

How Australian fire and rescue service personnel would like to improve their decision-making learning and training programs

Peer reviewed

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Introduction

In Australian states and territories, fire and rescue services agencies (urban fire services, rural fire services and State Emergency Services (SES)) respond to the threats posed to individuals, communities, infrastructure and environments by hazardous events such as structure fires and collapses, transport accidents, hazardous materials exposures, bushfires, storms and floods.¹ Agency personnel with responsibilities for responding to emergencies must make decisions about how to manage the response as they assess the nature of the threats posed and the resources available.

In a series of workshops conducted in 2022 by Natural Hazards Research Australia, a number of priorities were identified for future needs in the practice and training of IEM decision-making. These priorities were:

- updating and reinforcing knowledge about decision-making skills and how to develop them
- increasing understanding of decision-making contexts and consequences
- building capacity for making strategic decisions and dealing with uncertainty
- improving cross-agency and cross-jurisdictional coordination and planning
- reviewing and learning from existing research and tools
- developing practitioner decision-making skills quickly.

1. Depending on the nature of the incident other emergency response agencies are likely to be involved, notably police and ambulance services.



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Abstract

Effective management of the response to an incident or emergency event is critically dependent on the decision-making skills of incident and emergency management (IEM) personnel. In a series of workshops conducted in 2022 by Natural Hazards Research Australia, priorities were identified that specified future needs for the practice and training of IEM decision-making. The research in this paper contributes to the understanding of how to address these priorities by considering the views of a sample of fire and rescue service personnel about their agency's current decision-making training program and aspects to improve. This paper provides findings from 34 semi-structured interviews with fire and rescue services personnel in Australia. The sample comprised 29 men and 5 women. Participants worked in rural fire services ($n=17$), urban fire services ($n=9$) and State Emergency Services ($n=8$). The findings suggest that there is need for greater training focus on emergency management decision-making, greater use of exercise-based training activities, a formal approach to mentoring and coaching staff development programs and mandatory refresher courses and review exercises to maintain incident management skills. Australian fire and rescue services agencies need to ensure they are taking a strategic and holistic approach to emergency management learning and development programs.

To address these priorities, it is important to understand how people make decisions in IEM, what the challenges for IEM decision-making are, how decision-making is currently trained and the opportunities to improve training. This paper contributes to this broad understanding of decision-making by considering the views of a sample of fire and rescue service personnel about their agency's current decision-making training program and the aspects to improve.

How people make decisions in IEM

There is a good understanding of the cognitive processes that underlie IEM decision-making. Over the last 25 years, the cognitive science literature has increasingly recognised the central role of 2 main types (or systems) of decision-making: analytical (deliberative) and intuitive (recognition) approaches. Together, these approaches form the dual pathway model² of decision-making (e.g. Evans and Stanovich 2013; Evans 2019; Stanovich and West 2000). As the name suggests, analytical approaches follow a structured, deliberative process to weigh up options and decide on the best choice. This approach assumes adequate time, information and resources and is thus less practical in more dynamic, opaque and time-constrained situations (Steigenberger et al. 2017). In contrast, intuitive (or recognition) approaches have developed from observing how experts make decisions in the real world. A well-known example of this approach is recognition primed decision-making (RPD), which outlines how skilled practitioners use pattern matching to make decisions by comparing the current situation with their past experiences (Klein 1993). If the situation is recognised as similar to a decision maker's previous experience, then a similar solution may be applied to resolve the situation. Approaches such as RPD are generally swift and largely based on the decision maker's recognition (intuitive) cognitive processes (Klein 1999). When working under low-time, high workload and high-risk situations, intuitive approaches have the advantage of using less cognitive resources than analytical approaches. Of course, the safe and effective use of RPD requires that the practitioner has suitable relevant experience to use this approach (Klein et al. 2010).

Consistent with the dual pathway model, recent literature reviews of the emergency management, military, police, medicine and other high-reliability organisational domains have found that most decision-making relies largely on both analytical and intuitive approaches (Reale et al. 2023; Penney et al. 2022; Perona et al. 2019). Emergency management practitioners use a combination of analytical and intuitive approaches, but the emphasis varies depending on contextual factors such as uncertainty, task complexity, time available, novelty and resourcing (McLennan et al. 2001, 2003; Penney et al. 2022; Steigenberger et al. 2017). As much as 80% of IEM decision-making is largely intuitive (Cohen-Hatton et al. 2015;

McLennan et al. 2001, 2003; Taynor et al. 1990). Some contemporary decision frameworks used in the emergency management sector incorporate aspects of the analytical and intuitive decision processes discussed. For example, both the SPAR(CD) framework (Lauder and Penney 2023a, b) and the UK Decision Control Process³ describe analytical and intuitive processes in the context of the formation and implementation of goals, plans, actions and review.

An important point to note is that there is often a high degree of sophistication required by decision makers to interweave intuitive and analytical approaches to make sense of incidents and to swiftly develop satisfactory solutions. A qualitative study of police first-response highlights the challenging nature of this work noting the role of 'a complex and situated mix of intuition and analysis' in guiding effective decision-making (Akinci and Sadler-Smith 2020, p.78). This observation highlights the challenge for training IEM practitioners to become effective decision makers.

Penney et al. (2022) and Drummond et al. (2026) note that some organisations overly focus on one decision process at the expense of another in their doctrine and training. Typically, there is an over-emphasis on analytical processes while neglecting the importance of intuitive processes. This tends to make the decision-making process appear more deliberate, rational and reportable than it is and may cause decision inertia when a swift decision is required. The appropriate balance of intuitive and analytical processes with an understanding of the limitations of each has been a focus of the Australian National Operational Guidelines on Decision Making (Bearman et al. 2026; Drummond et al. 2026) and needs to underpin high-quality decision-making training.

Challenges for IEM decision-making

IEM decision-making is a challenging endeavour because of the intrinsic nature of the overall response task situation, typically characterised by one or more situational factors (Bearman et al. 2024; Brehmer 1992; Brunacini 2002; Dörner 1980; Flin and Arbutnot 2002; McLennan et al. 2017; Penney et al. 2022; Tissington and Watt 2019; Zsombok 1997):

1. A complex, sometimes opaque, hazardous situation.
2. An uncertain and dynamic threat environment.
3. Potentially uncertain and changing priorities.
4. Action and feedback loop processes rather than a single select-and-forget decision.
5. Time pressure.
6. High stakes, often involving immediate threat to life and/or costly damage to property, infrastructure, economies and environments.

2. This is similar to System 1 and System 2 thinking described by Kahneman (2012).

3. Version 3.1 (April 2024), available from <https://www.jesip.org.uk>

7. Multiple agencies engage so that decision-making is distributed and effective communication is critical.
8. Multiple stakeholders in outcomes whose goals may be in conflict.

In addition to these intrinsic challenges to the IEM decision-making endeavour, Butler et al. (2024) identified 3 challenges arising from the wider societal context in which decision-making may occur, which are:

- the negative effects of stress and fatigue on IEM decision makers in command roles at large scale incidents extending over long time periods
- inter-operability problems of communication, coordination and jurisdiction associated with multi-agency involvement in managing complex emergencies such as terrorist attacks
- ethical dilemmas about where assistance can be provided and where it cannot where the demands of the emergency exceed the available response resources.

Training needs and learning strategies

To be able to function effectively in such environments, emergency services personnel require high-quality specialised training so they can perform their varied response tasks effectively and safely (Bearman et al. 2025; Cohen-Hatton et al. 2015; Flin et al. 2026; Ward et al. 2019). Personnel need to have knowledge about a myriad of topics such as SOPs (Standard Operating Procedures), radio communications protocols, forest fire behaviour, building material performance, hazardous chemical safety. In addition, they need to have good technical skills such as use of breathing apparatus, fast-water flood rescue, ladder safety and non-technical skills such as leadership, decision-making and teamwork (Bearman et al. 2023; Hayes et al. 2021).

Organisations need to carefully curate the learning experiences of their workforce so that these experiences align with strategic goals and evolving needs (Ford 2021, McLennan et al. 2024). Ultimately, emergency management organisations need to develop and maintain the capability of their personnel to meet statutory responsibilities, respond to changing hazard environments (e.g. use of hydrogen as a fuel source) (AFAC 2021), respond to increases in the frequency and severity of climate-related incidents (Mach et al. 2016; Pescaroli et al. 2023), manage the effects of demographic changes in the workforce and community (Chong et al. 2022) and use new emergency response technologies (Khanal 2022; Pine 2018). Thus, developing and maintaining robust decision-making capability is central to an emergency management organisation's capacity to effectively and flexibly manage its statutory responsibilities. It is clear, however, that while

some emergency management organisations are delivering high-quality training in some areas, there are gaps in the provision of training that are not addressed adequately (Bearman et al. 2024; McLennan et al. 2024).

Four main types of learning approaches can be used to train and maintain the capabilities of practitioners. These are formal learning, guided learning, self-directed study and developmental job experiences (Ford 2021).

Formal training covers the learning programs that an organisation uses to train and develop its workforce to meet its needs (Ford 2021). These learning activities are delivered using face-to-face, online and virtual instructional environments. Some of these programs incorporate learning technologies such as computer-based simulation and augmented reality to create realistic scenarios for trainees to learn and practice skills safely. This type of training for emergency management decision-making was covered in McLennan et al. (2024), offering suggestions to strengthen the effectiveness of emergency management decision-making training. Many programs used by emergency management agencies currently lack robust non-technical skills training (Hayes and Bearman 2023). Hayes and Bearman (2023) provide guidance on how to embed non-technical skills in AFAC Public Safety Training Package units⁴ (and agency training delivery materials) commonly used in Australia to train emergency management personnel. Hayes and Bearman (2023) identified ways to strengthen the content and delivery of the situation awareness and decision-making topics described in those units.

Guided learning (Ford 2021) describes the individualised and facilitated on-the-job training practitioners can undertake. This occurs when someone new to the role is paired with an experienced practitioner to observe and learn practicalities of the job. Guided learning helps to address the gaps that inevitably occur in formal training programs and assists new personnel to learn about the informal aspects of organisational life (de Toni and Noninio 2010). Guided learning can be delivered via one-on-one coaching (especially for decision-making or leadership skills) and through supervisory or peer coaching and mentoring for less experienced colleagues. Coaching and mentoring are recognised as important to improve the performance of personnel (Ellinger 2014; Connor and Pokora 2017; Weinberg and Scandura 2024). Traditionally, they have tended to be viewed as somewhat peripheral to traditional training and development activities (Bruce-Foulds et al. 2016), although they are being increasingly introduced in workplaces (Ellinger 2014; Ghosh and Ellinger 2024; ICF 2025).

4. The 5 Public Safety Training units are Work in a team (PUATE001), Lead a crew (PUAOPE020), Control a Level 1 incident (PUAOPE012), Observe fire from an aircraft (PUAFIR005) and observe a non-fire emergency (PUAFIR006).

Self-directed or autonomous learning (Ford 2021) is learning that is voluntary in nature and is guided by a practitioner's own developmental needs and interests to build their skills and knowledge (Ellingson and Noe 2017). Organisations can support and encourage this type of learning by creating a culture supportive of continuous learning and development. Creating and sustaining a learning culture aligned to an organisation's strategic goals requires considerable investment (Ford 2021). This includes senior management commitment to creating and rewarding learning opportunities, modelling such learning, encouraging collaboration and team learning and having systems that capture and share learning across the organisation (Marsick and Watkins 2003). [The Emergency Management Professionalisation Scheme](#) is an example of a program that supports ongoing professional development for emergency management practitioners.

Developmental job experiences are created by providing practitioners with 'stretch' job assignments and on-the-job experiences to expand their knowledge base and skills range (Ford 2021). Developmental job experiences help practitioners recognise the gap between their current skills and knowledge and the requirements of a new or larger job (Cao and Haromi 2020). This can help motivate practitioners to acquire new skills and knowledge and challenge them to try new behaviours to address varied or novel job demands (Dragoni et al. 2009; McCauley et al. 1994). The new job demands can help practitioners develop new ways of thinking given they may be required to solve challenging problems and make decisions under conditions of novelty, risk and uncertainty (DeRue and Wellman 2009). This approach to developing practitioners has been shown to help practitioners speed up their learning of non-technical skills such as leadership (McCauley et al. 2006).

The 4 types of learning can be combined in various ways. This approach is used widely in emergency medicine to help less experienced practitioners develop their knowledge and skills in hospital trauma units (Sims et al. 2014). The blending of different types of learning has become a design feature in Australian public service training and development programs including various emergency management organisations. Since 2011, many of these organisations have adopted the Centre for Creative Leadership 70:20:10 framework to guide the design of these programs (McCall Jr et al. 1988; Johnson et al. 2018). The framework describes how training and development programs should be configured around 3 types of learning activities: experiential, social and formal. The framework specifies that the program should be made up of 70% challenging job experiences; 20% informal on-the-job learning such as peer support, managerial support,

mentoring and feedback and 10% formal training and learning activities (DeakinCo 2018). However, concerns have been expressed that Australian Public Service organisations that have implemented this approach have not achieved the desired learning outcomes in terms of transfer of training and managerial capability development (Johnson et al. 2018).

The technical and non-technical skills required for emergency management require ongoing maintenance training to ensure they do not atrophy (Woodman et al. 2021). Without periodic operational use, or exercising, of trained-for skills, practitioner performance will decay. Woodman et al. (2021) highlighted how organisations can use needs assessments and task analyses to identify aspects of:

- (1) when formal instruction may be the best option (or not) to remedy competency gaps
- (2) the profile of who needs to be trained
- (3) the content that needs to be taught.

A further issue related to emergency management decision-making skill maintenance is that not only do practitioner skills decay over time without use and systems, protocols, software and social networks change, thus increasing the importance of regular refresher training (Woodman et al. 2021).

Organisations need to provide high-quality, ongoing training and learning opportunities in policies and procedures, technical skills and non-technical skills that employ a variety of learning approaches. While many emergency management agencies provide high-quality training in policies, procedures and technical skills, training in non-technical skills (such as decision-making) appears neglected (Bearman et al. 2023, 2025; Hayes and Bearman 2023; Hayes et al. 2021). In a recent survey of emergency management personnel in Australia by Bearman et al. (2025), only a quarter (26%) of respondents said they had attended formal training on decision-making. Forty per cent of respondents said that the training they received from their organisation had either not improved their decision-making (12%) or they were unsure whether it had (28%). Nearly 60% of respondents felt that the approach to operational decision-making taught during any training was mostly ineffective (12%) or sometimes ineffective (48%). Nearly a third (29%) of respondents said that decision-making training rarely or never changed their on-the-job practice.

This study extends those findings by analysing semi-structured interview data to highlight the views of a sample of fire and rescue service personnel about their agency's decision-making training program and those aspects in need of improvement.

Method

Participants

A total of 34 fire and rescue services personnel participated in semi-structured interviews (29 men and 5 women). They worked in rural fire services ($n=17$), urban fire services ($n=9$) and SES ($n=8$). Rural fire services personnel respond to both bushfires and structure fires. They also carry out rescues, mostly relating to vehicle accidents. Urban fire and rescue services personnel respond to a wide range of emergency events including home, building and factory fires; transport accidents; hazardous chemical spills and discharges and rescues including building and trench collapses and rescues from heights. SES personnel respond to mostly weather-related emergencies including flood rescues, storm damage and fallen trees.

Participant agency role levels ranged from first responders (operational activities level) to executive role chief officers. The mean age was 52.9 years ($SD=8.40$; range 29–67 years) and they reported 23.1 mean years of experience in emergency response work ($SD=9.08$; range 5–40 years). The roles of the majority were Tactical Level ($n=19$) followed by those with roles at Strategic Level ($n=10$). Three participants had roles at Executive Level and 2 participants had roles that were mostly at Operational Response Level (Bearman et al. 2024; Drummond et al. 2025).

Procedure

The research was promoted nationally by Natural Hazards Research Australia and AFAC through publications and social media communications. Participants first completed an online Qualtrics® survey about their emergency management decision-making. The survey included an invitation to opt-in for possible participation in a follow-up interview. A total of 154 completed surveys were returned, including 102 agreements to participate in an interview. A target of 30 to 40 interviews was set to complete the task within the time limit of the project and participants were selected to include a representative sample of emergency management practitioners who were:

- from across Australian states and territories
- volunteer and career personnel
- represented in any of the 4 levels of emergency management decision-making (operational, tactical, strategic, executive)
- represented a range of emergency management response agencies (including urban fire and rescue, rural fire, SES).

Forty interviews were conducted, 34 with fire and emergency personnel and 6 with personnel from other

agencies of police ($n=3$), land management ($n=2$) and ambulance ($n=1$). The 6 interviews were not included in the analysis. Participants were invited to respond to 6 interview questions. This paper reports only on responses to question 6.

Interview protocol questions:

1. To start this interview, it would be helpful to understand a bit about your background working in emergency management and your experience in decision-making. In particular, it would be helpful to hear about your current role. Could you please tell us a bit about yourself and your emergency management work?
2. (a) Would you please provide a brief overview of how you were initially trained to make your emergency management operational decisions?
(b) What subsequent or ongoing training or development activities have you undertaken about operational decision-making?
3. Would you please outline your organisation's guidance and policy on operational decision-making?
4. Would you please describe your operational decision-making practice?
5. Based on your experiences, please outline what you consider are some of the most significant challenges to effective operational decision-making in today's operational environment?
6. How do you think we can improve the training and development of emergency management operational decision makers in roles like yours?

The interviews with fire and rescue service personnel were conducted by the second author ($n=21$) and the third author ($n=13$) using a video online platform and recording and transcribing facilities. The transcripts were analysed by the first author for thematic content following the procedures for Codebook Thematic Analysis using multiple coders to achieve accuracy as consensus discussed by Braun and Clarke (2021, 2022). The analysis was reviewed by the second and third authors independently and revised in discussion with the first author. All 3 authors have extensive experience in emergency incident response activities, undergoing and providing training in emergency management decision-making and using qualitative research investigating emergency management decision-making. The final consensus resulted in 4 overall training improvement needs themes being identified: policies, programs, curricula and activities (see Table 1). Specific training needs identified are detailed in Table 2.

Table 1: Agency training and development needs: themes and illustrative examples.

Training and development policies	Training programs	Training curricula	Training activities
The need for the framework developed by the organisation to ensure its overall training and development program meets its statutory goals and responsibilities. <i>I think we've got to formalise the mentoring.</i> <i>What we should have is at least every 2 year refresher IC program.</i> <i>What we can have is a nationalised approach to incident command training. Just work out what we're going to agree to and do it.</i>	A coherent schedule of training and development arrangements that are designed to achieve and maintain the policy-driven array of personnel capabilities. <i>Exercises are not given enough priority in our training regime.</i> <i>I think it would be good to have courses that are formal and some that are informal. Maybe some mandated.</i> <i>Without doing interoperability training there are problems when you get to large complex operations where you need people that actually understand the capabilities of other agencies.</i>	A specification of what topics will be covered across the spectrum of the training program. <i>There should be more organised study in regard to decision-making and leadership in general. A proper course needs to be made available.</i> <i>We need to start people on their incident management and decision-making training journey earlier than we do.</i> <i>There needs to be more training about cognitive flexibility and understanding of your working memory so you understand your own biases.</i>	How training and learning are delivered and facilitated in the various training courses. <i>Really, it's about training that puts people in realistic decision-making spaces to improve it.</i> <i>It's about putting people in a stressful situation and getting them to force themselves to go beyond their natural feelings.</i> <i>More frequent scenario-based training exercises, especially involving more complex types of incidents.</i> <i>Get somebody with street cred, somebody that crews can look up to and think, 'Yeah, that person's a good Incident Manager'. Get that person to model how they manage an incident.</i>

Ethics

Ethics approval for this research was received from Central Queensland University (#HREC 024362).

Results

The interviewees identified 48 ways agencies could improve training and development to enhance IEM decision-making (Mean=1.4, range 0–3). Table 2 summarises the initiatives interviewees would like agencies to implement grouped into the 4 training improvement needs themes as described in Table 1. The 'core businesses' of the 3 types of agencies differ. As the 3 types of emergency services organisations selected for this study respond to different types of emergency events, Table 2 groups interviewee responses separately for each.

The training and development improvements suggested by interviewees differed greatly in terms of scope and ranged from the most basic, '... we need more practical drills... Yeah, just get better at that basic firemanship' to the national, '...nationalise incident command and make it stick. Take the level of authority away from the agencies to determine the approach'. Overall, 3 of the areas recommended for improvement together accounted for 59% of the total number of proposals. These 3 were a greater training focus on emergency management decision-making (10 out of 48, 21%), greater use of exercise-based training activities (9 out of 48, 19%) and instituting and formalising mentoring and coaching staff

development programs (9 out of 48, 19%). Five participants (10%) advocated for mandatory refresher courses and review exercises for senior staff to maintain skills.

There was a degree of consistency across the 3 types of agencies in training needs identified by interviewees at the training and development policy level. For all 3, formally organised mentoring and coaching development programs were deemed necessary. For both rural and urban fire services, national approaches to training and credentialling were nominated by some interviewees. Some rural fire service and SES interviewees spoke of the need for mandatory refresher courses for senior managers to maintain emergency management skills. The most striking difference among the 3 kinds of agencies related to desired training activities. Only 2 rural fire service interviewees nominated particular activity needs. Only one SES interviewee spoke of a training activity need: (to have experts from outside the emergency management sector give presentations). In contrast, 8 (17%) urban fire service interviewees nominated desired changes in training activities; 7 about exercises. This reflects the greater range of incidents that urban fire services are required to respond to including house fires, factory fires, building collapses, transport accidents, hazardous chemical discharges as well as trench and high-angle rescues.

With only 3 interviewees from the executive and 2 from the operational activities, it can be noted that the former identified needs in the policy area, the latter in the training activities area. There were no noteworthy differences

Table 2: Australian fire and rescue services agencies training needs as perceived by interviewees.

Interviewee services type and Australian state or territory	Policy (n=17)	Program (n=6)	Curriculum (n=15)	Activities (n=10)
Rural fire services: WA 5 NSW 4 VIC 3 SA 2 NT 1	A formally organised approach to mentoring/coaching (6). Mandatory refresher courses and review exercises for skill maintenance (4). Greater emphasis on provision of exercise-based learning opportunities. A national approach to training and credentialling.	Higher priority to training exercises (2). Greater encouragement/recognition/reward for undertaking suitable external courses related to emergency management decision-making. Online courses to develop a range of skills, both technical/practical and non-technical, not necessarily linked to promotion.	Embed emergency management decision-making as a topic in training from initial induction (3). Increased content focused on decision-making and leadership. Increased content on psychological aspects of decision-making. Develop standards and training courses to develop competencies for the incident management team logistics function and the air observer function. Provision of a general model of emergency management decision-making. Greater emphasis on development of people management and leadership skills. Incorporate training modules covering all the required incident-related skills, not just those related to the most encountered incidents.	Greater use of scenario-based learning opportunities. Ensure training activities in non-technical skills are related directly to those required for incident management.
Urban fire and rescue services: NSW 7 Tasmania 3 Vic 1	A formally organised approach to mentoring/coaching. Mandatory refresher courses and review exercises for skill maintenance.	Nil	Embed emergency management decision-making as a topic in training from initial training. Provision of training in administrative skills and people management. Greater emphasis on practical fireground management knowledge. Greater emphasis on developing situation awareness, particularly information-elicitation skills.	Greater emphasis on scenario-based learning opportunities (3). Greater emphasis on exercise-based demonstrations/modelling of incident management by recognised experts. Greater emphasis on exercise-based learning opportunities and with follow-up in operational activities. Greater emphasis on TDG/tabletop-based learning opportunities with formally organised appraisal and critiquing. Need for opportunities/forums for discussion among peers about decision-making issues for personnel development and not linked to promotion. Greater use of drills necessary for good firemanship. Training exercises and scenarios need to be more realistic.
SES: NSW 6 WA 1 Qld 1	A formally organised approach to mentoring/coaching (2). A national approach to training and credentialling. National non-technical skills competency training standards with the addition of guidelines about modification to meet local hazard needs.	Need to evaluate the training program outputs in relation to operational needs. Need to provide adequate training to improve interoperability via appropriate multi-agency exercises.	Broaden the scope of training in incident management to consider impacts of operational decisions for post-incident recovery. Content specifically on decision-making. Content on relevant decision tools/cognitive aids.	Knowledge and awareness-expanding presentations by experts from outside the emergency management sector, such as the military and humanitarian aid.

Note: Figures in brackets indicate the number of interviewees who suggested the change.

in the patterns of responding by interviewees from the tactical and strategic incident management levels.

Discussion

The analysis of data was designed to highlight the views of fire and rescue service personnel about their agency's current training in decision-making and those aspects to improve. This builds on findings by Bearman et al. (2025) that more than 40% of participants said the training they had received from their organisation either had not improved their decision-making or they were unsure whether it had. In addition, nearly 60% of participants felt the approach to decision-making taught during any training was mostly or sometimes ineffective and nearly a third said that decision-making training rarely or never changed their on-the-job practice. Focusing on IEM personnel's opinions about their decision-making training provides important information that can help agencies meet industry identified priorities for decision-making practice and training, particularly in developing rapid practitioner decision-making skills and building capacity for making decisions and dealing with uncertainty.

The data showed a need for greater training focus on emergency management decision-making as a distinct skill. This is being addressed by the Natural Hazards Research Australia project on Enhancing Decision Making in Emergency Management (Bearman et al. 2024). The data also showed a desire by participants for agencies to make greater use of exercise-based training activities and for more formalisation of mentoring and coaching staff development programs.

A further topic of note is the proposal for mandatory refresher courses and review exercises to maintain incident management skills. Participants whose roles were in the Strategic Level commented about the challenge of maintaining incident management knowledge and skills because of infrequent opportunities to use them. This issue has been identified in other jurisdictions. For example, the United Kingdom Fire Service College provides a course to address this challenge.⁵ Woodman et al. (2021) cover the issue of skill decay and skill maintenance in a study of first responders. They outlined some analytical approaches that emergency management organisations can use to configure appropriate skills maintenance and refresher programs for practitioner decision-making and other non-technical skills based on likely skill decay and recurrency requirements.

McLennan et al. (2024) described the value to agencies taking a strategic (and holistic) approach to the learning and development of practitioners by framing learning as occurring through a 4 types of training strategies framework (see Ford 2021, p.9). That framework

suggests that effectively curating a range of practitioner learning activities and experiences can create stronger opportunities to develop decision-making skills. For example, at suitable incidents, placing a Leading Firefighter in a Station Officer Incident Controller role while supported (coached) by an experienced Station Officer combines guided learning with developmental job opportunities.

Hayes (2018) observed that while there has been a move towards an integrated approach to the development of emergency management practitioner skills within fire and rescue services, there has also been an increasing shift in responsibility for professional development from the organisation to the individual. To support self-directed or autonomous learning, organisations need to ensure they facilitate a culture and provide resources conducive to this (Ford 2021). Staff development systems that capture and enable the sharing of findings from post-operation reviews are invaluable (McLennan et al. 2024; Marsick and Watkins 2003). Further, developmental job experiences highlight the importance of fostering learning experiences for practitioner skills development. Rather than maximising the number of developmental job experiences, the focus should be on the fit between the experience and the practitioner's individual learning needs (Cao and Haromi 2020).

It is acknowledged that agencies face budgetary constraints and a balance must be struck between the costs of training programs and the need to adequately fund emergency response capability. One of our interviewees commented:

Our exercising and training regimes are probably not given enough priority because senior management is so busy with the business side of things. Not to put too fine a point on it, the world is run by accountants!

However, agency response capability is highly dependent on the skills of the responders and this should remain the focus for emergency management agencies.

Limitations

There are limitations of this study, notably the generalisability of the results to the wider fire and rescue services sector. While 34 interviewees came from agencies from all Australian states and the Northern Territory, agency annual reports indicate that there are more than 200,000 emergency services personnel involved in emergency management across the country. It would not be appropriate to conclude that the reported accounts of training improvement needs are necessarily characteristic of any agency nor of Australian fire and rescue service agencies in general. Rather, the findings should be viewed as suggestive of the likely value to agencies of reviewing

5. United Kingdom Fire Service College course [Revalidation for Advanced Incident Command in Fire and Rescue Services](#) (National Operational Guidance Level 3).

training and development programs to identify and address issues that would benefit from changes.

Of the participants, only 5 were female, 15% of the total. While this mirrors broadly the historical gender balance of the sector and there were no obvious overall differences between the responses of the male and female participants, it is expected that this study missed important IEM training needs specific to the needs of women.

Conclusion

A number of training needs recommended by interviewees were identified in the data relating to policies, programs, curricula and activities. The analysis highlights important topics that emergency management agencies need to address in their conceptualisation and delivery of training. In particular, the data showed there was need for a greater training focus on the decision-making aspects of emergency management, a desire for greater use of exercise-based training activities, a formal approach to mentoring and coaching staff development programs and mandatory refresher courses and review exercises to maintain incident management skills. It is important that emergency management agencies take a strategic (and holistic) approach to the learning and development of emergency management practitioners. As McLennan et al. (2024) noted, 'The most constructive action for emergency management organisations to improve decision-making effectiveness is to undertake critical reviews of current arrangements for decision-making training' (p.42).

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