





# Australian Journal of Emergency Management

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SUPPORTING A DISASTER RESILIENT AUSTRALIA

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The Australian Journal of Emergency Management is Australia's premier journal in emergency management. Its format and content are developed with reference to peak emergency management organisations and the emergency management sectors-nationally and internationally. The journal focuses on both the academic and practitioner reader. Its aim is to strengthen capabilities in the sector by documenting, growing and disseminating an emergency management body of knowledge. The journal strongly supports the role of the Australian Institute for Disaster Resilience as a national centre of excellence for knowledge and skills development in the emergency management sector. Papers are published in all areas of emergency management. The journal encourages empirical reports but may include specialised theoretical, methodological, case study and review papers and opinion pieces. The views in the journal are not necessarily the views of the Australian Government, Australian Institute for Disaster Resilience or its partners.

Aboriginal and Torres Strait Islander peoples are advised that this publication may contain images of deceased people.

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Contributions in the Research section of the *Australian Journal* of *Emergency Management* are peer reviewed to appropriate academic standards by independent, qualified reviewers.

# Foreword



Vidoshi Jana First Assistant Secretary Emergency Management and Coordination Group, Department of Home Affairs

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© 2021 by the authors. License Australian Institute for Disaster Resilience, Melbourne, Australia. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/ licenses/by/ 4.0/). It is a pleasure to contribute to the *Australian Journal of Emergency Management*. As I write this, my thoughts are with the thousands of people in New South Wales and surrounding regions who were affected by recent flooding and weather events. As these events unfold, emergency services personnel continue to work tirelessly to provide aid to communities.

The Australian Government plays a vital role in coordinating and strengthening the support provided by the states and territories to local communities. Resources and contributions include financial assistance for relief and recovery.

On the back of Australia's 2019–20 'Black Summer' bushfire season, the Australian Government took steps to bolster its ability to prepare for, respond to and recover from crises, including natural hazards and the COVID-19 pandemic. The Department of Home Affairs has been at the forefront of these efforts. We have built capability and capacity and adapted operating models and internal structures to respond to evolving threats and challenges. The department has also progressed recommendations from the Royal Commission into National Natural Disaster Arrangements.

The department has established the Emergency Management and Coordination Group and the National Coordination Mechanism (NCM) to improve the delivery of nationally coordinated emergency response and recovery activities. The NCM was established in March 2020 with an initial goal of coordinating the cross-jurisdictional response to non-health-related aspects of the COVID-19 pandemic. This work complemented the efforts of state and territory governments. The NCM has been effective in getting experts working together and has encouraged collaboration among stakeholders. This has been integral to the nationally consistent approach. In the early days of the pandemic, the NCM identified issues for government, industry and community sectors affected by the pandemic and quickly pulled together necessary responses. The NCM quickly gathered people together to troubleshoot problems and resolve issues particularly related to the early warning of emerging issues, liaising with peak industry bodies and maintaining engagement with stakeholders. The structured communication channels employed by the NCM created a trusted environment to examine problems and work through solutions. As such, the NCM cultivated positive relationships among stakeholders, some of whom had never worked with each other before. Collaboration was achieved through extensive consultation, communication, negotiation and compromise and constantly linking the relevant parties.

In March 2021, the NCM reached its 12-month milestone and, while we would not have anticipated last year that we would still be here today, the NCM continues its work on preparing and responding to events that adversely affect life in Australia. The NCM has become a significant capability for Australia, one that can be readily adapted to different crises. The NCM currently continues to assist with the flood response and recovery efforts in New South Wales.

# Helping volunteers shine as leaders

#### **Bethany Patch**

Bushfire and Natural Hazards Cooperative Research Centre

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© 2021 by the authors. License Australian Institute for Disaster Resilience, Melbourne, Australia. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/ licenses/by/ 4.0/). Evidence-based support for recruitment and retention of volunteers is an important part of strengthening Australia's emergency services workforce capability. A new toolkit is supporting leaders in the way they recruit, onboard, manage and retain volunteers.

When a natural hazard strikes or an emergency arises, communities rely on the assistance provided by emergency services personnel, many of whom are volunteers. This puts pressure on not only the volunteers, but also on their leaders; many of whom are not trained as managers when they become a volunteer leader.

Ensuring that volunteer leaders are as wellsupported as possible in areas of training, recruitment, management and staff retention is essential to deliver crucial emergency services. Research in this area has recently focused on improving the resources provided to emergency services organisations.

# Improving the way volunteers are led

Jennifer Pidgeon is the Manager of Strategic Volunteer and Youth Programs at the Department of Fire and Emergency Services (DFES) in Western Australia. DFES manages 26,000 volunteers across 800 brigades, groups and units (BGUs) within 5 volunteer emergency services. With a jurisdiction of more than 2.5 million square kilometres, Western Australia is one of the world's largest emergency response areas.

Ms Pidgeon explained that volunteer leaders are identifying that changes in the social and economic conditions in Western Australia, compounded with the changing nature of emergencies related to environmental change, require new approaches to recruiting and retaining volunteers. Volunteer leaders are seeking more support to improve their effectiveness and ability to meet the needs of volunteers and the community.

'Volunteer management and recruitment is complex. The drivers are different to any paid work.

'Our volunteer leaders are seeking assistance in the retention and recruitment space. We need to

provide some sort of resource that can support our brigades, groups and units to meet volunteer needs. We also need to find a way to present what is quite complex management theory to an audience with potentially no background in the area,' Ms Pidgeon said.

#### A toolkit for volunteer leaders

Researchers at Curtin University and the University of Western Australia, through the Bushfire and Natural Hazards CRC, worked with DFES to develop an evidence-based Recruitment and Retention Toolkit for Emergency Volunteer Leaders, which is available online.

The toolkit was one of the outputs of the Bushfire and Natural Hazards CRC project, Enabling sustainable emergency volunteering. This project examines volunteer engagement, motivation, wellbeing and psychological perceptions and, using this knowledge, designs better recruitment, retention and wellbeing actions and materials for emergency services organisations to use.

The toolkit is grounded in relevant models of organisational psychology and researchers worked with leaders and volunteers of brigades, groups and units to ensure the resources were as useful and easily applicable as possible.

CRC researcher Associate Professor Patrick Dunlop from the Curtin University Future of Work Institute explained that while the toolkit has psychological foundations, it was important that researchers design resources that would support volunteer management.

'We wanted to go back to basics and understand what relevant theories from psychology are likely to apply to these sorts of volunteer settings.

'We consulted with volunteers directly, their leaders across all services, district officers at DFES and the partner associations and their leaders. And we often discovered that the very best way of



A volunteer recruitment and retention roadmap improves the effectiveness of activities and materials used by volunteer leaders. Source: Department of Fire and Emergency Services, Western Australia

doing these things, like recruiting and onboarding, were already being done by a group and it's just that nobody else knew about it,' he said.

The toolkit gives leaders access to highly relevant, evidencebased new resources such as checklists, tip sheets, sample booklets and editable templates. These products assist at all stages of volunteer management:

- Recruiting Volunteers for the Emergency Services: a resource supporting volunteer recruitment and messaging.
- Volunteer Role Descriptions: a guide on role descriptions, why they are important and how to complete them.
- Managing Volunteers in the Emergency Services: a resource on how to motivate and manage emergency service volunteers effectively.
- · Volunteer Succession Planning: currently under development.

Associate Professor Dunlop and Hawa Muhammad Farid, alongside Jennifer Pidgeon and Kate White from DFES, introduced the toolkit to leaders of brigades, groups and units in an online showcase hosted by the Bushfire and Natural Hazards CRC in October 2020. They guided the audience through some of the tools that are currently being used by DFES in their volunteer recruitment and retention activities.

#### Collaboration is important

Strong collaboration was important in the development of the toolkit. This brought together the emergency management expertise of the DFES, the research knowledge of Curtin University and the University of Western Australia, as well as the personal experiences of volunteers and volunteer leaders.

Ms Pidgeon said that this hands-on collaboration was essential in creating the resources.

'What was important to us was that the volunteers and people who lead were actively consulted and engaged with when developing these resources. The benefits we can get from the relationship with researchers and actual application of current knowledge is that we have a useable and very useful resource for our volunteers.

'By building the relationship we're able to see a bigger picture of what's happening in our volunteer workforce and develop and build a resource set that meets their needs. But the long-term relationship with this particular research team means we're able to create a holistic picture and they have a very good grounding in what is happening with our volunteers, as well as the broader volunteering environment,' she said.

The research that contributed to the toolkit is being used by DFES on their Volunteer Hub.

The CRC Enabling sustainable emergency volunteering project, alongside other science on the topic of people and capability, is examining what the emergency volunteer workforce will look like in 2030 so that we can plan for a strengthened volunteer base.

The Recruitment and Retention Toolkit for Emergency Volunteer Leaders is at: www.bnhcrc.com.au/driving-change/tools.

The Bushfire and Natural Hazards CRC Enabling sustainable emergency volunteering project and recording of the launch is at:

www.bnhcrc.com.au/research/sustainablevolunteering.

# Taking the temperature of Australia's climate risk and response

#### Alana Beitz

Australian Institute for Disaster Resilience

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© 2021 by the authors. License Australian Institute for Disaster Resilience, Melbourne, Australia. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/ licenses/by/ 4.0/). For 5 consecutive years (2017–21), extreme weather has been rated the top global risk by likelihood in the World Economic Forum's Global Risks Perception Survey. In the preceding 3 years (2014–16) it was rated the second likeliest global risk.

The annual survey is completed by more than 650 members of the World Economic Forum's diverse leadership communities and serves as foundation of the *Global Risks Report 2021*.<sup>1</sup>

In the 16<sup>th</sup> edition of the report, environmental concerns dominated the top risk categories, with respondents ranking climate action failure as the most concerning risk globally. In regard to likelihood and impact, environmental risks featured prominently in the survey results (Table 1).

Table 1: Top risks as assessed by Global Risks Perceptions Survey 2020 respondents.

By likelihood	By impact
Extreme weather*	Infectious diseases
Climate action failure*	Climate action failure*
Human environmental damage*	Weapons of mass destruction
Infectious diseases	Biodiversity loss*
Biodiversity loss*	Natural resource crisis*

\*Risks categorised as environmental.

In a year that will be defined by the response and recovery of the COVID-19 pandemic and related consequences, the survey responses are a clear reminder that extreme weather – and the effects of a changing climate that intensify them – persist as a leading cause for concern across the globe.

#### Interconnected risk

While the report centres on the risks and consequences of widening inequalities and societal fragmentation (many of which have been generated or exacerbated by the pandemic), it notes that these risks will only be compounded by climate action failure:

Most critically, if environmental considerations—the top long-term risks once again—are not confronted in the short term, environmental degradation will intersect with societal fragmentation to bring about dramatic consequences.

Global Risk Report 2021, p.5.

A silver lining to the pandemic was the sudden and significant downturn in global  $CO_2$  emissions. Despite the obvious injury to economic and social wellbeing, the *Global Risks Report 2021* states that emissions dropped 9 per cent in the first half of 2020, putting the world on track to reach the 1.5°C global warming target by 2030. A similar decrease is required every year for the next decade to maintain progress toward this target. While this may prove challenging as vaccinations are rolled out and economic activity is reinvigorated, the report notes:

The speed and scale of policy responses to the pandemic have shown what is possible: citizens now know the power political leaders can wield when they are convinced that the challenge demands it. Many citizens who feel they have nothing left to lose will demand equally swift responses to deeply felt concerns.

Global Risk Report 2021, p.42.



International Space Station image of the smoke produced from the bushfires ongoing in the forests area of Australia, at an altitude of 424 km on 4 January 2020.

Source: NASA ISS

#### Increasing and compounding risk

The actual and emerging disasters of a warming climate are detailed in the January 2021 Climate Council report, *Hitting Home: The Compounding Costs of Climate Inaction.*<sup>2</sup>

Authored by Climate Council researchers Professor Will Steffen and Dr Simon Bradshaw, the report outlines the latest science on how climate change is driving more destructive extreme weather events. The report details significant hazard activity in Australia and around the world over the past 2 years as consequences of the current global temperature rise of 1.1°C above pre-industrial levels.

Documenting extreme weather fuelled by climate change, the report includes case studies of heatwaves in Siberia and in Australia (western Sydney) and fire activity on the US West Coast in south-east Australia, as well as Asian monsoon flooding and the North Atlantic hurricane season.

Professor Steffen said, 'Taken alone, any one of the events described in this report would mark the year as unusual. Taken together, they paint a disturbing portrait of our rapidly escalating climate emergency.

'There is no doubt that we have entered an era of consequences arising from decades of climate inaction and delay', he said.

A key finding from the *Hitting Home* report is that climate effects, such as megafires experienced during Australia's 2019–20 bushfire season, are 'locked in' over the coming years due to previous climate inaction. Similarly, the benefits of today's emission reductions will not be experienced until decades later.

Based on the range of emission scenarios beginning from 2020 onwards, we cannot expect a significant difference in the rise in global average temperature until at least 2040. This implies that worsening extreme weather is locked in for the next decade at least, and very likely until 2040.

Hitting Home: The Compounding Costs of Climate Inaction, p.27.

#### Unpredictable and evolving risk

Climate change and its influence on the intensity and frequency of extreme weather behaviour was presented in detail to the Royal Commission into National Natural Disaster Arrangements by the Bureau of Meteorology and CSIRO on 25 May 2020.<sup>3</sup>

Head of Climate Monitoring at the Bureau of Meteorology, Dr Karl Braganza, told the Royal Commission that while climate variability is large in Australia, there are also 'background climate trends' driven by global warming that are influencing that natural variability, most notably increased temperatures and reduced rainfall and humidity.

Table 2: Changes in Australia's climate that are taking affect.

Events clearly influenced by background climate trends	<ul> <li>Increased frequency of large- scale heatwaves and record-high temperatures.</li> <li>Longer fire season with more extreme fire danger days.</li> <li>Prolonged high ocean temperatures.</li> <li>Reduced average rainfall.</li> </ul>
Events starting to be influenced by background climate trends	<ul> <li>An increase in heavy rainfall.</li> <li>Increased frequency of coastal storm surge inundation.</li> </ul>

As presented by Dr Karl Braganza to the Royal Commission into National Natural Disaster Arrangements, 25 May 2020.

Dr Braganza told the Royal Commission that the 20-year period starting in 2000 was both the hottest and driest on record compared to all other 20-year periods, which 'loaded the dice' in favour of dangerous fire weather. These climate trends explain



Bushfires turned skies red over the town of Bruthen in Victoria's East Gippsland. Images of Australia's 'Black Summer' were shared widely and sparked international climate concern. Source: Country Fire Authority

the conditions that fuelled the devastating 2019–20 Australian bushfire season, but also play into a pattern of increasing intensity and frequency of fire events in Australia over the past 2 decades.

This isn't a one-off event that we're looking at here. Really, since the Canberra 2003 fires, every jurisdiction in Australia has seen some really significant fire events that have challenged what we do to respond to them and have really challenged what we thought fire weather looked like preceding this period.

#### Dr Karl Braganza

The latest climate research, observations, analyses and projections to describe year-to-year variability and longer-term changes in Australia's climate are available in the *State of the Climate 2020*<sup>4</sup> report from the Bureau of Meteorology. The report explains how ongoing, long-term climate change interacts with underlying natural variability, and the impact on the health and wellbeing of Australian communities and ecosystems.

CSIRO Climate Science Centre scientists, Dr Helen Cleugh and Dr Michael Grose, also provided evidence to the Royal Commission and presented how climate change projections are indicating increased risks of climate extremes. They shared the challenges of forecasting the climate over multi-years and decades and the multiple future trajectories of the climate depending on emissions released into the atmosphere.<sup>5</sup>

Dr Cleugh reiterated that the impact of climate change on Australia's natural variability and climate drivers (such as the Indian Ocean Dipole, Southern Annular Mode and the El Niño-Southern Oscillation, which contributed to severe conditions during the 2019–20 bushfire season) is altering Australia's risk landscape and predictability.



Mass evacuations and displacement of residents during the 2019–20 bushfire season triggered extensive relief and recovery responses.

Source: Country Fire Authority

This means that understanding the interaction between climate variability and these drivers and climate change is very important for building preparedness for the changing nature of climate risks into the future. Perhaps put more simply, climate change means that the past is no longer a guide to future climate related impacts and risks.

#### Dr Helen Cleugh

Following the 2019–20 bushfire season, CSIRO was tasked by the Prime Minister to deliver an independent study to determine how Australia can increase its climate and disaster resilience. The resulting report, *CSIRO Report on Climate and Disaster Resilience*<sup>6</sup>, delivered 6 actionable themes:

- 1. A harmonised and collaborative national approach is required to achieve global best practice.
- 2. A national approach requiring systems thinking and solutions to deal with complexity including foresighting, management of risk and learning and education for stakeholders.
- 3. Availability of data as an enabler to shift to common approaches and platforms for resilience-planning frameworks and operational management systems.
- Community plays an essential role in all phases of resilience building and must be appropriately included and engaged.
- Investment in targeted research, science and technology enables many of the improvements required to build resilience.
- Build back better. Resilience needs to be embedded as an explicit consideration in future planning, agricultural and urban land use and zoning and investment decisions.

#### Preparing and adapting for future risk

With indications that extreme weather events driven by climate change are expected to increase and intensify over the coming decades, there is imperative to prepare for an increasingly unpredictable hazard landscape.

The Australasian Fire and Emergency Service Authorities Council (AFAC), convenes a national Climate Change Group comprised of key individuals from emergency management agencies, the Bureau of Meteorology and research centres. The group is tasked with supporting effective climate change risk mitigation, planning and adaptation outcomes for AFAC members, its stakeholders and the community.

The group works with a research team to produce logically plausible scenarios about how the future might unfold in a climate-challenged world and what this means for strategic planning and operations in the fire and emergency services sector. The group has published *AFAC Climate Change and Disasters: Key Messages and Resources*<sup>7</sup> to provide authoritative and agreed information and resources related to climate change and disasters.

In November 2020, the Australian Government announced a National Resilience, Relief and Recovery Agency as part of its response to the recommendations of the Royal Commission into National Natural Disaster Arrangements. The agency will commence in July 2021 and aims to 'drive the reduction of natural disaster risk, enhance natural disaster resilience, and ensure effective relief and recovery to all hazards across Australia.'<sup>8</sup>

The new agency will initially incorporate the functions of the National Bushfire Recovery Agency and the National Drought and North Queensland Flood Response and Recovery Agency. It will also incorporate the disaster recovery and risk reduction functions within the Department of Home Affairs. A resilience services function will be established by the Australian Government to improve climate and disaster-risk information.

There is a growing body of knowledge to support decisionmakers in reducing climate and disaster risk into an increasingly complex future. The Australian Institute for Disaster Resilience (AIDR) updates online collections on the Knowledge Hub, including the Climate and Disasters Collection<sup>9</sup>, which contains overviews of Australian climate influences and their impact on natural hazards, and the Disaster Risk Reduction Collection<sup>10</sup>.

An asset of the Disaster Risk Reduction Collection is the suite of resources contained in the *Guidance for Strategic Decisions on Climate and Disaster Risk.*<sup>11</sup> Across 6 publications developed by the National Resilience Taskforce, previously operating within the Department of Home Affairs, decision-makers can access information to contextualise the systemic effects of a changing climate. The guidance provides direction on how to access knowledge, capabilities and processes to assist in strategic long-term planning and investment decisions.

AIDR is developing a Disaster Risk Handbook to address the systemic nature of climate and disaster risk. It will give practical effect to the *National Disaster Risk Reduction Framework* and provide guidance for decision-makers on effective risk governance, culture and disaster risk mindset. The handbook will profile different decision-makers and how they navigate the risk and resilience system. A working group from across Australia has been convened to inform the development and review of the handbook, which will be publicly available in the second half of 2021.

Regarding climate change, the global concern has been voiced, the increasing risk has been identified, and the guidance to improve decisions is being developed. While the first steps toward adapting to emerging climate and disaster risks have been taken, they lead in the direction of an increasingly complex future.

#### Footnotes

1. World Economic Forum 2021, *The Global Risks Report 2021*. *At: www.weforum.org/reports/the-global-risks-report-2021*.

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# Are we heading for disaster? The problem with resilience in disaster management and recovery

#### Zachary Horn

Edith Cowan University

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© 2021 by the authors. License Australian Institute for Disaster Resilience, Melbourne, Australia. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/ licenses/by/ 4.0/). Resilience is often construed as armour that protects individuals from stressors and harm, or a trait that allows people to 'bounce back' despite adversities and stressors. Although not fundamentally incorrect, these notions do not capture the true purpose, scope or power of resilience, particularly in the disaster context.

Despite its appeal, resilience is not without its criticisms and limitations and current applications of the concept of resilience in the emergency management sphere fail to adequately address these criticisms. Criticisms arise from the politicisation of resilience, ambiguity in definitions of resilience, its potential negative effects and the fundamental construct of resilience itself. Addressing limitations and criticisms of resilience requires reframing of the concept and its application, re-assessing the roles and accountability of resilience stakeholders and embedding an obligation to address exposed vulnerabilities.

#### Problems with resilience

Resilience attracts significant criticism in disaster discourse, including ambiguity surrounding definitions across various paradigms.<sup>1</sup> One pertinent criticism emerges from the consequences of 'inexhaustible' resilience and the evolutionary importance of stress.<sup>2</sup> Stress and discomfort are fundamental drivers of human behaviour and evolution across social, physical, technological and emotional domains.<sup>2, 3</sup> By eliminating stress, inexhaustible resilience leads to complacency and halts progress and recovery. Additionally, the development of resilience 'domains' can also be harmful with prioritisation of certain resilience domains over others.<sup>1</sup> This indicates that current resilience constructs can result in individuals being judged as not resilient enough, too resilient or not resilient in the right way.

Discussing resilience at the community level tends to result in 'responsibilisation' of individuals. 'Responsibilisation' is the process by which individuals are held disproportionately accountable for outcomes or conditions that they have limited or no power to control.<sup>4</sup> Shifting responsibility from the community to the individual significantly dilutes the accountability of community leaders. Restated, 'responsibilisation' demands that individuals 'bounce back' rather than charging community leaders with minimising or eliminating the risks and adversities experienced by individuals. The burden of 'responsibilisation' can also contribute to the emergence or worsening of mental illnesses<sup>5, 4, 6</sup> that exacerbate vulnerability rather than promoting community resilience.

By eliminating stress, inexhaustible resilience leads to complacency and halts progress and recovery.

The concept of resilience raises expectations of 'rebounding' to the pre-disaster status.<sup>7</sup> This notion of 'bouncing back', by promoting only a return to the pre-disaster status quo, excuses communities and community leaders from addressing injustice and inequality, thus perpetuating social inequality.<sup>8</sup> Resilience can thereby be politicised and manipulated in the interest of stakeholders benefitting from the pre-disaster status quo.<sup>9</sup> Consequences are compounded when 'responsibilisation' of vulnerable individuals and groups occurs as, in addition to absolving communities of their duty to address inequality, resilience discourse can then hold individuals accountable for individual and community recovery.

#### Potential way forward

Addressing these criticisms requires clear delineation between resilience, the process of adaptation, and resilience, the trait. It also requires acceptance and advocacy that momentary exhaustion of coping mechanisms does not equate to a lack of resilience. Adopting a longitudinal perception of resilience reinforces it as a dynamic process of adaptation over time rather than an instantaneous measure of coping. The importance of stress and discomfort as drivers for positive change, innovation and evolution must be emphasised so disasters are framed as opportunities for improvement and growth rather than challenges of resilience. Additionally, 'inexhaustible resilience' must be accepted as unfeasible and harmful and this should become embedded in discussions of resilience.

#### The relationship between individual and community resilience should be one of empowerment, participation and inclusion.

Resilience must be protected from becoming a tool that holds individuals accountable for post-disaster recovery. The relationship between individual and community resilience should be one of empowerment, participation and inclusion. It is important to acknowledge the capacity for systemic resilience, as an external factor to determine the collective capacity for individual resilience. Individual resilience should be considered as contributing to systemic or community resilience, not the determining factor behind it. Community resilience should demand that individual resilience is fostered and protected, not depended on. Disaster managers must adopt a 'resilient communities foster resilient people' mentality, shifting focus back to leaders and community structures that, as external factors, modulate individual resilience.

While the 'bounce forward' paradigm<sup>7</sup> is suggested instead of the 'bounce back' notion of resilience, the concept of 'bouncing' implies resilience is reflexive or passive. Reframing resilience as an active process promotes discussions surrounding the specific actions and activities required to facilitate resilience and recovery and who is responsible for undertaking them. The concept of community resilience should demand a state of readiness and willingness to address vulnerabilities exposed by disasters to drive active positive adaptation and progress. A resilient community is not one that does not suffer the effects of stresses, but rather one that has multi-dimensional preparedness to respond to a disaster and manage the recovery phase to rebuild a community that is an improvement from the pre-disaster state.

#### About the author

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# Meeting in the middle: community voices and complex choices

#### **Melissa Matthews**

Australian Institute for Disaster Resilience

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© 2021 by the authors. License Australian Institute for Disaster Resilience, Melbourne, Australia. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/ licenses/by/ 4.0/). The disaster risk and resilience landscape is constantly evolving, and so too are the approaches we take in policy and practice. Despite an extended period of disruption and social distancing, many lessons have been learnt over the past 12 months regarding resilience, adaptability and risk reduction.

These learnings will be shared over 2 major events hosted by AIDR this August; the Australian Disaster Resilience Conference and the National Recovery Forum.

The title of this year's conference is *Meeting in the middle: community voices and complex choices.* 

Recent times have brought the reality of intersecting crises and cascading societal consequences into focus. As Australia moved from drought into a bushfire crisis and a pandemic, the systemic risk and vulnerability present in the systems that support our society to function were laid bare. What this also brought to the forefront was human behaviour that demonstrates what we truly value and choices made in consideration of the future we seek to protect.

It is acknowledged that meaningful community engagement and community-led approaches are essential to effectively support disaster resilience. So too are systems, frameworks and enabling environments created through well-considered policy and coordination. We have sought to make disaster risk reduction and resilience everyone's business, all with a role to play. And yet, an inherent tension in striking the right balance between top-down and bottom-up approaches to resilience remains. What approaches and mindset do we need to meet in the middle?

Important choices will continue to be made about how we reduce risk, prepare, respond and recover. How do we ensure the 'community' is included in community-led? How do we tackle systemic risks influencing communities that arise from public policy legacies and past decisions?

Supported by industry partner Resilience NSW, the conference will bring together people from across Australia to discuss and connect with peers across 2 concurrent conference streams.

#### Improving future recovery

In Australia, we are guided by the national recovery principles of understanding context, recognising complexity, adopting community-led approaches, coordinating activities, communicating effectively and recognising and building capacity.

The bushfires of 2019–20 set in motion a recovery effort of immense scale and a surge of people supporting the complex and challenging work of supporting communities to recover. As we move further down the path of recovery, there is value in exchanging experiences and lessons, and reenergise for the steps ahead.

The National Recovery Forum will attract people involved in disaster recovery from who will be able to connect, share knowledge, ideas and good practice for communities to recover from disasters and build resilience.

Reflections will be shared from recovery practitioners and community members on different approaches to recovery, what has been most effective and why.

The Australian Disaster Resilience Conference will be held at the International Convention Centre in Sydney on 18–19 August 2021. Find out more at the Australian Institute for Disaster Resilience website: www.aidr.org.au/adrc.

For more information about the National Recovery Forum, visit: www.aidr.org.au/recoveryforum.

# A conference dedicated to building disaster-resilient nations

#### **Alistair Dawson**

Queensland Inspector-General Emergency Management

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© 2021 by the authors. License Australian Institute for Disaster Resilience, Melbourne, Australia. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/ licenses/by/ 4.0/). Despite the overwhelming challenges presented to holding events during 2020, the Australian and New Zealand Disaster and Emergency Management Conference was held at the Gold Coast in October.

The conference was a hybrid event combining face-to-face and online elements that allowed over 600 attendees to participate across the 2-day event. It was a tremendous success and was the first of its kind for the Gold Coast Convention and Exhibition Centre. Research papers associated with presentations given at the conference are included in this edition of the Australian Journal of Emergency Management.

The co-hosts were the Bushfire and Natural Hazards Cooperative Research Centre, the Australian Institute of Emergency Services and the Australian and New Zealand Mental Health Association Inc. Mr Sam Stewart, CEO of the Australian and New Zealand Mental Health Association said, 'We were so pleased to deliver this conference after such a challenging year. It was wonderful to see the sector come together and keep updated with the sector's progress'.

The official keynote session was delivered by Deputy Commissioner Steve Golleschewski from the Queensland Police Service. Mr Golleschewski examined the parallel use of adaptive leadership and command and control in considering the value of relationships. His presentation had a particular focus on the value of learnt and lived experience in being able to lead at strategic and operational levels.



The conference was a hybrid event combining face-to-face and online elements. Image: Australian and New Zealand Disaster and Emergency Management Conference



Major General Jake Ellwood, Australian Defence Force, was part of the expert panel.

Image: Australian and New Zealand Disaster and Emergency Management Conference

Ms Abigail Trewin, Director of Disaster Preparedness and Response at the National Critical Care and Trauma Response Centre, gave a unique insight into managing and implementing complex and difficult crisis responses. She highlighted her learnings and explained how these can be relevant to disaster responders and shape their preparation for future events.

Shane Fitzsimmons, Commissioner of Resilience NSW, spoke of the disastrous 2019–20 bushfire season and the subsequent relief effort. He spoke about leadership, communication and preparedness and how it might evolve, noting that leadership is not a hierarchical structure but a shared responsibility.

Day 1 included 5 breakout sessions of 3 in-person sessions and 2 virtual sessions, all of which were recorded for access post-event. The program progressed well and provided a sense of achievement especially given the extra focus on COVID-19 health and safety requirements and the complexities of constant border closures. This was greatly assisted by the flexibility of presenters and conference staff. The day concluded with a presentation from Mr Rhys Jones, CEO of Fire and Emergency New Zealand and Ms Sascha Rundle, Former Manager at ABC Emergency Broadcasting. Mr Jones provided insight into the New Zealand model of operations that has 2 foci; to put out fires and also to build an emergency management organisation that works seamlessly with other emergency services and agencies to help communities prepare for, respond to and recover quickly from emergencies. This provided an interesting case study for the many Australians attending the conference.

Ms Rundle provided an overview of how media can work with emergency management organisations to allow communication to rural and regional communities. Day 2 of the conference included a panel session moderated by Mr Chris Austin. The panel members were Commissioner Andrew Crisp, Emergency Management Victoria; Major General Jake Ellwood, Australian Defence Force; Dr Peter Mayfield, CSIRO; Dr Stephanie Rotarangi, Emergency Management Victoria and Commissioner Shane Fitzsimmons, NSW Resilience.

Each panellist shared their expertise to present learnings and describe some standout moments during 2019–20. They also discussed opportunities to prepare for and respond to future incidents, using multi-disciplinary strengths, science and technologies to strengthening the resilience of communities.

Delegates provided excellent feedback. Ms Jill Brix, General Manager of Avisure, commented, 'Brilliant. I have been talking about the presentations, the COVID-safe plan and venue. Also, kudos to all the presenters for sharing their journeys and providing advice to others'.

The conference concluded with Mr Mike Wassing, Deputy Commissioner Emergency Management, Volunteerism and Community Resilience of the Queensland Fire and Emergency Services and Ms Nicole Sadler, Head of Policy and Practice at Phoenix Australia. Mr Wassing explained the place-based model used by Queensland Fire and Emergency Services and how it empowers local communities and enhances knowledge and practical skills to optimise their capability before, during and after emergency events. Ms Sadler used her closing address to remind attendees of the importance of mental health and the psychological demands of these occupations.

The 2021 Australian and New Zealand Disaster and Emergency Management Conference will take place on 12–13 July at the Gold Coast and continues with the theme to build disaster resilient nations.

# World-first conference on animal disaster management

#### **Melanie Taylor**

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© 2021 by the authors. License Australian Institute for Disaster Resilience, Melbourne, Australia. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/ licenses/by/ 4.0/). The Global Animal Disaster Management Conference was conducted over 10 days in February 2021. It was a world-first of its type and kind in a pandemic-affected global environment, but its 4 volunteer conference organisers had the motivation, connections and skills to pull it off.

Have you ever had one of those too-good-tomiss opportunities turn up at the worst possible time? In August 2020, in the middle of a busy teaching semester and in a pandemic-disrupted academic research year I received an invitation to join a group in early planning for an international conference. Normally, I might have turned this volunteering down, but it was no normal year and when I learnt that the conference would be focused on a passion of mine - animal emergency management - and the small organising team comprised 2 friends (Steve Glassey, ex-Society for the Prevention of Cruelty to Animals Inc. in New Zealand and Christine Belcher, Managing Editor of the Australian Journal of Emergency Management) I knew I had to jump in with both feet.

Steve and Christine had been discussing ideas for a themed edition of AJEM related to animals in emergencies and Steve had the idea to host a conference to focus interest in the area. The team was later joined by Gerardo Huertas, someone I only knew by reputation as the World Animal Protection Director of Disaster Management, based in Costa Rica.

The brief: an international conference, fully virtual, spread across time zones, and free. One of the good things to come out of the pandemic is how we have embraced online exchanges of information, whether that's webinars, Zoom meetings or virtual conferences. An international conference where you don't have to travel, find funds or get permissions to attend opens up a world of knowledge-exchange opportunities. So began the development of a conference that had the potential to be fully open and inclusive to people with an interest in animal emergency management right around the globe. First was to decide a fitting conference title. As it was the inaugural conference, we had a blank slate but finally agreed on the Global Animal Disaster Management Conference (GADMC). Next, we sketched out a good conference program with a strong start. This is where fortune favours the brave. Steve approached one of the biggest names in animals and disasters, Professor Leslie Irvine from the University of Colorado in Boulder, and she agreed to deliver the opening keynote address. For those less familiar with animal emergency management, Professor Irvine is a sociologist, known for her work in animal welfare in disasters and her work after Hurricane Katrina in the US. She is the author of an acclaimed book about animal welfare and ethics in disasters, Filling the Ark. Her written work and advocacy have influenced many to pursue research in this area.

We then set about announcing the conference to colleagues and luminaries in the field to recruit speakers. All this went hand-in-hand with the background work of setting up a website, registering with a conference hosting site and establishing processes to manage sponsorship funds. This was all handled by Steve and Animal Evac New Zealand. The call for abstracts went out in early November and when this call closed, just before Christmas, we had received more than 50 excellent presentation outlines from people in every continent of the world (except Antarctica.).

At this point, with the conference date set for mid-February 2021, the clock was ticking.

Christine was busy interacting with speakers about potential submissions to the journal and Steve was working on opening the conference for delegate registrations. Within a few days of opening registrations, the online conference hosting platform company closed down without warning. Steve managed to source and transfer information to enable delegates to register.

Just as the conference had been a success with speakers, it was also very well supported by sponsors. The goal was to make the conference as accessible as possible and this was achieved with the support of sponsors that allowed the conference to run for free to delegates. World Animal Protection came on as primary platinum sponsor and the Australian Institute for Disaster Resilience, the Bushfire and Natural Hazards CRC, International Fund for Animal Welfare, Reach and Rescue, American Veterinary Medical Foundation, the C4 Group and Central Queensland University (CQU) were gold sponsors. We had initially hoped for a hundred or so delegates but as registrations rolled in, we were faced with many hundreds and growing. This was turning into a very large international conference.

Steve had recently been appointed as Director of the new Emergency Response Innovation Centre at CQU in Townsville. This meant that in the final throes of conference organisation, Steve was migrating to another country, in the middle of a pandemic, to take up a significant new role with CQU. But that was not the only challenge. Gerardo finished up his position with World Animal Protection, Christine broke her leg and underwent surgery and time in hospital, and I took voluntary redundancy from Macquarie University, which took effect mid-conference.

However, Steve's move to CQU meant the conference was well supported technically, with CQU hosting the conference using their Zoom platform and, critically, their amazing and calm IT team fielding our increasingly frantic queries.

The conference ran from 15 February to 24 February over 10 consecutive days, including the weekend. The conference was structured as a series of individual presentations, hosted as Zoom webinars. The sessions were based on Australian Eastern Standard Time, from 0800 to 2000 with 4 to 6 presentations a day. By the time the conference began, 1100 people had registered with final registrations over 1500.

Over the 10 days of the conference there were 44 regular speaker presentations of around 30-40 minutes (with questions) plus the conference keynote and an online social event. For the social event, we conducted the GADMC trivia championship, which was won by the 'Five Continents Rescue Team' named as such as members came from 5 different continents.

During the conference we gained a good appreciation of the diversity of the field. There were presentations from veterinarians, government officials and policy makers, academics from many disciplines, emergency management experts, industry associations and stakeholders, international non-government organisations, social workers, communications experts, legal experts and community volunteers.

It is difficult to summarise such diverse content. However, from Australia, we heard about responses to the Black Summer bushfires and the work underway to improve consideration of, and response to, bushfires and we discussed the legal status of animals. From India and South East Asia, we heard about the significance of livestock to vulnerable communities and the work undertaken with communities to prepare for disaster events and protect animals. From the US, we heard about innovations and preparations for managing mass livestock disposal after disasters and emergency diseases as well as preparedness activities and training for people managing captive exotic animals in zoos and aquariums. From Canada, we learnt about livestock emergency response and from Japan, we heard about the impacts of the Fukushima disaster and mass evacuation on the owners of companion animals. Technical animal rescue was the subject of a number of presentations with New Zealand, the US and the UK providing case studies, approaches and training for large animal rescue. One of the most moving presentations was provided by Dr Jackson Zee from Four Paws International who detailed the challenges in rescuing live export sheep from the Queen Hind livestock carrier when it capsized in waters off Romania. Dr Zee outlined the technical rescue challenges, the political aspects of negotiating rescue and the mental health effects for responders.

In summary, we had a great program of speakers and a great uptake from delegates. Being both online and free, we didn't expect everyone to log in for all sessions and perhaps some registered to get the recordings later on, which is fine. However, there was good attendance at all sessions and some great questions from attendees. Did the technology behave? Most of the time, yes – but there were issues. Was it a stressful experience? Yes. Were there challenges for delegates around time zones? Yes, occasionally. Did the lack of physical social interactions with others seem odd? Yes, it wasn't the same as a face-to-face conference, but it was still darn good. Would we do it again? Absolutely!

We gathered session evaluation data as we went along and were buoyed at the positive and supportive responses, which still flowed in the weeks after the event. We knew there were things to improve on and the 2021 experience sets us up well for 2022.

This was a free conference. Our supporting sponsors are partners in this area. Presenters volunteered to share experiences and ways of working and delegates could pick and choose sessions and will be able to view recorded sessions at their convenience – for free. Sessions will be edited and made available late in July 2021 to coincide with the AJEM July edition and the online GADMC awards ceremony.

You can view the conference program, register to be notified when the recordings are available and receive updates on plans for GADMC 2020 at: www.gadmc.org/schedule.

# The Recovery Myth



#### Author Lucy Easthope

Reviewed by Associate Professor David King James Cook University

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© 2021 by the authors. License Australian Institute for Disaster Resilience, Melbourne, Australia. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/ licenses/by/ 4.0/). My first reaction to Lucy Easthope's book *The Recovery Myth* was: what could we, in a 'land of flooding rains', possibly learn from one small flooded village in England? We have far more experience of floods here in Australia than emergency managers and communities do in the UK. However, as I got into what turned out to be a fascinating read, I was swept along by the sheer detail and humanity of a long-term study of a small community's experience of flood recovery.

I wish I could have had the time and patience to do such research in any of the communities that we have visited after disaster. There is a common experience to recovery from disaster that resonates with our communities here in Australia. Easthope was a professional emergency manager whose social research followed the experience of residents, emergency managers and local government officials for over 5 years.

On 25 June 2007, the village of Toll Bar in Yorkshire was among a number of areas that were severely flooded following exceptionally heavy (for the UK) rainfall that inundated low-lying areas and caused rivers to burst their banks. Floodwaters only receded after 2 weeks so most of the more than 1,000 residents had to be evacuated. Over half of the houses in the village were damaged including many that were local council properties. Many people were housed temporarily in a caravan park. Some remained there for over a year before being rehoused within the village or returned home. The community is a low social economic village that had been perceived by outsiders as a 'rough place'. Before the flood the village had high unemployment and youth delinquency. These rates decreased after the flood, especially a reduction in the crime rate. The community held together with considerable resilience, but people did not return to a normal or pre-flood state. The recovery process was hard and challenged many emergency management practices and assumptions, but ultimately the people of the community took over their own recovery.

Although Easthope carried out ethnographic research, she came to the community as an experienced emergency manager and questioned many of the ideas of emergency management. She recognises the necessity for emergency managers to bring order but suggests that they come with a pre-conceived framework that, especially in Toll Bar, began with a 'them and us' between officials and those affected. I would reflect that this division is more entrenched in English society than it is in Australia where people tend to have a positive attitude towards State Emergency Services and recovery workers. The voices of the people were initially disregarded by officials, but as those affected moved from shock and trauma, they took back control of their lives. As time passed, the attitudes of both sides softened. All the same, response and recovery frameworks are artificial structures. This led Easthope to refer to the official story and lessons learnt reports as fantasy documents. There was a tendency for government officials to think and talk regionally and rationally, while locals talked locally and emotionally. Despite labelling all emergency management planning texts as fantasy documents, Easthope does acknowledge that despite their flaws, recovery plans are designed to focus responders so that they can help the community.

A whole chapter of the book is concerned with the trauma that people felt as their damaged household belongings were dumped as waste. People saw part of their lives and values being disposed of too hurriedly. Out of this came an exhibition that remembered loss and acknowledged community strength and recovery. The community had avoided displacement to other places and had to work together to rebuild their village, as active participants rather than passive recipients. She also draws attention to gender issues as recognition of the different roles and voices of men and women and youth. The recovery community is not homogenous. Especially interesting is her idea that social capital emerges from the community. We make assumptions about tapping into social capital in order to build resilience. Easthope observes that social capital might not be strong or evident, but it is the disaster that creates social capital. Responders and emergency managers played a role in bringing out that social capital to facilitate community-led recovery.

Finally, there is a strong theme in this study that community recovery does not reach an end point. Government services may withdraw, but the community lives with the hazard as both memory and future threat. It will come again and their experience of this disaster will shape their recovery next time. This is the reality for most Australian communities. Hazard awareness and future recovery from disaster are interlinked as we live with natural hazards and the threat of disaster.

# Understanding and improving community flood preparedness and response: a research framework

#### Peer Reviewed

#### Neil Dufty<sup>1</sup>

1 Molino Stewart Pty Ltd, Sydney, New South Wales.

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#### Introduction

There has been a large volume of research conducted to understand why people and communities prepare and respond to hazard events in the way they do. Much of this research is guided by psychological theories and models including the Protection Motivation Theory, the Protective Action Decision Model and several socio-cognitive models. Grothmann and Reusswig (2006) introduced the Protection Motivation Theory, originally developed in health psychology, to flood-risk research. The theory suggests that the motivation to protect from a specific threat depends on how a person balances threat appraisal against coping appraisal (Rogers 1983). Subsequently, an increasing number of studies have applied the Protection Motivation Theory as a theoretical framework to explain protective behaviour of citizens at risk from a range of hazards.

A theoretical model that helps understand the process of decision-making in response to imminent threats is the Protective Action Decision Model produced by Lindell and Perry (2004). The model can be used for all phases of the disaster management cycle including preparedness and response. It proposes that people work through a series of pre-decisional and decision-making stages. According to the Protective Action Decision Model, the process of protective action decision-making begins with environmental cues (e.g. the sight or sound of a hazard such as floodwaters), social cues (observations of other's behaviour) and warnings (official advice to evacuate). These trigger a series of pre-decisional processes that stimulate the receiver to consider their perception of the threat, alternative options for protective action and their perceptions of the relevant stakeholders involved.

An example of a socio-cognitive model is that primarily developed by Paton, McIvor and Johnston (McIvor *et al.* 2009). It is a theoretical model designed to understand people's disaster preparedness. The model proposes that people's beliefs regarding the effectiveness of hazard preparedness interact with social-context factors (community participation, collective efficacy, empowerment and trust) to influence levels of hazard preparedness.

#### Abstract

Many social research projects identify issues with community disaster preparedness and response but struggle to attribute these issues to underlying causes and recommend possible ways to address them. A research framework that considers the underlying causes of preparedness and response and possible interventions was developed for the Wimmera region of Victoria, Australia. The research framework was developed in conjunction with the Wimmera Catchment Management Authority and tested in a social research project across 6 communities in the Wimmera region. This paper provides an outline and rationale for the components of the research framework. It also summarises the regional flood insight afforded by the research framework. The research framework, albeit with some limitations, has universal appeal not only in the examination of community flood preparedness and response, but also for other hazards and other parts of the disaster management cycle.

There has also been extensive social research into the state of disaster preparedness and response using a series of indicators. For example, for several years Healthcare Ready in the USA has conducted surveys into levels of resident disaster preparedness (Healthcare Ready 2020). Furthermore, interventions to improve disaster preparedness and response levels (e.g. community disaster education and engagement, early warning systems, communications, emergency management planning) have been heavily researched. For example, the New Zealand Government monitored for several years the effectiveness of its 'Get Ready Get Thru' social marketing education campaign (New Zealand Ministry of Civil Defence & Emergency Management 2013). However, there has been relatively scant research that has probed the complexities associated with the nexus between the psychological and sociological contributing factors of disaster preparedness and response, community preparedness and response levels, and interventions that can influence those levels.

This complex relationship was examined during 2020 in a flood project commissioned by the Wimmera Catchment Management Authority (Wimmera CMA) in the Wimmera region of western Victoria, Australia. The success of the *2017 Wimmera Floodplain Management Strategy* (Wimmera CMA 2017) is largely dependent on preparedness and response to flooding in the region. Regardless of the mitigation structures (e.g. levees) and nonstructural mitigation methods (e.g. property modifications, landuse planning), there will always be some residual risk for communities and emergency agencies to deal with in floods up to the probable maximum flood. Therefore, an understanding of the reaction to residual flood risk, initially via community preparedness and response (and then recovery), is central to the overall effectiveness of the strategy and the Wimmera region's flood resilience.

This paper outlines the research framework used to help understand and improve community flood preparedness and response in the Wimmera region. It also summarises the regional flood insight afforded by the research framework.

#### Methodology

A research framework (Figure 1) was initially constructed following a workshop with Wimmera CMA. It draws on the findings of relevant research related to the *2017 Wimmera Floodplain Management Strategy* in 3 areas:

- Contributing factors the main psychological, sociological and demographic features potentially influencing community flood preparedness and response in the Wimmera region.
- 2. Preparedness and response levels the common indicators used to measure these levels.
- Interventions the measures used to attempt to influence preparedness and response levels.



Figure 1: Research framework designed to examine community flood preparedness and response.

The research framework was used in a social research project in 6 communities in the Wimmera region. A survey of the communities related to the research framework was developed and distributed to randomly selected residences across 5 flood categories representing total flood risk and considering a full range of possible flooding based upon flood studies in the region identified by Wimmera CMA.

The social research was conducted in line with the principles in the National Statement on Ethical Conduct in Human Research (National Health and Medical Research Council 2015).

#### Results

#### **Contributing factors**

The contributing factors identified for the research framework were:

- Coping appraisal is a contributing factor identified in several of the psychological theories and models and was included in the research framework. Coping appraisal refers to the cognitive process by which a person evaluates possible responses that may reduce the perceived threat.
- Critical awareness people will not prepare for floods and other hazards if they are unaware of the risks. However, extensive research shows that simply being aware of risks is not a strong factor for the initiation of responsible adaptive behaviours such as preparedness and safe response decisions (Karanci *et al.* 2005). Nonetheless, critical awareness has been shown to be a motivator of preparedness behaviours (Paton *et al.* 2006). According to Paton and co-authors (2006), 'critical awareness is the extent to which people perceive hazard issues as important enough to think about them and to discuss them on a regular basis'.
- Risk perception there is ambivalence in the research regarding the role of risk perception in influencing preparedness and appropriate response behaviours. Some research has found a strong correlation between risk perception and flood preparedness and response actions (Terpstra *et al.* 2009, Miceli *et al.* 2008) while others have not (Bubeck *et al.* 2012, Scolobig *et al.* 2012). Nevertheless, it was decided to include risk perception in the research framework due to observations by local floodplain managers and emergency managers that this could be an important contributing factor in the Wimmera region.
- Flood experience a long-standing hypothesis is that previous experience with an emergency or disaster will make an individual more likely to perform protective behaviours. Whether people prepare or not appears to depend on the severity of their experience and how that experience has been interpreted (Becker *et al.* 2017). With the last big flood event in the Wimmera region occurring in 2011 (approximately 1% Annual Exceedance Probability flood), it was important to examine the influence of flood experience on current preparedness and potential response behaviours.
- Location and demographics 6 towns in the Wimmera region of varying size and residual flood risk were identified

for the research. Three demographic features of these populations (age, transience and gender) were identified for testing using the research framework.

- Vulnerable people and groups there are numerous definitions of 'social vulnerability' (van der Veen *et al.* 2009). One well-supported definition of social vulnerability is 'the susceptibility of social groups to potential losses from hazard events or society's resistance and resilience to hazard' (Blaikie *et al.* 1994). A natural or technological hazard can have different short- or long-term impacts on various groups within society (Bankoff *et al.* 2004). A person's gender, age, physical abilities, ethnicity and sexuality, for instance, can lead to a higher risk of death or injury, longer recovery times or greater risk of mental or physical trauma.
- Social capital the body of sociological evidence demonstrates the importance of connected communities across the disaster management cycle including preparedness and response (Aldrich 2012). Social capital has been defined as the 'networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit' (Putnam 1995). It consists of those bonds created by belonging to a group that instils trust, solidarity and cooperation among members.
- Trust is a subset of social capital this includes trust in authorities (e.g. in communication of flood warnings and risk communication). It becomes even more important when the individual's knowledge about the hazard is low and they depend on authorities for risk information (Cope *et al.* 2010).
- Animal ownership this is a contributing factor to preparedness and response, particularly in rural areas such as the Wimmera region where residents may own both companion animals (pets) and livestock. Animal owners may risk their lives to save their animals (Thompson 2013). Many animal owners report high levels of attachment to their animals, often considering them to be part of the family. According to Thompson (2018), 'many guardians experience similar types and levels of attachment to their companion animals as those they may also experience towards the human members of their family – partners, children, parents and siblings'.

It should be noted that these contributing factors may be intertwined. For example, risk perception of residents can be strongly influenced by flood experience and social capital.

#### Preparedness and response indicators

There are numerous indicators that could be used to measure community preparedness and response levels (Healthcare Ready 2020). For assessing community preparedness levels in the Wimmera region (see Figure 1), 3 indicators were chosen:

1. **Emergency plan.** Emergency services organisations such as the Victoria State Emergency Service (VICSES) and the Country Fire Authority encourage people and businesses in the Wimmera region to have written emergency plans for hazard risks such as floods and bushfires. The development of written household and business flood emergency plans should be part of preparedness actions.

- 2. **Emergency kit.** Emergency services organisations encourage Wimmera householders to have emergency kits. Suggested items for these kits include a first aid kit, candles, waterproof matches and non-perishable food for 72 hours.
- 3. **Preparations**. There is a range of actions that people can carry out to minimise flood damage to their properties. These include moving valuable items to higher places, having sandbags ready and even raising the level of the house. When a flood is imminent, local residents and businesses can undertake preparations like sandbagging their properties, collecting valuable portable items and storing valuable items in safe places if they cannot take them.

For assessing community responses to flooding, 3 indicators were chosen:

- 1. **Evacuation intention.** In Victoria, emergency services organisations prefer self-evacuation if a flood is imminent or immediately after a personal notice to evacuate is issued (VICSES 2020). Delaying evacuation or refusing to evacuate can result in the need for emergency rescue or possible injury and death (Haynes *et al.* 2017).
- 2. **Perceived time to evacuate.** Most flooding in the Wimmera region is due to riverine flooding and there is generally at least 24 hours of flood warning lead-time to communities. However, in 2 of the locations in this study area (Halls Gap and Natimuk) flash flooding can occur with less than 6 hours of warning lead-time. In these communities, perception of time to evacuate is critical to safe emergency responses.
- 3. **Willingness to drive through floodwaters.** Over half of the flood-related deaths in Australia have been caused by people driving through floodwaters (Haynes *et al.* 2017).

#### Interventions

There are several interventions that can be used to influence flood preparedness and response behaviours. In Australia, these interventions are largely part of the flood-risk management process promoted by the Australian Government (Australian Institute for Disaster Resilience 2017) and are usually developed in the mitigation and prevention phase of the disaster management cycle as flood response modification measures.

Based on the 2017 Wimmera Floodplain Management Strategy, 4 preparedness interventions were chosen for the research framework (see Figure 1):

- 1. **Education and engagement.** Community flood education and engagement are commonly used to motivate people to prepare for flooding and respond appropriately, including to evacuate if required and not drive through floodwaters (Dufty 2020). VICSES provides flood education and engagement services across the Wimmera region.
- 2. **Risk communication.** Risk communication informs people about a potential future harm and the associated dangers so that they might take action to prepare for and mitigate

the risk. Risk communication in the Wimmera region is conducted primarily via the Wimmera CMA (Wimmera CMA 2020).

- 3. Flood insurance. Property owners are encouraged to take up flood insurance as a preparedness action to help manage potential losses resulting from flooding. The Insurance Council of Australia (2016) estimates that flood insurance coverage for households in Australia is over 93 per cent. However, this high level of coverage is a recent phenomenon. Until 2008, residential flood insurance was broadly unavailable in the eastern states of Australia, which are home to most of Australia's population and have the majority of flood risk. Flood insurance is now available throughout Australia, although insurance affordability remains a concern in high-risk flood regions as pricing reflects the high underlying risk.
- 4. **Community development.** Community-development activities can help connect people prior to a flood event and establish support for vulnerable people in the advent of a flood. In the Wimmera region, community development is primarily conducted by local councils, each of which is required to have a Vulnerable Persons Register.

Four response interventions were identified for the research framework (Figure 1):

- Early warning systems. The aim of an early warning system is to provide people with enough time to make themselves safe when a threat is imminent. A secondary aim is the protection of property. It is important that the safety of companion animals and livestock such as sheep, cattle and horses is considered. A lead guiding document for the development of total flood warning systems in Australia was Manual 21 – Flood Warning (Attorney-General's Department 2009) with this guidance now being part of the Flood Emergency Planning for Disaster Resilience Manual (Australian Institute for Disaster Resilience 2020).
- 2. **Crisis communication.** Allied with early warning systems is the range of emergency communication methods and language used by emergency managers to warn people about flooding and encourage safe responses.
- 3. **Emergency management.** Emergency services organisations provide services to communities to help keep them safe during a flood. In Victoria, central to flood emergency management arrangements and coordination are municipal flood emergency plans, which are prepared in collaboration by local councils, emergency managers and catchment management authorities.
- 4. **Community support.** In many cases, the first responders in a flood emergency are community members, not emergency services agencies. Safe flood responses are therefore contingent on the level and type of community support, including that from community groups and networks.

#### Social research survey

Figure 2 shows that not all the potential inter-relationships in the research framework were tested through this social research project. The social research focused on the relationships between the contributing factors and the preparedness and response indicators, rather than the interventions. This was due to the research interests of the Wimmera CMA regarding the effectiveness of its strategy and the complexity of all possible inter-relationships.

Approximately 800 at-risk households were surveyed across the 6 Wimmera communities. A response rate of 21 per cent was achieved providing a sample with a good level of statistical confidence across the 5 categories of flood risk used in the Wimmera region.

The social research identified numerous issues for the implementation of the strategy, especially relating to the contributing factors. Many residents were unaware of their flood risk including those living in high-flood-risk areas. Eighty per cent of respondents who perceived a high-flood risk indicated that they would not evacuate before a flood. This

demonstrates the lack of effect of risk perception on warning response behaviours. Respondents who had companion animals were particularly unwilling to evacuate.

This research found a general 'optimism bias', being that people underestimate flood risk compared with actual flood risk. This was evident even for those respondents who had experienced previous floods. Respondents who had experienced previous floods displayed a 'prison of experience' where their behaviours during past flood events confine their future preparedness and response actions.

The survey responses indicated that almost all respondents did not have a written emergency plan as recommended by emergency services organisations.

In terms of coping appraisal, 19 per cent of respondents indicated they would need assistance in a future flood although only 3 per cent rated their ability to cope as 'not good'.

A positive for the region was the high levels of social capital shown. Eighty per cent of respondents indicated that they would be willing to help others and there were high levels of trust including in emergency services agencies and their local



INTERVENTIONS

Figure 2: Use of the research framework in the Wimmera region social research project.

volunteers. There were strong age and gender variances evident including that older males might drive through floodwaters of over 20cm in depth. There were also spatial differences in the relationships between the contributing factors and indicators. For example, residents in the smaller villages were more reticent to evacuate but had greater critical awareness of flooding.

Risk perception and previous flood experience were relatively weak contributors to the uptake of flood insurance, which was the only intervention directly tested. Although almost all respondents were aware of flood insurance products, only 59 per cent had flood insurance policies and only 71 per cent had policies in high-risk areas.

As a result of the social research, several interventions relating to community development, flood education and engagement, and emergency management planning were recommended. These were aimed at influencing the contributing factors and preparedness and response indicators identified in the research framework.

#### Discussion

The research framework provided an intriguing insight into the psychological and sociological complexities and inter-relationships in which the 2017 Wimmera Floodplain Management Strategy is bedded. It is the intention of the Wimmera CMA to conduct follow-up social research to see if recommended interventions have influenced preparedness and response levels and their contributing factors. Obviously, a major flood in the Wimmera region would strongly influence community flood behaviour and this flood event should be monitored using the research framework.

The research framework has 3 limitations based on the Wimmera social research. Firstly, at this stage, it does not weigh the contributing factors against each other but deals with them with the same level of importance. Secondly, the framework does not accommodate multiple causal factors where several factors may combine rather than one and have a cumulative effect. Lastly, there may be other important components of the research framework that have not been identified. Ongoing research is required to identify and include these components if warranted.

The research framework, built on the nexus of contributing factors and preparedness and response levels and interventions, has universal appeal in understanding and improving community disaster preparedness and response at the community, local, regional and national levels. The framework can be adapted to other hazards (bushfires, pandemics, heatwaves, tsunamis) and compounding hazard events (e.g. tropical cyclones where there is initial wind and storm surge followed by flooding). It can also be reconstructed for other parts of the disaster management cycle (mitigation, recovery) and to assess overall community disaster resilience.

#### Conclusion

A research framework was developed to help understand and improve community flood preparedness and response across the Wimmera region of Victoria. The framework was used as a basis for a social research project in the region, which found low preparedness levels, potential reasons for these levels and possible ways to increase the levels. It identified aspects of community response that require attention including unwillingness to evacuate and willingness to drive through floodwaters. The high levels of social capital in the region auger well for community support mechanisms in future flood events.

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#### Abstract

Australia's bushfire seasons are expected to become longer and more severe due to the effects of climate change and an increasing population living in rural-urban fringes. Social and economic vulnerability to extreme natural hazards means that Australia's emergency services sector plays a significant role in community safety and wellbeing. Therefore, it is important that the sector continually improves. Australia has a long history of conducting external reviews into significant bushfires. While these reviews receive good support and seek to identify relevant lessons, barriers remain that prevent these lessons from being effectively learnt. It is possible that some of these barriers exist because the stratum of work impedes the capture, codifying and adjustments to systems. This research investigated the premise that lessons learnt in the Australian emergency services sector occurs on a stratum, with different types of lessons learnt at different levels of work. Four significant independent bushfire reviews were analysed to evaluate whether specific lessons could be aligned to the stratum of work. Findings were that not all lessons apply to all levels of organisations. This supports the premise that lessons are learnt on a vertical organisational stratum; for example, some lessons were operational, others were tactical and some were strategic. It was determined that a lack of understanding of the barriers within an organisations stratum could impede the effectiveness of lessons being learnt.

# The efficacy of aligning lessons learnt from significant bushfire incidents to the organisational stratum

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#### Introduction

Australia's bushfire seasons are lasting longer and getting more severe. More Australians are living in rural-urban fringe areas and Australia's climate has changed with increasing temperatures (CSIRO & Bureau of Meteorology 2018). These circumstances present challenges for the emergency services sector, which includes multiple organisations (each with several organisational strata) operating in a high stress, highconsequence environment. The emergency services sector needs to be continually improving, which requires effective lessons learnt processes to prevent, prepare, respond to and recover from bushfires.

External inquiries are conducted after significant disasters, especially bushfires (Dufty 2013; Owen et al. 2018). According to Eburn and Dovers (2015, p.501) 'between 1939 and 2010 Royal Commissions and other inquiries have produced 953 recommendations as lessons to reduce the risk of bushfire'. Such reviews are conducted by experts, have clear terms of reference and state the methodology, which includes consultation with experts and/or affected community members. For example, both the Margaret River bushfire review (Keelty 2012) and the Bega Valley Fires Independent Review (Keelty 2018) were authored by Michael Joseph Keelty AO APM, a former Commissioner of the Australian Federal Police. Other reviews, such as the review into the 2009 Victorian bushfires (Teague, McLeod & Pascoe 2010), are conducted as royal commissions, which carries significant weight (Australian Law Reform Commission 2010).

Nevertheless, questions arise regarding whether the recommendations identified in reviews are actually converted to lessons, or even learnt by the emergency services sector and the Australian community (Dufty 2013, Owen *et al.* 2018) and integrated into capability. Reasons for such criticism include limited follow-up after the event and whether lessons can be transferred between events (Eburn & Dovers 2015). There is also no existing standard for

conducting external reviews (Cole *et al.* 2018, Dufty 2013, Owen *et al.* 2018) and variances exist in codifying and communicating lessons learnt.

Noting the literature limitations, this study considered the research question: 'Do the lessons identified in prior significant incidents support the proposition that lessons are learnt at different stratum of the organisation?'

# Learning in the emergency services sector

There is an extensive body of knowledge about emergency services, emergency management and disaster management (Howes *et al.* 2015; Owen *et al.* 2018; Whitmer, LaGoy & Sims 2018; Glassey 2015). This literature covers the 4 stages of the emergency management cycle being prevention, preparedness, response and recovery. There is a significant emphasis on future risk factors such as the effects of climate change (McAneney, Chen & Pitman 2009; McCaw 2013; Winkworth *et al.* 2009). A subset of the literature focuses on significant Australian bushfires, especially the 1983 Ash Wednesday bushfires and the 2009 Victorian bushfires (Cameron *et al.* 2009, Leonard & Howitt 2010, Valent 1984).

#### How organisations learn

Organisations adapt and learn and this results in tangible and intangible benefits (Deverell 2009 Duffield & Whitty 2015, Rowe & Sikes 2006). However, the structure of an organisation can affect its ability to learn (Aubry & Lavoie-Tremblay 2018). This supports the work of Garvin, Edmondson and Gino (2008), who argue that concrete learning processes and leadership that reinforces learning are important factors in establishing a learning organisation. This is particularly relevant for emergency services organisations that are 'traditionally hierarchical in nature and tend to value their own command and control arrangements' (Owen *et al.* 2018, p.716). For example, Boin and t'Hart (2010) argue that there are different challenges at the operational and strategic level in emergency services organisations.

#### Gaps in emergency services learning

There is a large body of knowledge about identifying and learning lessons, also known as lessons management, in emergency management (Cole *et al.* 2018, Jackson 2016, Stuart & Thomason 2018, Donahue & Tuohy 2006). A review of this work showed some dissent in organisational learning literature regarding the use of the terms 'lessons learnt' and 'lessons management'. However, the definition differences of these terms are outside the scope of this paper. Within the Australian context, a seminal text is the Lessons Management Handbook (Australian Institute for Disaster Resilience 2019), which includes a 4-step cycle for managing lessons. These are:

- collection
- analysis
- implementation
- · monitoring and review.

As Owen and co-authors (2018) argue, this body of knowledge is growing, stating that:

a search of one database, for example (Proquest) revealed that of the 266 publications identified using the search terms learning lessons and emergency management 50 per cent of them had been published in the past five years.

#### (Owen et al. 2018, p.716).

Cole and co-authors (2018, p.34) conducted a meta-analysis of '1,336 recommendations made in 55 Australian major postevent reviews and inquiries since 2009'. Although this research identified common themes across the post-event reviews, these themes were not aligned to specific organisational strata and failed to consider Boin and t'Hart's (2010) views about the challenges for learning lessons at different levels in emergency services organisations. This limitation indicates that a gap in the literature exists. Although literature about Stratified Systems Theory, organisational learning and learning in the emergency services sector already exists, to date, these have not been fused to investigate the lessons-learnt process in different strata in emergency services organisations.

#### Underlying theory

The idea of different strata existing within an organisation containing different roles, responsibilities and outlook based on task abstraction can be traced back to the work of Jaques (1996, 2016). Stratified Systems Theory states that organisations have multiple levels, or strata, based on the time span of control (Table 1). Time span of control is a measurement of 'the target completion time of the longest task, project, or program assigned to that role' (Jaques 1990). Jaques (1996) identified 7 strata within an organisation:

- front-line
- first-line manager
- unit manager
- general manager
- · business unit president
- vice president
- chief executive officer.

Stratified Systems Theory is a robust means of evaluating organisations and allows for comparisons between different organisations (Craddock 2009). Therefore, this theory has direct relevance to the lessons-learnt process in the emergency services sector as disasters usually involve a multi-agency response. For example, Jaques (2016) highlights how each organisation's stratum aligns with other orgaisation's strata; where indiviuals from one stratum may have responsibility for the activities of members of another organisational stratum, but with no line management authority. Table 1. Occupational stratum of work in organisations (Jaques 1996, 2002).

Stratum	Time span of discretion	Role complexity	Role
7	20+ years	Extrapolative development of whole systems	CEO
6	10 to 20 years	Defining whole systems	Executive Vice President
5	5 to 10 years	Shaping whole systems	Business Unit President
4	2 to 5 years	Transforming systems	General Manager
3	1 to 2 years	Task extrapolation	Unit Manager
2	3 months to 1 year	Task definition	First-line Manager
1	1 day to 3 months	Concrete shaping	Front-line workers

#### Methodology

This study applied a 2-stage design that, while acknowledging the theoretical framing of Jaques's work, compressed the stratum of work to 3 levels. Using this revised stratum, significant bushfire events in Australia were thematically analysed.

#### Stage 1: Compressing Jaques's stratum of work

Jaques (1996) Stratified Systems Theory can be used to classify organisational positions into 7 different strata. However, it is difficult to consistently apply the full Stratified Systems Theory model to every organisation as the reviews focused on the bushfire incident rather than on the organisations. Therefore, the Stratified Systems Theory needed to be compressed into 3 levels that were grouped based on alignment to the generally used strata designations of operational (front-line), tactical (middle managers) and strategic (executives).

#### Stage 2: Content and thematic analysis

The most appropriate method for addressing the research questions involved purposeful sampling and thematic analysis (Braun & Clarke 2006). As a methodological process, purposeful sampling involves selecting participants, or relevant documents, 'directly related to the central phenomenon or key concept being explored in a study' (Creswell & Plano Clark 2018, p.176). For this study, purposive sampling enabled the selection of informationrich cases that represent the complex elements of lessons learnt from bushfire emergencies, and specifically, investigating the link between lessons and the stratum of work.

#### Analysis

This study investigated lessons identified within the bushfirethreat environment across 4 external reviews of significant bushfires that occurred in Australia between 1983 and 2018. The study followed the iterative thematic analysis process outlined by Braun and Clarke (2006). This method involved reviewing the data, generating a code list and undertaking multiple rounds of searching, extracting and reviewing themes. Selecting external post-event reviews that were conducted by experts and included a methodology section provided validity to the study as it indicates that the data is credible (Leung 2015). The iterative thematic analysis process and using multiple sources to extract themes (triangulation process) also added to the reliability and validity of the study (Creswell & Plano Clark 2018).

#### Stage 1: Compressing Jaques's stratum of work

The Stratified Systems Theory was compressed to 3 levels of operational, middle management and executive as detailed in Table 2.

Table 2: Compressed stratum of works.

Jacques's strata	Compressed strata	Description
7 to 8	3. Strategic executive	Strategic decision-makers (i.e. senior leaders and government ministers, develops policies, allocates agency resources).
4 to 6	2. Tactical middle management	Operational decision-makers (i.e. team/section leaders, implement policy, allocates tactical/daily resources).
1 to 3	1. Operational	Tactical-level decision-makers (i.e. first responders, direct interaction with the public).

#### Stage 2: Thematic analysis

Table 3 presents the inclusion criteria for the published documents of post-event reviews of Australian bushfires (Benoot *et al.* 2016, Eburn & Dovers 2015).

Table 3: Inclusion criteria.

Review type	Availability	Methodology
Royal Commission	Publicly	Publicly
OR	available	available
Parliamentary Inquiry		
OR		
Inquiry under existing legislation		
OR		
Independent Review		

Using this process, 4 reviews of significant bushfire incidents were selected:

- 1983 Ash Wednesday bushfire review (Miller, Carter & Stephens 1984)
- 2009 Victorian bushfire review (Teague et al. 2010)
- 2011 Margaret River bushfire review (Keelty 2012)
- 2018 Bega Valley bushfire review (Keelty 2018).

The 4 reviewed documents totalled 399 pages, which were coded for analysis. A code list was developed and refined throughout an iterative coding process so that analysis of each document was consistent. Each code related to a specific type of lesson. Lessons were defined as a specific finding and/or recommendation that can be actioned in the future (either to repeat in the future or change in the future). As each lesson was extracted, it was mapped against the established compressed stratum of work.

#### 1983 Ash Wednesday bushfire review

On 16 February 1983, 180 bushfires were burning across Victoria. These fires had a catastrophic impact on the communities affected with 47 people killed, 2080 homes damaged or destroyed and approximately 200,000 hectares burnt (Miller et al. 1984, p.23). The subsequent review covered all phases of the emergency management cycle. Although the review did not use the specific terminology of 'organisational strata', there were statements about the importance of senior and experienced officers helping junior officers and how decisions were delegated from the state-level Country Fire Authority to regional (local) levels. Another key lesson, which primarily aligns to the executive and operational strata, was that legislation, policies and procedures should be enhanced to prepare, prevent and respond to bushfire hazards and to recovery from bushfire incidents. For example, the review stated that 'suitable legislation would enable the State Government to declare a "State of Emergency" or "State of Disaster"...' (Miller et al. 1984, p.63).

The review added that the Country Fire Authority and Forests Commission Victoria should not be merged into one organisation and should not adopt a common communications system. Instead, the focus should be increased liaison and coordination. The review's emphasis on communication and coordination included agencies that are not primarily focused on disaster situations and members of the public. Although these lessons are largely aligned to the executive strata (those responsible for establishing and shaping organisational culture), there are relevant lessons for the middle management and operational strata that conduct the liaison activities.

#### 2009 Victorian bushfire review

On 7 February 2009 (Black Saturday), over 300 bushfires burned in Victoria. 173 people died and an estimated \$4 billion in damage occurred (Teague *et al.* 2010). Unlike the other reviews, the review into these fires was established as a Royal Commission. Although the commission's final report referred to other inquiries, including the 1998 Linton Inquiry that reviewed incidents relating to the death of 5 firefighters, the report did not reference the 1983 Ash Wednesday review that related to the same geographic area.

The review included the 4 phases of the emergency management cycle. The report did not use the specific terminology of 'organisational strata' but did consider organisational-level change and had specific recommendations for senior executives. For example, the review recommended appointing a full-time fire commissioner, increasing prescribed burning and that 'Victoria's ageing electricity infrastructure requires updating' (Teague *et al.* 2010, p.12). There were lessons identified that related to information flow and information management. This information lessons included having more nuanced bushfire warnings and more specific information to operational firefighters. The lesson about the nuanced bushfire warning can be aligned to the middle management strata that prepares the community education programs and the operational strata that provides advice to the public.

#### 2011 Margaret River bushfire review

The 2011 Margaret River bushfires in Western Australia started when 2 prescribed burns became uncontrolled. They resulted in 139 people being displaced; 32 homes, 9 chalets and 4 sheds being destroyed and 3400 hectares burnt (Keelty 2012). The primary focus of the review was to analyse how the Western Australia Department of Environment and Conservation planned and managed the 2 prescribed burns. The review did not specifically refer to different strata within the department but did use terms such as 'middle management'.

The review covered 3 phases of the emergency management cycle: prevention, preparedness and response. The review referred to other reviews including the 2010 Ferguson Review (Ferguson 2010), which focused on the department's ability to manage fires and a Western Australia Supreme Court decision about prescribed burning. A key lesson in the review was that managing the risks of prescribed burns, especially in the rural-urban fringe, is complicated because not conducting prescribed burns can lead to catastrophic situations if a bushfire occurs. Although aspects of these lessons can be aligned to the operational strata, which includes the individuals and teams who conduct prescribed burns, the middle management stratum was specifically mentioned. There are also lessons that can be aligned to the executive strata that is responsible for setting the risk assessment process, which was considered by the review to be out-of-date and inconsistently applied.

#### 2018 Bega Valley bushfire review

On 18 March 2018, multiple bushfires destroyed 65 homes, 70 caravans and cabins and 1250 hectares in the Bega Valley in New South Wales. The review focused on one phase of the emergency management cycle: response. The review assessed the relationship between Fire and Rescue New South Wales (FRNSW) and the Rural Fire Service (RFS). For example, the review stated there was cooperation at the operational and executive strata but 'the weight of submissions painted a picture of animosity and mistrust between FRNSW and the RFS in many districts and

at the middle management level' (Keelty 2018, p.18). The review also highlighted that call-and-dispatch arrangements between a 000 caller, RFS and the RFS were flawed and in need of urgent reform. Aspects of this lesson are aligned to the executive strata (by prioritising and funding resources for improving the system) and the middle management strata (by implementing the recommendations to improve the system).

#### **Extracting themes**

Once the full set of lessons were extracted, they were grouped into themes (Table 4). A theme included extracted lessons that were identified in 3 or more reviews. These themes included

the need to update legislation, procedures and documents so that the emergency services organisations can adapt to different bushfire conditions, environments and circumstances. There was also emphasis on control and coordination within and between emergency services organisations. This control and coordination included role clarification and improving community education and bushfire warnings processes. Several of the themes are directly relevant to the national themes detailed in the Lessons Management Handbook (Australian Institute for Disaster Resilience 2019). Each theme was then mapped against the relevant emergency management phase and the relevant (indicative) strata (Table 5).

Table 4: Extracted themes.

		Reviews of Australian bushfires			
Lesson category	Specific lesson	Ash Wednesday 1983	Victorian Bushfire Review 2009	Margaret River 2011	Bega Valley 2018
Relevant fire factor	Weather conditions	yes	yes	yes	no
	Fuel load	yes	yes	yes	no
Recommends updating legislation and procedures	Legislation and/or policies are out-of-date and/or difficult to implement	yes	yes	yes	yes
	Increase the number of prescribed burns	yes	yes	yes	no
	Change building codes, planning and/or zoning to reflect bushfire risk	yes	yes	yes	no
	Update documents (i.e. disaster plans and incident action plans)	yes	yes	yes	no
	Problems shifting between non-disaster and disaster roles	yes	yes	yes	no
	Inconsistent processes	yes	yes	yes	yes
Coordination	Liaison between agencies needs to improve	yes	yes	yes	yes
	Need for role clarification	yes	yes	no	yes
Communication	Warnings/information system needs to improve	yes	yes	yes	no
Resources, equipment and systems	Importance of volunteers and local knowledge	yes	yes	yes	yes
	Communications and/or IT equipment	yes	yes	no	yes
Future threat	Future threat from bushfires	yes	yes	yes	yes

Table 5: Sample of extracted themes mapping against the emergency management phase and indicative strata.

Lesson category	Specific lesson	Phase	Indicative strata
Recommends updating legislation, procedures	Increase the number of prescribed burns	Prevention	<b>Executive:</b> Responsible for updating legislation, procedures and the overarching suite of documents; sets priorities and policies for prescribed burns; setting organisational culture (ongoing emphasis on officer safety).
			<b>Middle management:</b> Responsible for the operational risks for each prescribed burn; applying rating/prioritisation system consistently; allocating resources
			<b>Operational:</b> Conduct additional prescribed burns; using equipment; following procedures.
Communication	Warnings/ information system needs to improve	Prepare and Respond	<b>Executive:</b> Prioritise standardising IT systems; fund updated IT and communication systems.
			<b>Middle management:</b> Standardise (as much as possible) briefing processes and information flows to/from the tactical teams; regional level middle management to develop region-specific advice for the public.
			<b>Operational:</b> Provide specific advice to community groups using different formats/platforms.
Coordination	Liaison between agencies needs to	Plan, prepare, respond, recovery	<b>Executive:</b> Responsible for establishing an organisational culture that focuses on liaison; creating and enforcing standards.
	improve		Middle management: Responsible for liaison at the middle management level and ensuring operational-level liaison occurs; role clarification at team level.
			Operational: Liaison at the operational level.
Resources, equipment and systems	Importance of volunteers and local knowledge	Plan, prepare, respond, recovery	<b>Middle management:</b> Problems in communication and information sharing between the government agency and volunteer brigades.

# Do emergency services lessons occur across the stratum?

Findings from this research supported the proposition made in the research question by finding that lessons learnt can be aligned to specific organisational strata. Findings can be supported through the need for specific stratum learning in legislation, communications, coordination and resourcing. For example, the 2009 Victorian bushfire review recommended:

...the Country Fire Authority and the Department of Sustainability and Environment standardise their operating systems and information and communications technologies with the aim of achieving greater efficiency and interoperability between agencies.

(Teague et al. 2010, p.28).

This study also found that at the executive strata there is a responsibility to establish an organisational culture that focuses on intra- and inter-departmental liaison. Whereas, at the middle management strata, the indicative focus is towards standardising processes. Finally, at the operational strata, liaison needs to be enabled and supported. Further research could consider whether there are specific barriers at different operational strata that impede the lessons-learnt process in emergency services organisations. Improving lessons-learnt processes could have flow-on implications for communities through better responses to emergency incidents and for government through improved use of resources.

#### Limitations

A limitation of this study was the difficulty in comparing the selected incidents using only the external reviews as sources. The reviews ranged in scale, with the 1983 and 2009 reviews focusing on all 4 phases of the emergency management cycle, while the other 2 reviews were narrower in scope. Apart from the 2 Victorian incidents, the other incidents occurred in different Australian states and involved different jurisdictions and different emergency services organisations. Therefore, it was difficult to assess whether a 2011 review into prescribed bushfires getting out of control in Western Australia should have learnt from a 1983 review into bushfires in Victoria.

#### Conclusion

This study supported the proposition that emergency services organisations need to continually improve and that some learning between significant bushfire incidents occurs. However, reviews undertaken following significant bushfire events still indicate that further work is required. Furthermore, that lessons learnt are implicitly aligned towards specific stratum. Therefore, to assist the lessons-learnt process would be to align lessons to specific organisational strata, as this provides clearer advice to the organisations about who should be responsible for learning from each identified lesson.

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#### Abstract

School-based fire safety education programs are implemented by fire services organisations around the world to improve children's fire safety knowledge and skills. Such education is considered the single most modifiable strategy that fire services organisations can implement to reduce the risk that children will misuse fire or be harmed by fire. Despite this, there are no overarching and evidence-based guidelines for the development of new programs or the evaluation and modification of existing ones. To fill this void, a rapid evidence assessment of existing literature was conducted. Results revealed 25 evidence-based practices that held true in a variety of contexts and methodologically diverse studies. These practices inform an empirical framework that can be used to guide fire safety education programs for children.

Evidence-based practices of effective fire safety education programming for children

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#### Introduction

Fire services organisations implement community risk reduction mechanisms to improve fire prevention and preparedness (Simpson *et al.* 2014). One such mechanism, fire safety education for children, plays a pivotal role in fire prevention and preparedness (Brown 2019; Huseyin & Satyen 2006; Satyen, Barnett & Sosa 2004). School-based fire safety education programs are implemented around the world to improve children's fire safety knowledge and skills (Kendrick *et al.* 2007; Satyen, Barnett & Sosa 2004). These programs aim to enhance children's understanding of fire and how to respond appropriately to reduce the likelihood they will misuse fire or be harmed by fire (Kendrick *et al.* 2012).

According to Monk (2011), prevention through education is the single most modifiable strategy that fire services organisations can adopt to reduce the risk of fire to children. School-based fire safety education programs are generally delivered by firefighters during school visits that occur periodically or as stand-alone programs in isolation or coupled with teacher-delivered components (Satyen, Barnett & Sosa 2004). Despite widespread implementation of fire safety in schools, there are no overarching and evidence-based guidelines informing the development of new programs or the evaluation of existing ones (Simpson et al. 2014). This is problematic where empirically derived knowledge is required to determine what works in fire safety education for children (Huseyin & Satyen 2006, Simpson et al. 2014). To fill this void, a rapid evidence assessment of literature was conducted that revealed 25 evidence-based practices that held true in a variety of contexts and methodologically diverse studies.

#### Aim

This research is important because it contributes to the body of knowledge concerned with fire safety education. The use of an overarching, evidence-based framework will promote rigour, consistency and effectiveness in fire safety education to enhance the capacity of fire services organisations to reduce the risk of fire to children.

#### Methodology

A rapid evidence assessment collects relevant empirical evidence about a topic, collates the data and allows for a meta-analyse to summarise existing research (Barends, Rousseau & Briner 2017). Although this method systematically assesses existing literature, 'rapidity' is achieved by limiting breadth and scope (Barends, Rousseau & Briner 2017; Varker *et al.* 2015). While this ensures a timely and rigorous review of the literature, the findings are limited to the methodology employed (Varker *et al.* 2015). Concessions to breadth and scope mean that the results should be couched in the methodology of the rapid evidence assessment and not the body of evidence.

To ensure methodological rigour while meeting time-sensitive needs, this study limited the scope of the research to the following search criteria. Studies were included if they were:

- scholarly, scientific or industry papers
- published in any country
- dated between 2000 and 2020
- in English
- theoretically or empirically evaluated or studied fire safety programs for children aged 0 to 17 years
- a form of primary prevention.

An iterative search with key words was used to search the library catalogue of Fire and Rescue New South Wales and Google (child\* OR young person OR adolescent\* OR youth OR juvenile AND fire AND educat\* OR school OR prevent\* OR program\*).

Ninety sources were identified, 22 of which were excluded after abstract review. A further 17 were excluded after full-text review because they did not meet the selection criteria. A total of 51 sources were included in the rapid evidence assessment. Once the data were collected, coded and collated, it was qualitatively analysed. The findings revealed 25 evidence-based practices of effective fire safety education programs for children. These practices related to 7 main themes of theory of change, target, approach, content, resources, implementation and evaluation.

#### **Results and discussion**

#### Theory of change

# Fire safety education should explicitly identify the theory of change underpinning program activities

Fire safety education programs are generally underpinned by the premise that children have limited capacity to understand the risks and consequences of fire and an inability to react promptly and rationally to fire (Chen *et al.* 2011; Harpur, Boyce & McConnell 2012; Phillips 2012; Smith *et al.* 2018; UK Office of the Deputy Prime Minister 2003). This lack of knowledge and awareness puts children at risk of misusing fire or being harmed by fire. Fire safety education aims to improve children's knowledge and awareness of fire and fire safety to reduce this risk (Cakiroglu & Gokoglu 2019, Dukes *et al.* 2016, Subramaniam 2004). If children are aware of the risk posed by fire, the need for immediate response to fire and knowledge of fire safety, they will be more likely to behave and respond appropriately (Office of the Advocate for Children and Young People 2020, Subramaniam 2004). Although this theory of change underpinned most of the sources reviewed, many did not explicitly identify the theoretical underpinnings of the programs. Fire safety education programs should explicitly identify the theory of change to help facilitators understand how the program activities lead to intended effects.

#### Target

#### Fire safety education should be tailored to the developmental stages of children

It is important to expose children to fire safety as early as possible when their sensory input is high (Jankowski 2015). Where generic fire safety education is more effective for primary school-aged children than preschool or kindergartenaged children (Chavez *et al.* 2014), it is necessary to ensure that programs are implemented in age-appropriate increments (Jankowski 2015; Satyen, Barnett & Sosa 2004). This can be achieved by tailoring fire safety education to the developmental stages of children (Gielan *et al.* 2010; Lidstone 2006). Although not absolute, developmental stages provide a standard and commonly accepted classification of children by age (Giesler 2017).

#### Approach

# Fire safety education should be mapped to the education curriculum

Fire safety education must be mapped to the education curriculum to allow for integration with school lessons (Phillips 2012). Direct alignment is essential where an overcrowded curriculum constrains opportunities for the delivery of standalone programs (Towers & Whybro 2017). A standardised, integrated curriculum that connects the physical and social world and helps children understand the complexities of fire, hazards and disaster risk has been linked to a reduction in fear and increased preparedness (Phillips 2012, Ronan & Towers 2014). If fire safety is mapped to the curriculum, students can be assessed and programs can be evaluated against curriculum-based outcomes. It is critical that fire safety programs also align with the relevant education rubrics for assessment and evaluation.

### Child-centred disaster risk reduction mechanisms should be ingrained within fire safety education

Child-centred disaster risk reduction (CCDRR) draws on the rights, needs and capacities of children to reduce risk and enhance resilience (Back, Cameron & Tanner 2009). CCDRR positions children as dynamic agents of change who can contribute to prevention and preparedness within their households and communities, influence response to fire and grow from the challenges associated with fire (Hayes, Lassa & Towers 2010; Office of the Advocate for Children and Young People 2020). CCDRR can be included in fire safety education by empowering children to actively engage with and maintain ownership over program activities (Back, Cameron & Tanner 2009; Office of the Advocate for Children and Young People 2020). CCDRR learning should be inquiry-driven, action-oriented and interactive (Brown 2019, Gielan *et al.* 2010), while also connecting with communities and a social consciousness (Hayes, Lassa & Towers 2010).

#### Structure

### Fire safety education should be teacher delivered and firefighter reiterated

Stand-alone firefighter-delivered fire safety education is not sufficient to reduce fire-related risks for children (Jankowski 2015, Monk 2011), meaning that firefighters should not be the primary source of fire safety education (Gerald 2019, Ogier 2008). Instead, fire safety education is more effective when educators teach fire safety concepts and skills to children, and firefighters reiterate lessons learnt (Monk 2011). This requires a coordinated approach (Jankowski 2015, Monk 2011, Ogier 2008), While teachers are best placed to provide age-appropriate and accessible education, coupled with opportunities to practice and consolidate lessons learnt (Gerald 2019; Towers et al. 2014), firefighters are best placed to familiarise children with aspects related to firefighter equipment and appearance and their roles (Gerald 2019). It is important that the firefighter-delivered component of the program does not become an entertainment or goodwill exercise (Ogier 2008). Focusing on the fire truck and playing with water hoses can distract children from the fire safety messages and may impede program effectiveness (Ogier 2008).

### Fire safety education should implement the 'instruction, modelling, rehearsal and feedback' approach

Evidence suggests that fire safety should be taught using the 'instruction, modelling, rehearsal and feedback' approach (Cakiroglu & Gokoglu 2019, Dukes *et al.* 2016, Giesler 2017). Instruction refers to the information given to children about the correct behaviours in specific situations. Modelling refers to the imitation of demonstrated behaviour. Rehearsal refers to the practice of a newly learnt behaviour. Feedback refers to positive reinforcement when behaviours are modelled correctly and instructive feedback when they are not (Cakiroglu & Gokoglu 2019, Dukes *et al.* 2016). Importantly, this approach has been identified as effective in teaching fire safety skills to children with learning or behavioural problems (Dukes *et al.* 2016).

### Fire safety education should be gain-framed, caregiver mediated and portrayed as a social norm

Children's understanding of fire safety messages is affected by framing and scripting (Borzekowski *et al.* 2013; Gielan, Borzekowski & Rimal 2010). Fire safety messages that are gain-framed (show the correct behaviour followed by a positive outcome) and are combined with scripted caregiver mediation (discussion between the child and caregiver that follows predetermined talking points) are effective in communicating safety behaviours (Borzekowski *et al.* 2013; Gielan, Borzekowski & Rimal 2010). Evidence also suggests that creating the perception that a certain behaviour is a social norm is effective in changing behaviour and reducing risk-taking by children (Morrongiello & Schwebal 2017). If children are exposed to gainframed messages and caregiver mediation, correct behaviour may be perceived as a social norm that, in turn, may instigate safe fire behaviour (Morrongiello & Schwebal 2017).

### Fire safety education should be short in duration and repeated over time to consolidate learning

Children need time to repeat and rehearse skills to consolidate learning and develop new skills (Gerald 2019, Jankowski 2015, Lidstone 2006, Rimmer *et al.* 2010). Fire safety should be delivered over several sessions to facilitate repetition (Jankowski 2015). Further, younger children have shorter attention spans than older children and older children have shorter attention spans that adolescents (Gerald 2019, Lidstone 2006). Fire safety sessions should be short in duration, with lesson times adjusted to suit the developmental stages of children.

### Fire safety education should be delivered using the 'multiple messages-multiple methods' approach

Not all children learn the same way. What works for some children will not work for others (Hickman & Lawrence 2010, Lehna et al. 2013). Not all children experience the same risks, where culture, race, ethnicity and socio-economic disparities influence risk of fire and child injury (Istre et al. 2002, Morrongiello & Schwebal 2017). To ensure fire safety is targeted towards the needs of participants (Kirsch 2016, Lehna et al. 2013) and the risks experienced by communities (Monk 2011), the 'multiple messages-multiple methods' approach should be employed. This approach requires the use of techniques and resources to give children equal access to education that is suitable and relevant (Hickman & Lawrence 2010, Kirsch 2016). This may include presenting the same message using a variety of modes and media (instruction, role play, video and online interactive resources), the use of translated resources and culturally appropriate fire safety advice and scenarios (Kirsch 2016, Lidstone 2006, Rimmer et al. 2010) and the inclusion of community diversity in publications and illustrations (Gielan et al. 2010).

#### Content

#### Fire safety education should be behaviourally focused

Fire safety education that is behaviourally focused involves stimulating and interactive activities that transfer knowledge and skill (Jankowski 2015, UK Office of the Deputy Prime Minister 2003). Messages such as 'get down low and go, go, go' to safely exit a room with a smoke layer and 'stop, drop, cover, and roll' when clothing catches alight help teach children how to respond appropriately to fire (Gielser 2017, Hickman & Lawrence 2010, Huseyin & Satyen 2006, Kendrick *et al.* 2007, Smith *et al.* 2018). These actions are important where a child's behavioural response to fire increases their risk of fire fatality (Chen *et al.* 2011).

# Fire safety education should involve fire escape planning and drills

Although fire safety education often teaches children how to exit a room safely, studies have found that the self-rescue capabilities of children are limited (Najmanova & Ronchi 2017). At the age of 3, children are capable of self-preservation and have the capacity to understand and follow simple instructions and walk without support (Taciuc & Dederichs 2013). They have a limited understanding of risk, an undeveloped sense of danger, a lack of awareness of the need to escape unsafe or dangerous situations and no ability to react promptly and rationally to fires (Chen et al. 2011; Harpur, Boyce & McConnell 2012; Smith et al. 2018). Younger children also take longer to evacuate than do older children and are more likely to need an adult to accompany them or provide instructions to follow (Harpur, Boyce & McConnell 2012; Najmanova & Ronchi 2017; Smith et al. 2018). Older children have the capacity to self-rescue and evacuate unsafe environments without adult support or guidance as older children can have experienced periods of being alone (Giesler 2017). However, evidence indicates that children who are home alone and face an emergency do not know how to respond appropriately (Durso 2013). It is important to educate older children about how to handle emergencies and make the necessary decisions without adult guidance (Giesler 2017).

This highlights the importance of fire escape planning and drills (Chen et al. 2011, Lehna et al. 2013). Teachers and caregivers should guide children through creating and practising fire escape plans at school and home (Gielser 2017). Plans and drills increase fire safety knowledge and accuracy of response to fire (Gielser 2017; Hickman & Lawrence 2010, Huseyin & Satyen 2006, Tatebe & Mutch 2015). Fire escape planning and drills reinforce appropriate behaviour, such as alerting an adult to the alarm or fire, evacuation, going to a pre-arranged safe place and calling emergency services (Mytton, Goodenough & Novak 2017). It is important to note that fire alarms differ in tone, pitch and rhythm (Dukes et al. 2016) and this may trigger adverse reactions in some children (Cohen 2012). Pre-instruction and repetition are important to assist children to differentiate between fire alarms and other sounds and to be less sensitive to the sound because they know how to respond appropriately (Cohen 2012, Dukes et al. 2016).

#### Fire safety education should include firefighter identification and awareness

Education that teaches children how to identify a firefighter and the roles of firefighters is effective for improving awareness that firefighters are responsible people in an emergency (Cole, Krandell & Kourofsky 2004; UK Office of the Deputy Prime Minister 2003). Children need not run or hide from a firefighter in an emergency but should gain their attention and approach them if safe to do so (Giesler 2017). While firefighters should dress in their full uniform during lessons to aid identification, their appearance may initially frighten younger children. It is also important for firefighters to sit or crouch down when speaking with children so that they are on the same level (Giesler 2017).

# Fire safety education should include match and lighter safety

Teaching that matches and lighters are used by adults improves children's awareness to tell an adult if they see matches or a lighter (Cole, Krandell & Kourofsky 2004; Giesler 2017). This can reduce the risk of children playing with matches and lighters (Kendrick *et al.* 2007) particularly where matches and lighters are associated with an increased risk of fire injury and fatality (Chen *et al.* 2011, Istre *et al.* 2001). Evidence suggests that children should be educated about the medical and social consequences of misusing fire (UK Office of the Deputy Prime Minister 2003). However, this finding contrasts with the need to use gainframing. Instead, match and lighter safety should focus on children informing an adult if they see matches and lighters and the positive outcome of that action.

# Fire safety education should include messaging about when and how to dial Triple Zero (000)

Children should be taught to dial Triple Zero (000) by first identifying the circumstances under which to call Triple Zero (000), what happens if they call and possible repercussions of making hoax calls (Hickman & Lawrence 2010, Towers & Whybro 2017, UK Office of the Deputy Prime Minister 2003). It is important that children have opportunities to practice dialling Triple Zero (000) using the numbers as they would appear on a phone and learn how to navigate to the emergency dial pad on a phone or mobile (Giesler 2017).

# Fire safety education should reinforce messages about bushfire safety

Due to the heightened risk of bushfire and increased effects of hazards on children, there is a need to reiterate bushfire safety when delivering fire safety education (Brown 2019, Office of the Advocate for Children and Young People 2020). When children are aware of the risk factors for bushfire they are more likely to assist in prevention and preparedness activities (Brown 2019) and improve response and recovery outcomes (Office of the Advocate for Children and Young People 2020). Bushfire education assists children to understand the importance of bushfire escape plans, how and when to implement them, what to pack in readiness and where to go when leaving (Office of the Advocate for Children and Young People 2020). While bushfire education is included in disaster education more broadly, evidence suggests that messages about bushfire safety should be included when delivering fire safety education.

# Fire safety education should include fire hazard identification and mitigation

Lessons in fire hazard identification and mitigation improve children's understanding of how to identify and react to hazardous situations (Gielser 2017, Morrongiello 2012, Smith *et al.* 2018, Tatebe & Mutch 2015). A valid approach is to show children various hazard scenarios, including combustibles stored too close to a heat source, blocked exits, matches and lighters lying around, unsupervised lit candles and cooking as well as overloaded power boards (Morrongiello 2012). This should be followed by the ways to reduce these hazards. Education that involves identification and mitigation promotes active engagement in hazard reduction (Office of the Advocate for Children and Young People 2020). Importantly, if children see their contributions implemented, they are more likely to remember the material, have a sense of ownership over their safety and promote safe environments (Office of the Advocate for Children and Young People 2020).

### Fire safety education for older children should include fire science

Fire safety education for older children extends beyond specific fire safety skills (UK Office of the Deputy Prime Minister 2003). Older children need a good level of understanding of fire, the science behind fire and all its characteristics, so they can identify risks and take appropriate actions (UK Office of the Deputy Prime Minister 2003). Fire science lessons should cover what fire is, how it works, why it grows and spreads and how it can be controlled and extinguished (UK Office of the Deputy Prime Minister 2003). Evidence indicates that children appreciate information that provides them with a deeper knowledge of why emergencies, such as bushfires, occur (Office of the Advocate for Children and Young People 2020).

# Fire safety education should be relatable to children's lived experiences of fire

Research shows that children desire opportunities to share their stories and find common understanding with others (Office of the Advocate for Children and Young People 2020). By providing opportunities with their peers, school and their community, children can cognise fire safety messages in a meaningful and relatable manner (Office of the Advocate for Children and Young People 2020). This can enhance the effectiveness of fire safety education. To permit alignment with other evidencebased practices, it is important that children's lived experiences of fire are gain-framed and caregiver mediated. Stories can be completed as homework exercises that encourage family or caregiver discussion. When presented in class, correct behavioural responses can be reinforced by identifying the positive outcomes of behaviours, while incorrect responses can be corrected by focusing on behaviours that can be performed in the future to achieve desirable outcomes.

#### Resources

### Fire safety education should use resources and create a realistic training environment

Fire safety programs that use resources such as the firefighter uniform, smoke alarms and a pretend phone to dial Triple Zero (000), create a realistic training environment that develops knowledge and skills in a practical environment (Federal Emergency Management Agency n.d.). When children learn in a simulated environment, such as a mock house prop or trailer, they can practice their fire safety skills in situ (Phillips 2012). This helps them identify and respond to hazards and to understand the practical implications of their knowledge and skills (Phillips 2012).

### Fire safety education should incorporate digital resources, activities and social media

Many children spend a good proportion of time online, both for education and recreation (Kirsch 2016) and often seek out information online (Durso 2013). Digital resources, activities and social media are cost-effective ways to engage children, disseminate and reiterate fire safety information and implement prevention activities (Morrongiello & Schwebal 2017, Towers & Whybro 2017). New research suggests that serious games and augmented/virtual reality can train older children and adolescents to respond to a fire, make sound decisions and evacuate safely (Almeida & Rossetti 2015, Cakiroglu & Gokoglu 2019). Serious games recreate situations that are difficult to simulate in the real world with a high degree of immersion and realism. They assist children in transferring their knowledge and skills to the practical environment (Cakiroglu & Gokoglu 2019).

#### Teachers should have access to resources and support

Although teachers are well placed to deliver fire safety education, they are not subject-matter experts. Nor do they have the time or resources to develop comprehensive fire safety programs in isolation (Ogier 2008). As a result, fire services organisations must continue to provide teachers with resources and support to successfully teach fire safety concepts (Brown 2019, Towers *et al.* 2014, Ogier 2008). Correct and consistent information should be available to teachers to help them implement evidence-based and curriculum-aligned fire safety education (Brown 2019, Towers *et al.* 2014, Ogier 2008).

#### Caregivers should have access to resources and support

Caregivers play a pivotal role in supervising and modelling appropriate fire behaviour for children (Bahr 2000). In fact, it is the behaviour and lifestyles of caregivers, rather than that of children, that are paramount to reducing risk. Caregivers must have access to education and information so that they are aware of the importance of home fire safety, adequate supervision, limiting access to incendiary materials and safe modelling behaviour (Bahr 2000; Gielser 2017; Harpur, Boyce & McConnell 2012; Istre *et al.* 2002). Caregivers should be educated in firerelated risks associated with children's developmental stages (Smith *et al.* 2018) and should know how to identify misuse of fire (Giesler 2017). If caregivers practice safe fire behaviour children are more likely to model this behaviour (Gielser 2017). Further, when caregivers are well-informed, they are more likely to create a safe environment for children (Gielser 2017).

To capitalise on the capacity of caregivers, children could use resources that help them transfer fire safety knowledge from school into the home (Kourofsky & Cole 2010, Rimmer *et al.* 2010, Towers *et al.* 2014). Take-home resources such as checklists, factsheets or homework exercises, help knowledge retention and the transfer of knowledge from children to caregivers extends learning beyond classroom instruction (Chavez *et al.* 2014, Gielan *et al.* 2010, Johnson *et al.* 2014, Lehna *et al.* 2013, Ogier 2008, Rimmer *et al.* 2010, Tatebe & Mutch 2015, UK Office of the Deputy Prime Minister 2003). While this would be ideal, the provision of take-home resources may rely on the available resources of fire service organisations and budgetary allocations.

# Fire safety education should provide free or low-cost fire safety equipment

Fire-related injury is heightened by the absence of smoke alarms (Kendrick *et al.* 2012) and poor smoke alarm functionality (Chen *et al.* 2011, Kendrick *et al.* 2012). Fire safety initiatives that provide free or low-cost fire safety equipment, such as smoke alarms, are effective at improving home fire safety (Dierkman, Ballesterous & Ahrens 2011; Kendrick *et al.* 2012; Smith *et al.* 2018). Importantly, the provision of fire safety equipment is effective for families whose children are at greater risk of injury (Dierkman, Ballesterous & Ahrens 2011; Kendrick *et al.* 2012). However, smoke alarms are not sufficient to reduce the risk of fire-related injury and fatality (Istre *et al.* 2002, Smith *et al.* 2018). Consequently, the provision of fire safety equipment, such as smoke alarms, should be accompanied by additional caregiver resources.

#### Implementation

#### Fire safety education should be embedded in business-as-usual activities and programs should be designed to provide consistency in implementation

Fire safety education should be embedded in business-asusual for fire services organisations through recruit training, career development and normal workplace practices (Monk 2011, UK Office of the Deputy Prime Minister 2003). Fire services organisations should form ongoing relationships with local schools to conduct regular fire safety sessions within the curriculum (Ogier 2008). It is recognised that negative firefighter attitude towards fire safety education in schools may impede effectiveness, so it is important that firefighters are correctly chosen to deliver sessions and they are aware of the value of fire safety and its implications for the health and safety of children and their families (Ogier 2008). Firefighters can be allowed ownership over the provision and delivery of the program to encourage commitment (Ogier 2008). Fire safety programs should be designed to allow for consistency in delivery (Gerald 2019, Phillips 2012). Participating firefighters must be provided with training that helps in the systematic delivery of fire safety education (Gerald 2019, Monk 2011, UK Office of the Deputy Prime Minister 2003).

#### Evaluation

## Fire safety education programs should be subject to record keeping, monitoring and evaluation

Fire safety education programs should be subject to scrutiny to ensure they are relevant, effective and evidence-based (Giesler 2017, Monk 2011, Lidstone 2006, Towers *et al.* 2014). Although it is important to measure post-implementation changes in knowledge, it may be difficult to measure how children behave in emergency situations or if fire safety education changes a child's behaviour (Johnson *et al.* 2014). Where fire safety knowledge does not always lead to the practical application of fire safety skills and prevention in the home (Senthilkumaran *et al.* 2019), measuring knowledge alone is insufficient. Despite this, fire safety knowledge is a precursor of behavioural change (Senthilkumaran *et al.* 2019). Evaluation mechanisms should measure fire safety knowledge and behaviour in children and their caregivers before and after program implementation by using qualitative and quantitative instruments (Gielan *et al.* 2010, Johnson *et al.* 2014, Senthilkumaran *et al.* 2019). Instruments may include surveys of home fire safety practices, skill testing, drills, fire scenarios and other activities that measure knowledge and behavioural change (Gerald 2019).

#### Conclusion

Fire safety education helps to reduce the likelihood children will misuse fire or be harmed by fire. Although there is a large body of evidence informing current practice, there are no overarching, evidence-based frameworks guiding effective education programs. Such guidelines are needed to develop new programs and to evaluate and modify existing ones.

Fire safety education is most effective when underpinned by comprehensible change theory, mapped against the education curriculum and delivered by teachers and reinforced by firefighters. Lessons incorporating CCDRR principles and that are behaviourally focused can improve fire safety knowledge and skills in children. Actual, interactive and online resources facilitate the acquisition and transfer of knowledge and skills to the practical environment, while teacher and caregiver resources support the delivery and reinforce fire safety messages. When programs are embedded within business-as-usual activities, fire services organisations can establish consistency in implementation and ongoing record keeping, monitoring and evaluation. The use of an overarching, evidence-based framework will deliver the rigour, consistency and effectiveness of fire safety education.

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#### Abstract

In 2009, 4 major bushfires destroyed vast areas of Gippsland in eastern Victoria including the areas around Delburn, Bunyip, Churchill and Wilsons Promontory. These are collectively known as the 2009 Gippsland bushfires. Research was conducted to investigate the psychosocial recovery of young adults in these areas. Twenty young adults participated in the study and, while these young adults are not an homogenous group, commonalities were identified across their stories. Asked what would have helped their recovery, the participants all said that acknowledgment of their personal and age-specific needs was the single most important factor that enabled or impeded recovery. This paper describes some of their stories. The paper looks at how participants viewed acknowledgment and the effects of its absence on their psychosocial recovery and how they felt unacknowledged in local recovery supports. The paper reports on the findings of this research and suggests an approach for management and longer-term recovery support that is inclusive of the specific needs of young adults.

BASED ON A PAPER PRESENTED AT THE AUSTRALIA & NEW ZEALAND DISASTER & EMERGENCY MANAGEMENT CONFERENCE 2020.

# The role of acknowledgment in the psychosocial recovery of young adults in disaster events

#### Peer Reviewed

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#### Introduction

Research conducted in 2015 and 2016 explored how young adults in rural areas were faring in their psychosocial recovery from the 2009 Gippsland bushfires. Twenty young people<sup>1</sup> from rural and regional areas in Gippsland who selfidentified as being a young adult and affected by the 2009 Gippsland bushfires participated in the study.

At the time of the fires, weather conditions were rated as 'catastrophic' and this was reflected by one of the participants who was in her early 20s at the time, was actively involved in firefighting efforts and resided in the Gippsland bush:

We were alert and ready to go, sitting in 48-degree heat with gusting 100 kilometres per hour winds. All we could do was watch this fire grow more voluminous, moving quickly across the landscape. Later when it was deemed safe enough for us to be at the fire line, we focused on asset protection at some rural properties exposed to the flank of the still moving fire.

#### Tamsin

Several themes emerged from the research. A separate paper explored the use of social media and the rise of virtual communities for young adult recovery (Willems, Forbes & Simmons 2021). This paper builds on previous research that considered the lack of acknowledgment as being a key factor influencing the post-disaster recovery of young adults (Forbes, Simmons & Willems 2018). Further synthesis of that data collected data yielded 3 additional findings relating to acknowledgment. First, acknowledgment of personaland age-specific needs is important for the psychosocial recovery of young adults. Second, post-disaster recovery continues long after an event has passed. Finally, young adults must be included in emergency and disaster planning,

1 Names of participants have been changed and pseudonyms have been used in this paper.

and in discussions around longer-term recovery support, such as ways to foster their physical, mental and financial health. The stories of psychosocial recovery of participants are shared to show how acknowledgment (or its lack thereof) continues to affect these young people. Their perceptions, reflections and lived experiences as presented were analysed to enable recommendations for relevant policy adjustments. These could also contribute to emergency management planning to support young adults through this and future terrible events.

#### Young adults and disasters

The term 'young adult' refers to a transitional stage of development between childhood and adulthood. It is therefore somewhat ambiguous with no clear characteristics to define the beginning or end point (Chudacoff 2004, Galland 2007). However, in Australia, the legal age for adulthood is 18 years. The Australian Bureau of Statistics (ABS 2013) defines 'young adult' as people aged between 18 to 34 years.

Young adults, as a specific cohort with unique and individual needs, are different from those of children and older adults. This is one of the few studies globally to have explored this research gap (Cox 2017). In relation to research on young adults and disasters, while there is a plethora of literature from researchers on recovery, research specific to youth tends to target children and young people under 18 years old, occasionally extending up to 25 years of age (Caruana 2009, Hosin 2007, McDermott 2004). The gap in research requires a focus on young adults in the 18-to-34year age range, particularly on the effects of informal and formal psychosocial post-disaster supports in their recovery (Forbes, Jones & Reupert 2012; Hubbard 2014). In addition, as personal recovery is complex and varied and can take up to 5 years or longer following a traumatic event (AIDR 2018, Bryant et al. 2018), investigating young adult psychosocial post-disaster recovery needs to delve beyond the short-term.

Recovery is aided by acknowledgment and that being acknowledged is a protective factor for mental health and wellbeing (Maercker *et al.* 2009a). "'Acknowledgment' is the social appreciation of a person's unique experiences, including their social setting" (Maercker *et al.* 2009b). Without acknowledging a person's experiences, a negative feedback spiral can arise. In such a scenario, there could be disengagement from recovery processes, a lack of social support-seeking and the potential for disillusionment and heightened distress. This negative spiral reinforces the original lack of acknowledgment that people experience (AIDR 2018; Forbes, Jones & Reupert 2012; Maercker *et al.* 2009).

Communicating personal recovery needs is vital and can be achieved through the telling of stories. Stories help people make sense of their experiences and the experiences of others (Frank 2014). Having the opportunity to tell one's story—of being heard and understood—is a crucial step to acknowledgment and recovery (Barker 2007, Gordon 2016). It is important that young adults are acknowledged and this can be done by providing them space to express themselves and say what they consider is important in their recovery. These accounts are important contributions to recovery and the planning of response and recovery support services.

#### Methodology

To understand young adults' specific recovery needs it is important to consider their interactions with their families and peers, their communities and the various emergency services personnel and support providers. Social constructionism was employed to interrogate how bushfire recovery frameworks and social contexts affected young adults. Social constructionism are explanations that acknowledge people's stories and lived experiences (Denzin & Lincoln 2011). Storytelling is an effective qualitative methodology for this research because it aims for richness and depth, which are both key elements in this study. For the purposes of this study, these explanations are examined in terms of psychosocial recovery; a term that encompasses the many social and behavioural factors that influence the health and wellbeing of young adults (Hawe 2009).

At the time of the 2009 Gippsland bushfires, the study participants ranged in age from 18 to 26 years, falling at the lower end of the ABS (2013) young-adult range of 18 to 34 years. Twenty young adults who were personally affected by the bushfires voluntarily participated in the study that was conducted in 2016.

Data was collected via a survey featuring mainly qualitative questions with the addition of quantitative demographic questions to gather details of age, gender, occupation and location during and after the bushfires. The survey was offered online and in paper format depending on participant preference. The survey was supported by an in-depth recorded telephone interview. While an interview guide was used for the qualitative interviews, participant' responses instigated further questions in an iterative process. Qualitative comments from the surveys and telephone interviews were transcribed verbatim with selected quotes from participants used to illustrate the stories uncovered. Participants were given a pseudonym to protect their identity. Ages were bracketed into broad groups (e.g. early or mid-20s). The data was analysed using a thematic analysis approach as outlined by the Braun & Clarke (2013) phased method of contextualising young adults' accounts in order to better understand their experiences.

Ethics approval for the project was granted in 2015 (CF14/3555–2014001877) from the Monash University Human Research Ethics Committee.

#### Results

The bushfire experiences and recovery journeys of these young adults, as explored through the interviews and surveys, were complex and diverse. Collectively, participants experienced various hardships and challenges. Their losses were both tangible and psychological. While most participants were not homeowners, some did lose their home or their family's home. Their losses also included the loss of friends, people in their community, pets, livestock, employment and livelihoods, personal belongings and memorabilia. Their life trajectory and sense of safety and security was disrupted. The young adults also suffered the damage to the natural environment and related fauna and flora in the region. The young adults were also commonly in the process of moving to, or from, the area because of life transitions such as relationships, jobs or education. Most participants reported that this mobility excluded them from 'place-based' recovery supports and that once they had left home, school and the area, they often felt lost in a void. While participants' losses were disparate, it was identified that they all had some unique needs for their age and demographic group. According to Hawe (2009), young adults may not have developed the skills required to recognise and manage difficult emotions and they thus have particular requirements related to their identity and their place in the world. As 'Jemma' in her early 20s and working in healthcare at the time of the bushfires wrote:

I think that everyone grows emotionally between the age of 20 and 30, and that you're still sort of trying to define who you are as an adult and where your place is.

#### Jemma

In terms of identity and recovery, some participants considered they were well along the road in recovery, while others indicated they were still processing and managing emotional, physical and material consequences of the bushfires some 6 or 7 years later. While not a homogenous group, all participants reported that acknowledgment, particularly acknowledgment of their personal and age-specific needs, was pivotal to their recovery. One participant, 'Finn', a student in his early 20s at the time of the bushfires provided an insightful explanation of recovery as being both long-term and context-dependent:

Recovery seems to be a two-fold issue. First, it's about getting people to a state where they can feel a sense of both normality and value in their region and communities. Support programs seem useful here in assisting families and communities to help one another along. Second, recovery means acknowledging that Gippsland is located in an area that is likely to become fire prone during dry years and to have the appropriate mechanisms put in place to mitigate or prevent future risky events.

#### Finn

For Finn, recovery was perceived as solution oriented. It involves people being valued and acknowledged for their unique needs. As a concept, acknowledgment by peers, community members and authorities include a person's social setting, social recognition and acceptance (Maercker & Müller 2004).

When participants were asked what acknowledgment meant to them, they described concepts involving recognition, acceptance and consideration of personal trauma by family, friends, communities and support workers. Further, participants wanted to be accepted as deserving and legitimate members of the fireaffected community in which they lived. 'Felicity', a business owner and operator in her mid-20s at the time of the bushfires wrote:

Acknowledgment? ... I suppose it just means that people realise that you've been through a traumatic experience ... it's not just the parents, it's the whole family ... you know, it's everybody. Felicity However, many participants noted that they did not receive acknowledgment, particularly from external support providers. 'Harriet', a volunteer wildlife rescuer in her late teens at the time of the bushfires explained:

... being offered things ... is just a form of acknowledgment, but ... it's ... one thing to be acknowledged by a close friend and it's another thing to be acknowledged by perhaps an organisation or someone who's that sort of one step removed. It's ... like if they can see, it becomes ... real.

#### Harriet

Some participants were ineligible for post-disaster support that might have acknowledged and supported their unique needs. As 'Tilly', a student in her late teens at the time of the bushfires said, 'I really was not part of the community recovery events. Being eligible for support would have helped my recovery'.

When some support and post-disaster activities were provided to young adults, they were often inappropriate to the age group. 'Ryan', a student in his late teens at the time of the bushfires explained that post-disaster supports were aimed at younger people or were not suitable for young adults:

[t]here was paintballing and ... and skydiving, but I wasn't fussed. I had [had] enough excitement. I think I got a couple of invitations but not really for young adults, more like ... for those a bit younger.

#### Ryan

Along with other participants, 'Laurel', a musician looking for work and aged in her mid-20s at the time of the bushfires said she had received little acknowledgment of her particular experience, thus preferring not to share her story widely:

... [and] not often in great depth. People don't understand, and I don't like to waste words. This far down the track I prefer to move on rather than talk about it. The time for talking has passed for me.

#### Laurel

Laurel's reflections indicate that recovery can take a long time and that recovery supports should extend beyond the immediate aftermath. According to Gordon (2016), recovery is an ongoing process that may not necessarily have an endpoint. The notion of a recovery journey is emphasised by 'Jack', a volunteer firefighter in his early 20s at the time of the bushfires:

I feel like it's still a process and although a lot of people have moved on as best they can it's forever going to be a part of their lives. You can't forget that kind of thing, however big or small the impact is, there still will be an impact.

#### Jack

Many participants talked in longitudinal terms regarding their recovery using temporal language such as 'for a long time'. 'Mary', a student in her late teens at the time of the bushfires recounts, 'I thought I had to put on a bit of a face that I was alright, and that went on for a very long time ... I thought at the time I was doing ok ... but I was struggling'.

The perception of a long-term recovery struggle is similar to Laurel's view, as she explains, she felt:

...very lost for a long time, felt I didn't fit anywhere in the world any more as my 'safe place' had been taken away from me, and my friends (none of whom were impacted) had no understanding of what I had been through, and continued to go through for a very long time.

#### Laurel

'Molly', in her early 20s was a volunteer at a relief centre following the bushfires reflected on how long and lasting the personal recovery process may be, even with recovery supports:

Since the fires I have gained more of an awareness of how long the recovery process can take. It's quite surreal in terms of the lasting impact of such great destruction, and how adjustments can take quite a while, despite systems of support from governments or insurance agencies.

#### Molly

Molly's reflections are significant because disaster recovery is often measured in terms of material rebuilding but in many cases, adjustments and recovery allude to regaining a sense of emotional safety over time. Tilly concurs:

Now it is quite good, for a long time though it was not. Now I feel that I am in a solid emotional state currently. However, for the first few years following the fires I experienced a 'rollercoaster' of emotions.

#### Tilly

It is clear from participants' comments that recovery is a dynamic and at times prolonged process that may take many years. It is vital therefore, that 'time' is considered an integral aspect of recovery support mechanisms. In terms of support systems and emergency policies, the next section of the article's results will highlight the importance of including young adults in this wider community recovery discussion.

Young adults must be included and acknowledged in the broad discussions around recovery support mechanisms and emergency relief systems even though it appears that in many instances following the 2009 Gippsland Bushfires, they were not. This exclusion is unfortunate, because young adults have many interesting and informed ideas for how the distribution and reach of support could be improved for this cohort; some of which will be outlined herein. However, it must be noted that many of the research participants regard their exclusion from such supports as benign rather than deliberate. For example, Laurel speculated on the chaotic situation of the recovery processes and the disruption to normal social structures as a result of the bushfires, stating that, '[w]ithin communities that have suffered disaster it is understandable that young adults' needs were overlooked because everything was "upside down".

'James', aged in his early 20s and working in the local power industry at the time of bushfires considers that young adults' voices are often overpowered by the needs of older members in the community, remarking that 'older people ran the community recovery meetings and so they planned for their own needs'. 'Oscar', a student in his early 20s at the time of the bushfires said, '[y]oung adults definitely missed when it came to funding, psychological support ... case management, etc. It felt like there was nothing available'. 'Harriet' concurred saying, '[t]here could be more supports that are specific to our age group. I know a lot of young people missed out on support'.

'Beth', a student in her late teens at the time of the bushfires reflected that young adults 'were outnumbered and because there wasn't a large amount of them having a voice and creating attention ... that was a reason they were overlooked'. Beth's observation accords with the actual demographics in small rural communities, where young adults make up less than 14 per cent of the population (ABS 2013). Nevertheless, there is great merit in including the voices of young adults because of the contributions they made both during and after the disaster along with their potential contributions in future disaster policy, knowledge and management. It should be noted that young adults were also often in the process of moving to or from the area because of life transitions such as relationships, jobs or education, which may have invalidated them from 'place-based' recovery supports.

Further, the research identified young adults missing out on support alongside self and community perceptions of them being able to quickly recover or 'get over' their experiences. Tilly summarised this sentiment: '[m]any were left out. People thought that they were young and would get over it fast'. There are many cultural narratives and stereotypes around young adults that position them as a separate and marginalised group that is somehow undeveloped and needs to be managed (Allen 2008; Raby 2007). Yet, there is also a paradox in the notion of young adults needing protection but also being resilient and able to quickly recover from disaster, as Beth notes:

I suppose I'm young and I have that opportunity to build up again, whereas I can imagine for a middle aged or older person people they might have perceived their loss as more of a sort of overwhelming loss ... Whereas I think people my age sort of realise there is a future, like you've got a lot of time to build up again and to change things.

#### Beth

In addition to the importance of hearing their stories, participants indicated that the telling of their story was a powerful aspect of their recovery. 'Karen', a mental health worker in her early 20s at the time of the bushfires observed that the interview process, '[o]ffered an opportunity over repeated telling to validate and understand [the] experience of the fires'. The stories of young adults support Frank's (2010) contention that telling your story can be therapeutic and cathartic.

#### Discussion and recommendations

In the context of the increasing frequency and severity of extreme events in Australia, and particularly in Gippsland (one of the most bushfire-prone regions in the world (AIDR 2018)), this research provided compelling arguments for including young adult voices and acknowledging their unique needs and experiences related to recovery. The stories in this research show there is an imperative to listen to young adults and to develop appropriate ways and spaces to acknowledge and include them. According to Raby (2007, p.46), we need to understand young adults' lived experiences because they '…are experts in and remain gatekeepers of their own cultures'. Providing a space where young adults can express themselves can be empowering and may enable personal agency as experts in their own culture.

There may be multiple reasons for the exclusion of young adult voices in recovery support mechanisms apart from fewer numbers and reduced mobility. There are power imbalances between adults and young people, where adults generally have access to greater resources and the decision-making processes (Raby 2007). Young people lack the political and financial advantages and access of older people and there are constantly shifting platforms between their 'dependence and independence' that further serves to marginalise them (Raby 2007, p.47). Raby (2007) also explains that young adults may have different social and communication skills that inhibit their ability to actively participate in societal discourses, particularly during and after traumatic events. It is essential to view young adults as 'social agents who are active meaning-makers in their own lives...' (Allen 2008, p.565) and their inclusion in recovery mechanisms is important.

To effect young adult inclusion in recovery supports, several recommendations emerge from this research. Local, state and federal government policy makers and planners, service providers, community stakeholders and social researchers must listen to and include input from young adults and their experiences. Participants in this research were anxious to express themselves to an audience. Thus, providing avenues to facilitate this could be pursued, including through social media, prose and poetry, music and the creation of story books. Those involved in emergency management planning could develop ways of providing access to both short- and longer-term recovery supports for young adults. Consideration of placing acknowledgment as an activity for recovery can address current dilemmas and validate the losses and personal situations of young adults.

This research supports the argument that young adults (18 to 34) be recognised as a significant and separate age cohort and have access to recovery services specific to their needs and appropriately funded. There is an urgent need to develop policy and service provision guidelines that acknowledge young adults as a distinct demographic. There is also a need for activities that are appropriate to all ages and abilities but particularly activities targeted towards connecting with young adults on their terms (Hawe 2009). It is recommended that young adults be invited to participate on community recovery advisory committees as equal members and have access to advocacy and mentorship. Further research is required to evaluate progress and to increase young adult participation to continually improve emergency management policies and support systems.

#### **Research limitations**

This research looked only at the experiences of young adults in general and did not analyse experiences based on gender, sexuality or ethnicity. Other marginalised groups and other age groups, including parents with young families, could be studied to provide insights into the diverse recovery experiences and requirements. Further studies might explore different communities and locations or different events.

The young adults in this research were highly protective of the efforts of their parents and the community to support them and others after the bushfires. A limitation in the study was participants' concerns that sharing information might be potentially emotionally damaging to their family and community. Participants were keen to avoid notions that their stories might appear to belittle the recovery efforts of others. While reassured to the privacy and confidentiality of the research, these concerns may have been factors in reducing participation. Those who participated despite these concerns also expressed a sense of obligation to share their stories in the hope that it would make a difference to future recovery efforts for other young adults.

Considering these limitations, this research has nevertheless explored new ground and could be replicated in a larger study into the long-term recovery of young adults.

#### Conclusion

This research examined the psychosocial recovery and support for a group of young adults following the 2009 Gippsland bushfires. It considered young adults as a specific cohort with unique and individual needs that are different from those of children and older adults. The study examined young adults' longer-term psychosocial recovery within a decade of the 2009 Gippsland bushfires and is an important part of the picture beyond that event.

The work has implications for both policy and planning. Acknowledgment of personal and age-specific needs is important to assisting in the psychosocial recovery of young adults. The integration of their stories highlights how acknowledgment (or the lack thereof) influences recovery. Post-disaster recovery continues long after an event has passed. According to Spencer and Doull (2015, p.901), '...a better understanding of young people's lived experiences can reveal possibilities for young people's agency to emerge'. This research encourages the inclusion of young adults in emergency management activities, planning and in longer-term recovery supports due to their invaluable and age-specific insights.

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#### Abstract

In post-disaster recovery, optimising psychosocial support is important for all groups of the population, yet young adults have tended to be overlooked as a demographic in their own right. Research was conducted to seek the perspectives of young adults through the narrative of their experiences in the years following the 2009 Gippsland bushfires. One emergent theme in the findings highlighted the importance of information and communication during and after events. Participants in this research sought information and support via social media and virtual communities. These sites traverse localised. place-based solutions, enabling young people to communicate over large geographical areas. The platforms aid dynamic and rapidly evolving support by sharing information, feelings and ideas. This research also highlighted the need to identify the gaps in information processes and support systems for young adults and to ensure youthspecific information is included in formal communications. Possible solutions are outlined taking into consideration the perspectives offered by the study participants.

### BASED ON A PAPER PRESENTED AT THE AUSTRALIA & NEW ZEALAND DISASTER & EMERGENCY MANAGEMENT CONFERENCE 2020.

# Beyond place-based: the role of virtual communities via social media in young adult recovery

#### Peer Reviewed

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#### Introduction

'Black Saturday' refers to the catastrophic bushfire events across Victoria in February 2009 (Department of Human Services DHS 2009, Teague *et al.* 2010). As part of Black Saturday, 4 major fire complexes (the Delburn, Bunyip, Churchill and Wilsons Promontory complexes) raged across the Gippsland region in eastern Victoria and were collectively referred to as the 2009 Gippsland bushfires.

The Australian Bureau of Statistics (ABS 2013) defines young adults as those aged between 18–34 years. This age range is marked as a time of transition, where people develop independence that might include moving away from the family home, finding a partner, studying or starting a career. However, as a specific age cohort, young adults have tended to be overlooked as research participants in post-disaster research (Peek *et al.* 2016). If included in research, their specific psychosocial recovery has not been examined (Cox *et al.* 2017).

Research was conducted on the longer-term psychosocial recovery of young adults in the years beyond the 2009 Gippsland bushfires. Several themes emerged from the research. One was the role of acknowledgment (Forbes, Willems & Simmons 2021). This article explores the theme of deficiencies in youth-specific information and communication during and following disasters. From the perspective of the young adults in the research, it highlights the role of social connectedness in the recovery of young adults through social media and virtual communities.

# Information and communications in psychosocial recovery

For those who experience emergencies and disasters – and their aftermath – the need for accurate and timely local information is vital. It provides opportunities for connection

to community and recovery supports (Au 2011, Pato 2016). Recovery frameworks indicate that information is central to success. During the 2009 Gippsland bushfires, information was primarily delivered by the Australian Government and emergency services organisations (Blanchard *et al.* 2010, Vieweg *et al.* 2010). Such 'formal' communication channels present challenges in that information can be one-directional and can lag behind events as they unfold (Willems 2015).

The question of how to optimise communication to support specific groups such as young adults during emergencies and in their post-disaster psychosocial recovery is crucial to answer. According to Au (2011), at the time of the Black Saturday bushfires and in the immediate aftermath, there appeared to be no coordinated and overarching approaches for optimising communication. Young adults, and indeed everyone, require information that is understandable, trustworthy, ageappropriate, readily available and that enables access support to deal with the emerging and ongoing consequences of the event (Bird *et al.* 2012, Blanchard *et al.* 2010, Lovari & Bowen 2019, Paton & Irons 2016, Taylor *et al.* 2012).

Social media sites are an increasingly popular and multidirectional means of disseminating information during and after disasters. They are also known as 'back channel communication', which refers to informal communication that may travel in tandem with (and sometimes in advance of) official or formal channels (Willems 2015). They can also serve as a primary source for individuals and communities following a disaster, providing a conduit for accessing support and linkages (Page-Tan 2020). This involves 'a grassroots effort where social media is used in a number of ways to support the safety of the community' (White 2012 p.187) and for psychosocial supports in the aftermath.

# Beyond place: virtual communities and social media

Deficiencies in youth-specific information and gaps in the delivery of information during and after disasters have been identified (Forbes, Jones & Reupert 2012; Fletcher et al. 2016). Research suggests that formal communication channels are not the best for the age-specific cohort of young adults. Young adults communicate and seek information during and in the aftermath of emergencies and disasters through social media. Kaplan and Haenlein (2011) define social media as 'a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 [allowing] the creation and exchange of User Generated Content' (p.59). The interactivity of social media promotes user-generated content through collective knowledge creation and 2-way communication (Beetham, McGill & Littlejohn 2009, Lovari & Valentini 2020, Willems 2013). In addition, Lovari and Valentini (2020) argue that social media can be empowering and particularly useful during crises. Dufty (2012, p.43) progresses this notion of empowerment by relating it to providing 'power to the people' in its enabling of peer-to-peer interactions.

Social media has 3 main types of users: 'prosumers', 'tacit consumers' and 'non-engagers' (Fergie, Hunt & Hilton 2016). Prosumers actively produce and consume social media content (Toffler 1980) as distinguished by those who only consume the content. Young adults stand out as a demographic that embraces social media platforms and uses them frequently (Smith & Anderson 2018) as prosumers and consumers in comparison with other age groups (Anderson & Jiang 2018, We are Social 2020). This is especially so in contrast to older age groups with the tendency to be 'non-engagers' of social media, however the global COVID-19 pandemic has been a catalyst to bring older demographics online (We are Social 2020). Social media use by young adults varies across platforms. In recent years, social media preference by young adults has shifted from Facebook, now viewed as a social media platform for 'mum' (Pangrazio & Selwyn 2018, p.4) to other forms of social media such as Snapchat and Instagram (Anderson & Jiang 2018).

During emergencies and disasters, young adults also use social media to connect with others to contact and locate family and friends (Beetham, McGill & Littlejohn 2009, Lovari & Valentini 2020). Social media is also used to access virtual communities for support. Virtual communities have existed on the Internet for almost a quarter of a century (Ridings & Gefen 2004) and they offer spaces to share information, feelings, ideas and support (Kaplan & Haenlein 2011). According to Palen and coauthors (2009), social networking can be described as 'virtual destinations'; places that enable people to communicate over wide geographical areas. Ridings and Gefen (2004) contend that the main reason people join virtual communities is for information exchange but also to seek friendship and social support that extend their social network of family and friends. Virtual communities can therefore lead to greater engagement with others through knowledge sharing (Dufty 2012, Shanahan & Elliot 2009, Taylor et al. 2012). Palen and colleagues (2009) argue that virtual communities may fill a social void that has arisen in conventional communities. It is important to remember that these 'virtual destinations' are dynamic and rapidly evolving spaces that allow people to access support beyond their placebased support networks (Fugate 2011; Keim, Noji & Keim 2011; Lovari & Valentini 2020).

Dufty (2012) suggests that social media has the potential to build community disaster resilience in a variety of ways, including through the development of social capital. According to the Organisation for Economic Co-operation and Development (OECD 2001), social capital has such structural and psychological elements as the networks of personal relationships. This fosters a sense of mutual understanding that helps people to live and work together effectively. Social capital is generated through networking, leadership and support systems as well as disaster risk management (Keim, Noji & Keim 2011). In the context of disaster, social media can increase social capital, leading to better outcomes (Page-Tan 2020). Howell and Taylor (2012) found that Facebook was useful in empowering young people to be active participants in community response networks, arguing that '[i] n the immediate aftermath, the reach of these social networks assisted those who were recovering from disaster by rapidly connecting them with resources to obtain help' (p.6). Howell and Taylor (2012) suggest that social media's main 'strengths of timely information exchange and promotion of connectedness,

were able to act as sources of psychological first aid in the early stages of disaster and assist in supporting aspects of community resilience' (p.7). Therefore, delivery of information in an ageappropriate way is vital for young adults to be involved and to set up alternate supports. This is reinforced if recovery plans contain specific actions and activities that are targeted to the needs of young people and that 'recovery is best achieved when the affected community is able to exercise a high degree of selfdetermination' (DHSEMB 2013, p.15).

Much psychosocial support and approaches to recovery are primarily place-based. Yet many young adults are a transient part of the population. They also seek information and support from virtual communities. Beyond place-based solutions, back channels allow people to communicate over large geographical areas and enables dynamic and rapidly evolving support by sharing information and enabling personal and social engagement and suggestions. Through these channels, information is dynamic, interactive and current, as compared to formal channels that may lag behind changeable and hazardous local conditions (Willems 2013).

#### Methodology

Research was conducted on the psychosocial recovery of young adults 6 to 7 years after the 2009 Gippsland bushfires by gathering qualitative and quantitative data from 20 young adults who had been affected. Ethics approval was granted from the Monash University Human Research Ethics Committee (CF14/3555 – 2014001877), with data collection taking place between April 2015 and December 2016.

Two data collection instruments were used for the research. The first was a survey containing open-ended questions and the second was a semi-structured interview. In both instruments, a section of the questions related to 'Information exchange and communication'. The open-ended survey questions were:

- How did you receive bushfire recovery information beyond the 2009 Gippsland bushfires?
- What sources of information did you find to be most reliable and trustworthy?
- With whom did you exchange and share recovery support information?
- How did you stay connected with others beyond the 2009 Gippsland bushfires?

The semi-structured interview questions expanded on the survey questions:

- Thinking about your recovery information sharing beyond the 2009 Gippsland bushfires, what information sources were the most useful and trustworthy?
- How would you liked to have received it after the 2009 Gippsland bushfires?
- What social media did you use beyond the 2009 Gippsland bushfires?

Of the 20 young adults who participated in the research, 17 completed a survey questionnaire with open-ended questions.

Of the 17, 10 also participated in the telephone interviews. In addition, 3 participants chose to undertake the interview only. Thus, data was collected from 17 survey completions and 13 telephone interviews. The written survey responses plus and interview audio transcripts were thematically analysed by hand due to the small dataset. The resulting qualitative data informs the findings in this paper.

#### Findings and discussion

Relating to 'Information exchange and communication', 3 subthemes emerged. These were:

- supportive disaster communications for young adults
- the strength of social media for communications during and after disasters
- the creation and role of virtual communities.

To emphasise these, some of the responses are provided to highlight various facets. Participants were given pseudonyms for anonymity.

# Supportive disaster communications for young adults

A research question asked the participants how to deliver information to young adults. When Harriet was asked what communication she considered would connect young adults to recovery supports, she asserted that a variety of communication strategies were beneficial:

[P]robably a combination of ways to contact people through social media [such as] Facebook. [And] texting. But ... like I said before ... I did not know about the government website. I'm not sure if others knew about the government website or other sources that offer help.

#### Harriet

Felicity suggested that information delivery needed to be flexible and 'tailored', especially to reach young adults:

I think specifically some people my age needed help finding information – you're expected to find things yourself and you're supposed to have such easy access to digital communications, [people] think you can find it quite easily. But some didn't have access and did not know where to get the information. So I think that, yeah, definitely, digital communications are not only the preferred way to get information. Perhaps information needs to be tailored to [young adults].

Felicity

For Oscar, he reflected that young adults:

... felt like they didn't know where to go to get information and they felt like they didn't have an opportunity to speak on a level platform.

Oscar

Oscar's final point articulates one of the challenges of one-way communication and the lack of agency and voice for young adults in traditional and formal communications.

A noteworthy deficit in youth disaster resilience appears to be poor communication, with perceived inadequacies in the formal information exchange. Many young adults in acute need during the bushfires reported that they did not know of essential recovery supports available to them.

# Social media for communications during and after disasters

The young adults in this study searched for information and support through their personal social media networks. According to Howell and Taylor (2012), social media may be an important factor in the promotion of connectedness and can play a significant role in the promotion of psychological first aid and support.

Beyond general communications, respondents said they turned to social media and its potential to send and receive information. Louise, along with other participants, was unsure about any single method of contact being more helpful than another. However, she thought that social media options such as Facebook were a good starting point:

... people would message you but a lot of people didn't have people's contact details so that's why Facebook was a starting point ... you can message anyone and say 'hi, how you going, can I get your number, can I get your email address?' It's a starting point; it's a way of connecting with people and then from there you can choose what kind of avenues you want to take, but in terms of people getting information, I know a lot of people weren't aware which websites to go to.

#### Louise

Like others in this study who had moved elsewhere after the bushfires, Oscar reported social media as being useful in keeping connected. His comments demonstrate the changing nature of social media platforms:

Even though I didn't have direct access to everyone's numbers, social media was extremely beneficial in keeping in contact with people whether they were still in Victoria or other parts of Australia or even overseas for that matter. Now there's lots of combinations of Facebook, Twitter, we use Instagram for just sending direct photos through, Viber, WhatsApp and a whole lot of applications that people use.

#### Oscar

While social media platforms have demonstrated potential as a psychosocial recovery tool, their use was hindered by a lack of policies and procedures around the time of the 2009 Gippsland bushfires. Support agencies claimed they were uncertain how to use social media to reach young adults (Australian Red Cross 2012). While many emergency services organisations use social media to transmit information and monitor feedback for

situational awareness, governments at the local and national level could better use social media for efficient information dispersal and ease of communication and build public participation, engagement and empowerment (Lovira & Valentina 2020).

It is important to note that social media is not a magic solution for the challenges faced by communicators during and after a disaster. Validity of information is a key concern. As Willems and Bateman (2013) note, errors and inaccuracies can be magnified, especially when peers are considered more trustworthy sources of information than information coming through formal communications channels. In a recent United Kingdom poll, fewer than 40 per cent of the 2000 adults surveyed chose an expert as the most trustworthy authority for information and advice, while the majority indicated that anything a friend shared on social media was fact (South West News Service 2019). Willems (2015) outlined additional limitations to relying solely on social media during disasters including Internet overload, service supply and connectivity, power sources and personal safety.

#### Role of virtual communities

The strength of social media was discussed by participants in enabling the establishment of, or participation in, virtual communities of support. In particular, Facebook was mentioned as offering a means of keeping people dispersed across wide geographic areas connected, especially through the creation of specific group pages established to provide support for agespecific cohorts. Oscar established one such virtual community when he set up a Facebook group. He said:

The fact was I knew [young] people who were in desperate need of support and they just weren't getting any assistance. They didn't know where to get the information from. They weren't in a mental position to ask for the information nor did they feel that they were entitled to it, even though they definitely were. They felt that other people were more needing of support.

#### Oscar

While Oscar had moved away after the 2009 Gippsland bushfires, he still connected to his virtual community long after the event.

Aldrich (2012) has written extensively on how 'social networks and connections form the core engine of recovery after even the most devastating of events' (p.viii). Virtual communities grow and thrive in social media (Lovari & Bowen 2019) to meet the specific needs of those involved, allowing a person's sense of place to go beyond a physical location. Facebook pages offer a means of keeping young adults in wide geographic areas connected because a person's sense of place often goes beyond physical location to the virtual world of social media (Ridings & Gefen 2004). Aldrich (2012, p.163) indicated that more research needs to be conducted into how effective virtual communities are 'creating and maintaining social ties and disseminating critical facts'. This has been supported in recent reports (We are Social 2020).

#### **Research limitations**

There are limitations to this research. Small research cohorts are often salient features of qualitative research. Scale is not crucial and there is no need for estimates of statistical significance because a phenomenon may only occur once in order to be significant (Braun & Clarke 2013). Sample size does affect the generalisation of the findings to other contexts. Due to the small sample size, themes were not analysed for contextual deviations and no comparisons were made between the different fire-affected regions in the 2009 Gippsland bushfires. Had it been done, variations may have occurred. Qualitative research requires researcher reflexivity on 'insider' versus 'outsider' status with the research population. On one hand, a potential bias could have been the 'outsider' demographic of the authors who are not young adults. Participants may not have shared freely. On the other hand, researcher 'insider' status of having experienced Black Saturday and the 2009 Gippsland bushfires may have limited objectivity. In spite of these considerations, the research specifically sought the perspectives through narrative of young adults as a particular demographic in disaster recovery.

#### Conclusion

Young adults, as a specific age cohort, are important to consider in research on emergencies and disasters. This article has described the theme of age-specific information and communication that emerged from research conducted on the psychosocial recovery of young adults following the 2009 Gippsland bushfires. Three learnings have emerged. First, there is a need to identify the gaps in information processes and support systems for young adults. Second, young adults are mobile and may miss out on place-based information and support. However, use of virtual communities can provide support that is not location-reliant. Finally, virtual communities are a preferred source of information and support for young adults.

These findings point to the need for continued age-specific research with young adults, especially the role of social media and virtual communities to aid recovery. While researchers and practitioners support the opinion that social media can be a means by which to develop disaster resilience, it is noted that social media is not a panacea. We encourage further research on young adults' use of social media and virtual communities as part of their psychosocial supports.

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#### Abstract

The effects of climate change are escalating and developing and maintaining disaster resilience in communities is a major objective. Yet the active involvement of communities as major stakeholders in building their capacity to prepare, respond to and recover from natural hazards has had less focus in emergency management planning. For communities living in hazard-prone areas, the continuity of risk and disaster awareness and the significance of preparation at the local level can be critical to people's capacity to appropriately respond to disaster events. In 2011, the significant flood event in Brisbane saw community-led response and recovery efforts supported by place-based organisations that traditionally work within communities. However, as communities evolve and change, learnings can dissipate over time. As such, 10 years on from the 2011 floods, how well prepared are communities living in floodprone areas of Brisbane? This paper outlines how community and stakeholder engagement can develop disaster resilience at the local level. The focus is on strong working relationships between participants in emergency management planning and response including communitybased organisations and, by extension, the community.

### BASED ON A PAPER PRESENTED AT THE AUSTRALIA & NEW ZEALAND DISASTER & EMERGENCY MANAGEMENT CONFERENCE 2020.

# Whose plan is it? The importance of place

Peer Reviewed

#### Laurelle Muir<sup>1</sup>

1 Resilient Communities Consulting

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#### Introduction

Extreme weather events have caused death and destruction in countries across the globe over the past decades. This highlights the importance of disaster resilience. In Australia, while some communities are still recovering from the most recent fire and flood events, the memory of past events in some communities has declined over time. This raises questions about of how prepared communities are for the next event.

The National Strategy for Disaster Resilience (Attorney-General's Department 2011) outlines an expectation of a level of capacity within communities that anticipates being 'self-reliant and prepared' (p.11). However, there is a lack of any detail about how this capacity is realised in practice at the local level. Such lack of clarity seriously weakens the intent of these aspirations and presents a major challenge to communities to deal with events. This places added burden on the emergency management system and its related agencies.

There is little doubt that resilience is actively being developed in some locations, particularly in rural areas where populations are smaller and the fabric of the community is often strong. However, effectively engaging with urbanised communities to build disaster resilience can be a complex, labour-intensive and ongoing undertaking. For example, it has been 10 years after Brisbane's last major flood event in 2011 and the affected communities and the built environment have changed and evolved since that time. The 'flood memory' is reduced and this is a key factor when designing effective community engagement strategies.

As the flooding inundated communities across Brisbane in 2011, 6 neighbourhood centres provided resources and linked their communities to critical information while also providing outreach services to vulnerable residents (West End Community House 2011). As place-based organisations, these neighbourhood centres have a physical presence in the communities where they deliver services and operate in a localised way to identify, anticipate and respond to local issues and opportunities. They also usually practice from a community-development framework. This research explored how community and stakeholder engagement capitalises on the traditional roles that place-based community organisations play to develop disaster resilience at the local level.

#### Methodology

A case study was used to explore the characteristics of community disaster resilience, community-based disaster management frameworks and cross-sector collaborative approaches. Two place-based community organisations that led community responses to the flood event in Brisbane in 2011 were chosen for this study. In-depth, semi-structured interviews were undertaken with participants from the 2 organisations, as well as with a number of key policy makers and practitioners. Participants contributed their experiences during the flood as they worked in emergency areas of the Queensland Government or Brisbane City Council.

Data analysis leading to the development of a framework to operationalise community disaster resilience at the local level was supported by reflexive thematic analysis. Braun and Clarke (2006, p.591) describe thematic analysis as a qualitative research method, where the researcher plays an active role in the identification of themes from the data. The data were supported by the analysis as well as by insights from the extant literature. Analysis sought to identify the themes that informed the development of frameworks to operationalise community disaster resilience at the local level. National, state, territory and local government disaster management frameworks were also included in this study.

This research was conducted under Queensland University of Technology Ethics Approval Number 1700000122.

#### Targeting communities in 'place'

The term 'community engagement' is used frequently by government at all levels to suggest activities that involve varying levels of participation by the public. The United Nations (2005) describes community engagement as:

... a two-way process by which the aspirations, concerns, needs and values of citizens and communities are incorporated at all levels and in all sectors in policy development, planning, decision-making, service delivery and assessment; and by which governments and other business and civil society organisations involve citizens, clients, communities and other stakeholders in these processes.

Purposeful community engagement relies on identifying stakeholders and delivering fit-for-purpose activities tailored to the needs of the target group. Using Brisbane as the case-study area, interviews were held with participants from Brisbane City Council emergency management. The data identified that the size of the city presented challenges to maintaining effective community engagement. In order to address this, the framework proposes directing intensive engagement activities to communities located in hazard-prone areas of the city only. This is an efficient way to direct the resources by focusing on locations of identified need. Community place-based organisations operating in these locations represent critical 'soft entry' point to connect with the community. Their significance relates to local knowledge and the relationships with, and access to, the community (Chen, Liu Y & Chan 2006; Bach *et al.* 2010; Thornley *et al.* 2013).

The major flood event across Brisbane in 2011 provided a meaningful context for this research to understand the significance of community-led efforts. Data from interviews explored the scope of the response, recovery and preparation efforts of the organisations and identified the range of characteristics associated with community resilience that influenced each organisation's ability to deliver. Four themes were synthesised from the data that related to:

- community capacity
- the significance of trust in disaster situations
- the importance of existing relationships and networks
- human connection.

Considering the critical role of place-based organisations, one Queensland Government participant mentioned that the nature of the roles of emergency management agencies can be transient, using terms like 'roll in and out'. However, being part of the community, place-based organisations experience the events with the community. Another participant from a state agency described challenges of working in flood-affected communities where there was an absence of a community centre:

....we didn't have a community or neighbourhood centre, so we didn't have that coordinator role there... coordinating resources and mobilising people and partnerships is the key one... knowing who to liaise with to bring the right people in for that local response.

Participant response

#### Developing resilience at the local level

The expanding body of literature related to resilience adopts the view that the increasing need to respond to disasters cannot be addressed by emergency management agencies acting on their own (Bach et al. 2010, Waugh & Streib 2006, Simo & Bies 2007, Kapucu & Garayev 2012). In recognising the value of, and the necessity for, locally organised efforts, there has been a focus on building the capacity of communities to self-organise (Simo & Bies 2007, Harris et al. 2018, Bach et al. 2010, Berkes & Ross 2013, Chen, Liu Y & Chan 2006). The data from interviews with participants from Brisbane City Council reflected this view and drew out concerns about the effect on council resources if an event with greater consequences than those of 2011 were to occur. One participant commented that 'people are going to have to be more self-sufficient'. The suggestions from state agency participants were that local responses are best led by local governments and that emergency management officers could bring organisations together.

Studies on community-led disaster management models identified that a cross-sectoral approach is critical to building emergency management capability at the local level. Community and stakeholder engagement is a central component of this method (Kapucu & Garayev 2011, Waugh & Sylves 2002, Simo



Community organisations delivering their traditional roles within their communities can be effective partners in harnessing community participation in planning activities.

Image: Mountains Outreach Community Services

& Bies 2007, Bach *et al.* 2010). From a legislative perspective, Queensland local governments are responsible for engagement with communities (Queensland Government 2018). As part of this facilitation role, local governments are well placed to deliver purposeful stakeholder engagement with state emergency services organisations, volunteer bodies, community organisations and universities to develop working relationships within these sectors.

As key stakeholders in this model, community organisations can be effective partners in harnessing community participation in planning activities. They can also provide significant input into the development of interactive approaches that include people in the community who have experience in disaster events as well as encouraging participation of people from more marginalised or vulnerable parts of the community. Ongoing engagement of local communities in developing pre-disaster planning is important to identify community capacities and tailor the plan to suit community needs (Australian Red Cross 2014, Thornley et al. 2013). Engagement activities that capitalise on existing relationships and networks held by community organisations operating in place can support a whole-of-community approach and encourage participation from local businesses; local institutions such as schools, tertiary institutions and faith-based organisations as well as other place-based community services.

#### Collaboration and practical support

An important element of a collaborative approach is the participation of emergency management organisations in engagement activities with the community. Their expertise can build community capacity and can provide those agencies with a level of confidence in their processes and the outcome. Importantly, emergency management agencies that work directly with communities can better understand the diversity, strengths and risks of communities in hazard-prone areas. Collaboration builds relationships and trust (Thornley *et al.* 2013, Bach *et al.* 2010, Australian Red Cross 2014). The development of stronger relationships facilitates consistent communication between emergency management agencies and the community. This is a key functional outcome and reduces inefficiency while strengthening community resilience at the local level (Magis 2010; Stys 2011; Kapucu, Yuldashev & Feldheim 2018).

A significant outcome of this approach is the creation of a culture of awareness that can be developed through planning events and training that include members of the community. Chen, Liu Y and Chan (2006) support public launching of preparation planning to reinforce community awareness and ownership. The staging of scenario exercises involving the community can also sustain a level of awareness by identifying exposure and understanding of the significance of preparation planning. Preparation plans need to be promoted broadly through communication and information sharing that is tailored to each community (Paton & Johnston 2001). A continued presence by collaboration partners at local events also helps to keep plans front of mind for people between disaster events. This also supports awareness by new residents moving to a hazard-prone area.

#### Building strong working relationships

International models featuring collaborative approaches to strengthen the capacity of communities have been based on formal training programs that capitalise on the existing capacity and experience of communities. These approaches have incorporated community-based organisations as stakeholders in collaborative initiatives, supported by information and expertise at the community level.

In the Australian context, community organisations are loosely mentioned in the *National Strategy for Disaster Resilience* (Attorney-General's Department 2011) and in other frameworks. The Australian Council of Social Services (2015) argues that these organisations are rarely included in conversations about what role they could play. As well as a limited role for community organisations in supporting communities, frameworks lack detail on how these organisations can better connect with the emergency management sector.

This study identified an absence of existing relationships between emergency management agencies and communities in hazardprone areas of Brisbane as a challenge to building community resilience. Efforts by 2 organisations to better understand their role and their place in the system, in preparation for the next event led to concerns about a perceived lack of respect for, or confidence in their response and recovery effort. As one interviewee commented:

... it didn't recognise the social capital. It didn't recognise the volunteerism. It didn't recognise the very important social infrastructure that had played out very strongly here and in... other communities obviously. So they really discouraged us from developing anything.

#### Participant response

Recognition by state and local council participants of a role for place-based community organisations in preparation, response and recovery efforts was evident from the interview data. However, engaging community as participants in shared activities, acknowledging local input and supporting community ownership of disaster plans, is contingent on the ability of stakeholders in the system to initiate and develop collaborative relationships and practices. The integration of community organisations operating in place as key stakeholders in the system can have a significant influence on the delivery of this approach.

However, as Bryson, Crosby and Stone (2006, p.44) note, 'collaboration may be necessary and desirable, but the research evidence indicates that it is hardly easy'. Addressing differences between stakeholder groups in terms of how they operate and how they can work together during a disaster are significant elements for consideration in the design of engagement that enables strong working relationships. Stakeholder engagement activities that focus on a shared understanding of roles and responsibilities, respect for local knowledge and experience and a recognition of community flexibility can assist in building trust and cooperation.

Studies on major disasters have identified the importance of providing adequate financial resourcing to community organisations to enable their participation in disaster resilience in communities (Cretney 2016; Kapucu, Yuldashev & Feldheim 2018; Goode *et al.* 2015). Community organisations receive a major portion of their funding through government programs and are therefore practised in reporting and delivering outputs and acquittals. In terms of accountability, resourcing for their role could be tied to the successful development of a preparation plan, staff attendance at training and collaboration events. This approach considers the return on investment that governments can achieve as communities build a capacity to respond to disasters and create an effective disaster response system (Goode *et al.* 2015, Cretney 2016).

#### Conclusion

The loss over time of community disaster capacity developed through previous local responses is a critical issue. The sustainability of social capital and community capacity that can support the replication of a community's ability to self-organise in any future event is not guaranteed. Additionally, international trends towards a recognition of the limitations of emergency management systems highlight the necessity to provide support to locally organised efforts, through building the capacity of communities to self-organise. A significant aspect of the approach outlined in this paper is the ability to develop a sustainable culture of awareness of disaster risk and preparation arrangements among communities through ongoing community and stakeholder engagement.

This paper has drawn on existing studies to suggest a strategy that departs from a traditional 'top down' approach to disaster resilience, advocating a collaborative cross-sector approach that would see the integration of community organisations operating in place as stakeholders in the emergency management system. Data from participant interviews showed how relationships held by place-based community organisations with their communities can present a crucial entry point for engagement activities that assist emergency management agencies working with communities to develop and promote ownership of local preparation plans.

Operationalising community disaster resilience at the local level can be improved through providing communities with opportunities be active participants in the system. The willingness of emergency management agencies to formalise roles for the community sector, and by extension, the community, could create pathways to prepared and resilient communities.

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#### About the author

Laurelle Muir is the Director of Resilient Communities Consulting and has 20 years' experience in community engagement, social planning and community development. Her experiences in coordinating a major evacuation centre during the 2011 floods and the management of community-development recovery projects inspired a strong interest in the development of community disaster resilience.



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# Lessons Management **Forum** – 2021

#### Registrations are now open for the 2021 Lessons Management Forum. A hybrid event, participants can join in person in Brisbane or online.

Exploring the topic What does success look like? the event will build on current expertise from across emergency management sector and beyond, to ensure that lessons are not just identified, but are developed as learnings to improve policy and practice.

#### Supported by our event sponsors





Australian Institute for Disaster Resilience





Date: Tuesday 6 and Wednesday 7 July 2021

Location: Brisbane Convention and Exhibition Centre, Glenelg St, South Brisbane.

Registrations open: Tuesday 23 March 2021

Please contact the AFAC and AIDR Events Team: events@aidr.org.au | +61 3 9419 2388 or visit www.aidr.org.au/events

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Australian Government Department of Home Affairs Australian Institute for Disaster Resilience



### Australian Disaster Resilience Conference

MEETING IN THE MIDDLE: COMMUNITY VOICES AND COMPLEX CHOICES

Find out more at: aidr.org.au/adrc

18 – 19 AUGUST 2021 International Convention Centre, Sydney NSW

Supported by industry partner



### Free Event

# National Recovery Forum

The National Recovery Forum will **bring together disaster recovery practitioners** from across Australia to network and **share knowledge, ideas and good practice.**  FRIDAY 20 AUGUST 2021

International Convention Centre, Sydney NSW

Find out more at: aidr.org.au/recoveryforum

The Australian Disaster Resilience Conference will provide an opportunity to have a national conversation about local impact, highlighting leading thinking and practice for community engagement in disaster resilience and collaborative decision making to reduce risk.