69 (39%)
Don't know	15 (8%)

FUTURE RISK

Participants were asked to reflect on what risks they and their household might be exposed to over the next ten years. The largest concern for participants was

the future risk of bushfire (n=85), followed by climate change/extreme weather events (n=56), and then flooding (n=46). Health-related risks (n=37) and financial/economic risks (n=37) were also common themes of concern. A number of participants also raised the issue of risks surrounding children and teenagers (n=15), as well as pandemic-related risks (n=14).

Q: Over the next 10 years, what is the biggest risk(s) you think you and your household will be exposed to?	**N = 179**
Covid/pandemic	14
Climate change/extreme weather	56
Fire	85
Flood	46
Financial/economic/cost of living	37
Children/kids/teenagers	15
Health	37
War	7
Theft/crime	5

Many participants had already thought about or taken action to mitigate these risks across different scales. For example, several participants described acting at the household scale, most often centred around 'household' (n=16) and/or 'garden maintenance' (n=12):

> *"Make sure that all the grass is maintained. Make sure the gutters are well cleaned, the trees that are closer to the house make sure that they're trimmed as much as we can. And the drainage, make sure the drainage is functioning" (#00008).*

> *"Just normal things. Maintenance, you know, sensible upkeep of homes and gardens and things like that"* (#00063).

The multiple benefits of 'garden design' and maintenance as a risk mitigation action was also discussed by several participants:

> *"If you design a garden right it helps protect your property. So you may need to do less to your house, if your garden can help protect it, particularly flood but also fire… It's a much more affordable thing to do a garden than all the retrofits on the house"* (#00095).

Participants described retrofitting their houses to prepare for bushfire, flood, and other extreme weather events including, installing solar panels (n=6), water tanks and pumps (n=3) and improving window glazing (n=2).

> *"We insulated the walls; we double-glazed the windows. And we put in a solar system. And the next step would be to get the battery I guess to be more self-sufficient with power"* (#00031).

Some participants (n=5) described their various mitigation efforts as primarily directed at reducing risks related to personal health:

> *"I put like a great deal of effort into trying to upgrade my house externally, it's a renovated weatherboard with no insulation, and you know, extremely hot in hot summers and freezing and so, I guess those are the risks to our health and I put a lot of great deal I would say probably put into reducing the risk of that discomfort or health risk"* (#00034).

Many participants indicated that risk mitigation was a collective activity. For example, many participants talked about acting with their family (n=6) or at the community scale (n=7), instead of them acting individually. For many participants, 'teaching' their children and family was an important action to reduce household risk:

> *"Having a good relationship with children, teaching them about things"* (#00061).

> *"Talking with family, and providing support"* (#00016).

For other participants, collective risk mitigation was seen as something that extends beyond the household and family scale. For example, participants often talked about the value of reducing risk by being 'connected with their community' (n=9).

> *"Being well connected to the community and keeping an eye on others (family and local community)"* (#00056).
>
> *"On a community level, there has been a collective acknowledgment of the climate crisis and impact on disaster risk, adapt to new ways of doing things"* (#00029).
>
> *"Building community as risk mitigation"* (#00044).

Communication and advocacy for the local council to act was also commonly identified as an important risk mitigation action:

> *"Advocating for local council to do something about flood levy"* (#00201).
>
> *"Consulting with council, raise consciousness by writing articles in local media… sharing information with community"* (#00095).

SUPPORT FOR RISK MITIGATION

Participants identified a range of supports that could help mitigate against perceived current and /or future risks. Many identified that more information (n=38) or resources (n=18) would be useful, especially local information about flood risk (n=6):

> *"Maybe sort of information from local… areas that know exactly what the risks are for this area"* (#00075).
>
> *"I think there's something about sort of community specific information that that's missing in in our systems, and I think that that would be helpful"* (#00098).

Greater support from council (n=16) or broader levels of government (n=21) was also a common theme. For example, financial 'incentives' such as rebates or subsidies to support risk mitigation at the household and community scale was identified as a useful support (n=10).

> *"I would really like it if there was more incentive to do risk reduction on the environmental side of things"* (#00103).

Many (n=32) felt that council and government needed to better 'listen' to and support the community to prompt action:

> *"Community represents a small voice compared to developers and commercial sector. Need to amplify and respect the voices of community. Community needs to feel listened to, and supported by, council and other powerful actors"* (#00011).

In terms of flood risk, support from the council to address flood infrastructure and improve local drainage systems was identified as critical by multiple participants.

> *"Definitely support from council with improving drainage. I think more broadly, support from government at local and state level around planning regulations and ensuring that our planning system is not creating or exacerbating risks in my neighbourhood or my community"* (#00003).

The need for better communication (n=7) and transparency (n=2) from the Council around risk, responsibility, and development was also emphasised:

> *"Just make it transparent as to what they can and can't do… If they could communicate any ideas about improving and upgrading and not just maintenance… It's the lack of communication, the lack of trust, which makes things far more difficult"* (#00037).

COMMUNITY CONNECTEDNESS

Participants identified that they would primarily rely on friends, family, or neighbours if in need during an emergency, a finding demonstrated in the risk literature (Kelman et al. 2016). 'Other' (n=36) sources often included emergency services (n=14) such as the State Emergency Services (SES) (n=4) and community organisations or groups (n=12).

Who would you rely on if you were in need?	**N = 179**
Friends	160
Family	158
Neighbours	121
Colleagues	61
Other	36

Most participants knew 'most' of their neighbours at the street scale.

How well do you know your neighbours (street scale)? **I know ____ of my neighbours.**	**N = 179**
All (very well)	40 (22%)
Most	67 (37%)
Some	48 (27%)
Few	19 (11%)
None (no one)	5 (3%)

Most participants felt that their neighbours cared for their wellbeing.

I feel my neighbours care for my wellbeing	**N = 179**
Strongly agree	52 (29%)
Agree	96 (54%)
Undecided	20 (11%)

Disagree	8 (4%)
Strongly disagree	3 (2%)

Almost all participants felt that they could draw on their neighbours for support in an emergency.

In an emergency, I could draw on my neighbours for support?	**N = 179**
Strongly agree	87 (49%)
Agree	79 (44%)
Undecided	6 (3%)
Disagree	7 (4%)
Strongly disagree	0

Participants in general felt 'very' connected to their communities, defined at the suburb scale.

Q: How connected do you feel to your community (suburb)? I feel _____ connected to my community.	**N = 179**
Very	70
Moderately	55
Extremely	33
Slightly	12
Not at all	8

Participants mostly felt their community cared for their wellbeing.

Q: I feel that my community cares for my wellbeing.	**N = 179**
Strongly Agree	27

Agree	111
Undecided	28
Disagree	10
Strongly Disagree	3

CONCLUSIONS AND RECOMMENDATIONS

- Participants in the Mount Alexander shire perceive themselves to be exposed to and at risk of multiple environmental hazards including, bushfire, flood, and climate change.
- Household garden maintenance and design are common household risk mitigation actions taken by participants, which suggests a willingness to implement mitigation actions but may also indicate reduced willingness to expend significant capital.
- More locally-specific information, especially around flood risk, is desired by participants to help prompt risk mitigation actions.
- Community connectedness is perceived to be an important theme and resource for Mount Alexander participants to reduce their exposure to risk.
- Better communication, transparency, and financial support from council and government is desired to help build community resilience.

APPENDICE

Appendix 1: Cook & Overpeck (2019) version of Hicks (2011) dignity-based principles for interaction, amended to produce "10 essential elements" for building relationships with publics.

#	**Relationship building principle**
1	Treat all individuals as neither inferior nor superior to yourself.
2	Commit to all individuals being welcome in the space of interaction.
3	That all individuals be physically and psychologically safe and free from humiliation.
4	"Give people your full attention by listening, hearing, validating, and responding to their concerns, feelings, and experiences" (Hicks, 2011, p.25).
5	That each individual is recognized for their individual talents and potential contributions.
6	That fairness and equality guide all interactions.
7	That all people be assumed to have good intentions until proven otherwise.
8	"Believe that what others think matters. Give them the chance to explain and express their points of view. Actively listen in order to understand them" (Hicks, 2011, p.26).
9	That all individuals are free to act on their own behalf so that they are in control of themselves and their lives.
10	That all individuals take responsibility for past actions that might have violated others' dignity.

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