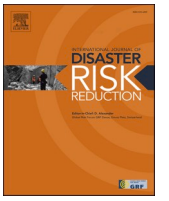
International Journal of Disaster Risk Reduction 131 (2025) 105904

Contents lists available at ScienceDirect

International Journal of Disaster Risk Reduction

journal homepage: www.elsevier.com/locate/ijdrr



Ephemeral and pop-up communities in disasters: Conceptualizing community temporality

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ARTICLE INFO

Keywords:
Ephemeral community
Pop-up community
Disaster resilience
Social capital
Community typology
Flood

ABSTRACT

The concept of 'community' is central to disaster risk reduction, yet it remains theoretically underdeveloped and inconsistently applied across disciplines and practice. This study addresses this gap by examining how individuals affected by the 2022 floods in Queensland, Australia conceptualized 'community' and enacted its roles during the disaster. Drawing on 52 in-depth interviews, the research identifies five distinct community types and explores their formation contexts, activation patterns, and contributions to preparedness, response, and recovery. While communities of place, interest, practice, and Virtual/Networked communities, are well-documented in the literature, this study introduces the concept of pop-up communities: ephemeral, situationally emergent collectives that mobilize rapidly in response to disasters. These communities challenge static, place- and interest-based models by highlighting the temporal and relational dynamics of social capital mobilization in response to temporally situated, community-identified needs. By integrating sociological and relational perspectives, the paper extends existing community theory and presents a refined typology and conceptual framework for understanding community dynamics in disaster contexts. The findings underscore the importance of recognizing pop-up community formations and their embedded resources to enhance resilience and inform more adaptive, inclusive, and community-centered disaster management strategies.

1. Introduction

Although the concept of community has been central to disaster management discourse for more than three decades, its theoretical development remains limited. Persistent ambiguity around what constitutes 'community' [1–3] constrains both scholarly understanding and practical application, hindering efforts to effectively engage communities in disaster preparedness, response, and recovery. As the role of community in building the social capital required to achieve these outcomes becomes increasingly recognized [4,5], there is a pressing need to revisit and refine how community is understood in disaster contexts.

This paper responds to that need by drawing on the lived experiences of flood-affected community members to develop an empirically grounded understanding of what 'community' means and how community actions contribute to resilience. Specifically, it explores how individuals affected by a disaster conceptualize community and how these conceptualizations shape their disaster-related activities. While calls have been made for disaster management agencies to build relationships with communities to foster trust and encourage proactive hazard preparedness [6] and to support action in response to official warnings [7], the literature offers

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https://doi.org/10.1016/j.ijdrr.2025.105904
Received 26 August 2025; Received in revised form 9 November 2025; Accepted 10 November 2025
Available online 15 November 2025

limited guidance on implementation. More importantly, there is a notable absence of theoretical frameworks capable of distinguishing between different community types and articulating their relevance to disaster management. This study addresses that gap.

Situated within the context of the 2022 Queensland Australia floods [8] (see Fig. 1), the research examines how communities prepare for, respond to, and recover from such disaster events. Prior studies (e.g., Ref. [9]) suggest that strong communities are better equipped to manage disasters: they are more prepared, cope more effectively during crises, and recover more quickly. These communities are characterized by strong social connections and collective capacity to respond to environmental and social challenges [10–12]. In other words, they possess high levels of social capital. Despite this, little is known about how conceptualizations of community influence disaster resilience, or how different types of community behavior during disasters depend upon or build social capital, and what this means for engaging communities for resilience. While Räsänen et al. [1] have contributed to this conversation, further empirical work is needed to clarify what is meant by community in disaster contexts and how engagement strategies can strengthen these communities and their social capital—and, by extension, their resilience.

For researchers and practitioners of community engagement—a key practice area in disaster management ([13]; see also Australia's National Strategy for Disaster Resilience [14])—this study offers a timely contribution. It confirms, refines, and extends current understandings of community by providing empirical insight into how communities are formed, how they function during crises, and how they can be supported to achieve socially valued outcomes. In doing so, it advances both theory and practice in disaster risk reduction. Accordingly, this study aims to 1) explore how people affected by the 2022 Queensland floods conceptualize 'community,' 2) to develop a typology of community types activated across preparedness, response, and recovery, and 3) to consider the implications of these findings for emergency management practice.

2. Literature review

2.1. Conceptualizing community

The concept of 'community' has long been central to sociological inquiry yet it remains contested and multidimensional. The term 'community' describes individuals who are collectively drawn together or bound by something shared (see, for example, [15]). Early work in this area was based on the premise that the 'something' was most likely to be a shared location. An influential review by Hillery [16], identified 94 distinct definitions of community, with the most common element at that time being social interaction within a geographic area.

Studies continue to grapple with the complexity of the term, emphasizing its fluidity across disciplines and contexts [17]. Delanty

Fig. 1. Southeast Queensland locations affected by flooding in 2022.

[18] extended the concept of community to embrace the social *other* and "the desire for belonging, sharing, and place" (p. 2). In public health, MacQueen et al. [19] proposed five defining elements of community: locus (place), sharing, joint action, social ties, and diversity. These elements reflect both structural and relational dimensions, suggesting that community is not merely a spatial construct but also a social and symbolic one. These social constructs form the basis for a definition put forward by Spezia et al. [2], p.9), that communities are comprised of psychological, relational and emotional bonds that create sense of community and that sense of community overshadows more physical commonalities between individuals. However, community remains a contested term [2,17,18].

Considering the complexity and diversity of where sharing takes place, a wide range of community definitions has emerged, shaped by context and disciplinary perspectives. Notably, the work of Dunham et al. [20] introduced a typology that remains influential across disciplines, identifying four primary forms of community: those based on shared place, shared interests, shared practices, and virtual connections. Each of these is discussed below.

2.1.1. Community of place

Defined by geographic proximity and shared space, this form reflects traditional notions of neighborhood and locality. Place attachment, as explored by Hummon [21] and Manzo & Perkins [22], is closely linked to social capital and collective action. Individuals who feel connected to their place are more likely to engage in community improvement and disaster preparedness [1,23]. Hillery [16] viewed community as consisting of "persons in social interaction within a geographic area and having one or more additional common ties" (p. 111). The notions of place and proximity are acknowledged by Dunham et al. [20] as being in a shared place that facilitates interaction and social connection. Place—and place attachment—describes people's feelings and beliefs about their community of place [21] and is closely related to social capital and community satisfaction [23]. How connected an individual is to their place, and their sense of community is found to motivate people to collectively contribute and "inspire action because people are motivated to seek, stay in, protect, and improve places that are meaningful to them" ([22], p. 347). In a similar way, Räsänen et al. [1] described place-based community as being bound by a geographical location.

2.1.2. Community of interest

These communities form around shared ideologies, hobbies, or goals. Dunham et al. [20] describe them as agenda-driven collectives that foster identity and action. When people connect with others through "ideological goals that shape an agenda-driven identity" ([20], p. 32), a community of interest is formed which motivates community members to act and think in ways that support shared interests. In disaster contexts, such communities might mobilize environmental advocacy, preparedness education, or mutual aid. Shared interests therefore scaffold community connection and shared perspectives.

2.1.3. Community of practice

Rooted in shared activities and professional or volunteer engagement, communities of practice generate collective knowledge and norms (Lave & Wenger, 1993). While these often represent professional work groups, communities of practice can also be found in local community volunteer or sporting groups, or local settings where members are in active and direct interaction [20]. In disaster settings, these may include volunteer emergency responders or local recovery groups [1,20]. Räsänen et al. [1] combined practice and interest in their flood research suggesting that these groups are bound by common action and shared identity. Dunham et al.'s [20] work differentiates ideologies as interests from activities and so is more useful in this sense.

2.1.4. Virtual communities

Enabled by digital technologies, virtual communities transcend geographic boundaries and facilitate interaction based on shared interests. While Dunham et al. [20] treat these as a distinct category of community, others argue they represent a communication modality rather than a community type. Räsänen et al. [1] conceptualize these as networked communities, grounded in informal cooperation and everyday life. Membership of these groups is based on interests that aim to "moderate [member] views, build tolerance, and encourage an ongoing engagement" ([20], p. 33). It is arguable, therefore, that rather than as a type of community this could be classified as a means of communication or context within which members of communities connect or interact.

However, Xie et al. [24], in their examination of digital communities during the COVID-19 pandemic, found that social media fostered a collective sense of identity and efficacy, thereby developing and supporting psychological and social ties within online groups. They reflected the findings of Räsänen et al. [1], who considered the concept of a networked community and described an interaction-based community as the foundation of a 'community'. They argued that these were grounded in social capital, as a "network of interactions between people, foci on informal cooperation and everyday life" (p.2). These groups were bound by the interactions between people.

Synthesizing these perspectives, the notion of 'community' can be understood as groups of individuals and collectives who share a connection, or share common interests, knowingly or not, through choice or circumstances. Synthesizing these perspectives, community can be understood as a dynamic configuration of individuals and collectives who share connections, whether spatial, ideological, or situational. Firth et al. [12] emphasize that strong communities are built through engagement, participation, and problem-solving, supported by robust social networks. This understanding is foundational for community engagement, particularly in disaster management, where mobilizing collective capacity is critical.

However, despite this rich conceptual landscape, there remains limited empirical understanding of the extent to which these theoretical perspectives align with how community members themselves conceptualize community, and how this relates to their lived experiences of disaster events. This gap underpins the first aim of the study: to examine how community members affected by a disaster

event conceptualize community.

2.2. Conceptualizing community in disaster management

In disaster management literature, community has traditionally been conceptualized in geographic terms, referring to people living in a specific location [25]. While this location based framing has long informed emergency management (EM) planning and policy, it is increasingly viewed as insufficient for capturing the complexity of community dynamics in disaster contexts.

Alternative perspectives to "community as place" began to emerge at the end of the 1990s. Buckland and Rahman [26] emphasized social capital, and "the ways in which community members participate and manage processes of change" (p. 175). This perspective foregrounds agency, adaptability, and collective action in disaster response and recovery. Marsh and Buckle [27] expanded this understanding by proposing that communities share common characteristics across space, interest, and function. Their typology—communities of affection, function, competition, interest, or status—emphasized that communities are not static entities; they might disintegrate under stress rather than evolve.

Building on these foundations, Patterson et al. [28] offered a dual framing of community, as both a collection of people and a functional system (group) bound by shared interests, preferences, resources, and capabilities. This framing supports a more nuanced view of community as both a social structure and a functional system capable of mobilizing resources and responding to complex challenges.

Contemporary definitions further integrate social and special dimensions. Tariq et al. [29], drawing on Ostadtaghizadeh et al. [30], define community as "a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings," (p. 2). Similarly, Okdinawati et al. [31], referencing international disaster law and humanitarian frameworks (IDRL/IFRC), define community as a group that shares one or more things in common, such as living in the same environment. These inclusive definitions support the operationalization of community in multi-stakeholder disaster coordination and the importance of shared context in building trust and cooperation.

Community engagement scholars emphasize the role of social and relational capital in disaster preparedness and response [55]. Jin and Lee [32], Johnston and Lane [33], and Sommerfeldt [34] argue that engagement fosters the development of shared outcomes and collective identity, thereby strengthening both social and relational capital. Sobhaninia [35] in a systematic literature review, identified social capital, sense of community, social participation, and place attachment as the most influential social cohesion variables in disaster recovery.

Social capital emerges from the relationships and networks within communities ([11]; Putnam, 1994). and is embedded in both formal and informal group structures [36]. In online disaster settings, the quality of digital interactions—particularly those that are detailed, consistent, and localized—forms the foundation of individuals' perceptions of community [37]. Communities are increasingly viewed by their members as environments that facilitate connectivity, diversity, and agency [38], making them a vital coping resource in times of crisis. Understanding how communities access and activate these resources is essential for enhancing disaster resilience.

2.3. Temporality

The temporality of community formation and the salience of place have relevance to a range of disaster types, not just floods. Temporality, as a dimension of time, illustrates how contextual and social forces shape and are shaped by individual and collective agency over time [39,40]. In disaster contexts, temporality intensifies the complexity of decision-making [41], and the actions taken by individuals and communities reflect a form of collective agency, underscoring disaster response as a fundamentally social phenomenon.

Posio [42], in the context of Japanese earthquakes, argues that communities should be viewed through a lens of collective aspiration, where "forms of sociality emerging" as people strive towards "desired futures" ([42], p. 374) - In this framing, desired futures represent the response to and recovery from disaster.

Comparative studies reinforce the importance of temporality and place ([43]; Shirleyana, 2023). In wildfire-affected regions of Chile, place-based communities mobilize rapidly in response to fast-onset threats, with strong place attachment and social capital determining resilience and recovery [44]. In Sweden, Cuadra and Ramgård [45] found that pre-existing community relationships and networks provided the necessary capacity for a timely and inclusive response to COVID19. In post-earthquake Japan, Pooyan and Hokugo (2025) found spontaneous collaboration among community members strengthened their adaptive capacity and fostered greater self-reliance during recovery.

Norris et al. [46] conceptualize community resilience as a dynamic process linking adaptive capacities such as social capital, communication, and competence, which are often activated during disasters in time-bound, situationally emergent ways during disasters. These insights reinforce the need to theorize community not only as a spatial or structural entity, but also as a time sensitive and socially embedded entity that adapts across hazard types.

Contemporary approaches to defining and understanding 'community' increasingly emphasize shared responsibility, participatory engagement, and the social dynamics that underpin community resilience. While the literature acknowledges the importance of community in disaster preparedness and response, there is limited theorization of the roles communities play during disaster events. This leads us to our second aim, which is to find out what role community plays in enabling individuals to prepare for, respond to, and/or recover from a disaster event.

3. Research design

The Community Floods 2022 project was a multi-phase study [47] examining the experiences of residents in Queensland and New South Wales who were impacted by or at risk of flooding during 2022. This paper focuses exclusively on the Queensland component of the qualitative phase, which involved 52 in-depth interviews in the local government areas of Brisbane, Logan, Ipswich, and Gympie. The aim was to understand how disaster-affected individuals conceptualized community and how these conceptualizations shaped preparedness, response, and recovery actions. A qualitative design situated within a constructivist paradigm was adopted to capture lived experiences and explore the relational and temporal dynamics of community formation during a disaster. This approach enabled nuanced insights into how social capital was activated and mobilized in response to the floods ([11]; Putnam, 1994; [36]). Ethical approval was granted by Macquarie University Human Research Ethics Committee (HREC11902).

3.1. Method

Given the exploratory nature of the research, semi-structured interviews were selected to elicit rich, detailed narratives and allow participants to articulate their own understandings of community. This method facilitated comparison with established typologies while providing scope for the emergence of new forms, such as ephemeral or pop-up communities. The design prioritized depth and flexibility, enabling participants to reflect on both pre-existing and situationally emergent community relationships.

3.2. Sampling and recruitment

Purposive sampling was employed to ensure diversity in geographic location, socio-economic characteristics, and flood severity. Postcodes were selected from flood-affected local government areas based on official emergency warnings and government reports. The target sample size of 52 participants was determined during project planning to balance thematic saturation with resource constraints.

Recruitment utilized multiple channels to maximize reach: press releases distributed to local media, social media posts in community groups, letterbox drops in targeted neighborhoods, and a dedicated project website for registration. Eligibility required participants to have been affected by the 2022 floods. Of 55 individuals who expressed interest, 52 were interviewed; three were excluded due to scheduling conflicts or incomplete consent.

Tables 1 and 2 summarize participant demographics and postcode representation. All participants were residents directly affected by the 2022 Queensland floods and did not hold formal emergency management roles. Gender, age, and location (postcode) were therefore reported as the key demographic details to describe the sample. Participants self-identified their level of impact as significantly, moderately, or minimally affected, or as indirectly impacted, based on their experiences.

3.3. Data collection

Interviews were conducted between July and November 2022, using face-to-face, phone, or online platforms (Zoom or Microsoft Teams), depending on participant preference, location, and availability. Sixteen interviews were conducted in person, and the remaining sessions were completed via phone or online. Each interview lasted approximately 1 h and was audio-recorded with participant consent. Mixed modes were employed to maximize participation and accommodate geographic dispersion, ensuring that individuals in flood-affected areas could be included regardless of travel constraints. To ensure accessibility, two researchers traveled up to 4 h from their home university to conduct in-person interviews in local communities.

Given the sensitive nature of disaster research, protocols were implemented to safeguard participant well-being. Interviewers monitored for signs of distress and offered breaks or withdrawal options if needed [48]. Some participants chose to be accompanied by family or friends for support. Following each interview, researchers engaged in reflective debriefing to process emotional and analytical dimensions—a practice increasingly recognized as best practice in qualitative disaster research [49]. All interviews were professionally transcribed and imported into NVivo12 for analysis.

Table 1
Sample demographics – Age, Gender and Impact.

		N
Age	25–34	6
	35–44	18
	45–54	14
	55–64	7
	65+	7
Gender	Female	38
	Male	14
Impact Level	Significantly impacted	39
	Moderately impacted	5
	Minor impacted	5
	Indirectly impacted	3

Table 2
Postcode representation.

Postcode	N	Postcode	N	Postcode	N
4006	1	4053	2	4205	1
4011	2	4066	1	4207	1
4014	1	4068	1	4304	1
4017	1	4069	3	4501	1
4019	1	4070	2	4503	1
4020	1	4075	7	4516	1
4030	2	4101	1	4558	1
4031	1	4105	1	4560	1
4032	1	4106	1	4304	1
4051	1	4151	1	4570	11

3.4. Analysis

Data analysis followed Wolcott's [50] three-stage model: (1) descriptive coding to identify key topics and allow themes to emerge organically; (2) pattern analysis to explore relationships across interviews; and (3) theoretical coding to interpret findings in light of existing literature on community typologies, social capital, and disaster resilience [1,12,20]. To address coding quality, a comprehensive codebook was developed prior to the commencement of coding. The research team collaboratively defined and discussed each code to ensure shared understanding and consistency in application. All 52 transcripts were coded by a primary researcher, and a subset of 12 transcripts (23 %) underwent independent double-coding to assess interpretive alignment. Discrepancies were reconciled through structured discussion, and the codebook was iteratively refined to enhance clarity and reliability. These steps ensured a systematic and consistent approach to the analysis.

The analysis examined how disaster-affected individuals conceptualize 'community,' the different forms it takes, and the roles communities play across the disaster cycle. This approach yielded empirically grounded insights into the enactment of community during disasters, addressing the study aims and contributing to its theorization within emergency management contexts.

The next section presents the empirical findings derived from 52 in-depth interviews with residents affected by the 2022 Queensland floods. These results address the study's two aims: first, to examine how disaster-affected individuals conceptualize 'community'; and second, to explore the roles communities play across the disaster cycle—preparedness, response, and recovery. The findings are organized thematically to reflect both established and emergent forms of community and their functional contributions during the flood event.

4. Results

The analysis revealed that participants understood and enacted 'community' in diverse and dynamic ways during the 2022 Queensland floods. Rather than viewing community as a static or purely geographic construct, participants described configurations shaped by place, relationships, shared values, and situational needs. To present these findings clearly, this section first examines how participants conceptualized community, highlighting both established forms and the emergent category of pop-up communities. It then explores the functional roles communities played across preparedness, response, and recovery, focusing on support, leadership, and information exchange. Illustrative excerpts from interviews are integrated throughout to ground the analysis in lived experience.

4.1. Discovering how community members affected by a disaster event conceptualize community

Participants offered rich and varied interpretations of what 'community' meant to them during the 2022 Queensland floods. These conceptualizations extended beyond traditional notions of geographic proximity, encompassing relational, value-based, and situational dimensions. These interpretations resonate with sociological perspectives on community as fluid and multidimensional [17,18] and align with typologies proposed by Dunham et al. [20] and Räsänen et al. [1]. The analysis identified four dominant forms: communities grounded in shared physical space, those built on social connections, those shaped by shared interests and values, and an emergent category— as ephemeral collectives formed in response to a time-bound event – what we have termed 'pop-up' communities—formed in response to immediate needs. Each form is discussed below, with illustrative excerpts highlighting how these conceptualizations influenced collective action during the disaster.

4.1.1. Community based on shared physical space or proximity

Many participants defined community in terms of geographic proximity and shared locality. This understanding aligns with traditional notions of place-based community and reflects the importance of spatial closeness in fostering social ties and mutual support.

> Our neighborhood … is incredibly connected. So we are in a … little pocket of - like, the way it's structured, it's a bit contained by a creek. So there's a sense of people being connected to each other. (2251)

Their relatively close physical presence means these people share a space, which could result in them having an impact ——for good

or ill—on each other. Participants noted that physical proximity with neighbors gave them the chance to meet and get to know them before the flood, which meant that during the flood event they were able to connect with each other and provide assistance.

> .. we have a lovely street. We know most of our neighbors, … My son's school contacted us/volunteers, "Do you need a hand?" … So they came on the Sunday after … (2256)

Participants viewed the shared space as a resource to offer or receive help or support, reinforcing a shared view that physical proximity facilitates interaction, familiarity, and collective action, particularly during times of crisis.

The notion of community as a geographically bounded entity remains a dominant conceptualization among participants. However, the data suggests that physical proximity alone does not define community; rather, it is the activation of place-based relationships during a disaster event that gives this form its meaning. The flood acted as a catalyst, transforming latent spatial relationships into active social networks. This supports earlier work on place attachment [21,22] and a more recent cyclone study [37] but also highlights the conditional nature of spatial community—its relevance emerges most clearly in moments of disruption.

4.1.2. Community based on shared connections

Beyond geography, participants emphasized the role of informal networks and shared experiences as central to their sense of community. These relational ties were often forged, strengthened, or repurposed during the flood, creating a sense of solidarity and mutual aid. In the setting of the floods, people were bound by their common experiences across and within the group. In this context, the network of connections offered resources of support and goods, of advice and friendship.

> There was quite a sense of community out there because we're pretty popular; because everyone would come and have a look at the flood. But [name of suburb] became an island. It was cut off - …. we were our own little island. …. even the mobile phone stop working when the towers ran out of battery. No home phone; no power; … it was pretty social. As people's freezers defrosted, we were having communal barbecues for breakfast, lunch and dinner– all the friends came round for barbies. So that was quite a nice time. We had everything we needed. We weren't short on supplies. We had a camper trailer; had water. We weren't concerned; just wait it out. (2203)

This theme was distinct from the perception of community as a shared space because—as seen in the example above—the members of this group had not previously been bound by their close proximity to each other. Their connections were generated out of their situation rather than physical proximity. The absence of formal infrastructure prompted spontaneous gatherings and resource sharing, reinforcing the idea that community can emerge through shared adversity rather than pre-existing ties.

Participants' emphasis on shared experiences and informal networks points to a relational conceptualization of community that transcends geography. These connections were often forged through the flood itself, suggesting that community can be event-generated rather than pre-existing. This challenges static definitions and aligns with Räsänen et al.'s [1] notion of interaction-based communities, but the data in this study suggests that such communities are not only grounded in everyday life, they reflect the findings of Hou et al. (2024) in that connectivity is activated during hazard events. The flood created new relational infrastructures, often informal and temporary, that facilitated mutual aid and emotional support.

4.1.3. Community based on shared interests and values

A third conceptualization reflected normative dimensions of community, where shared values such as reciprocity, care, and collective responsibility underpinned community identity and action. This form of community is less about who people are or where they live, and more about what they do together and why they do it. The flood revealed latent moral economies within neighborhoods, where people acted not out of obligation but out of a shared sense of purpose. This resonates with Dunham et al.'s [20] communities of interest and practice and the agency feature of the community described by Hou et al. [38], but the data suggest a hybrid form—where shared values and shared action converge in response to a common threat.

Several participants described community as a collective of individuals united by common goals, values, or activities. These communities were often activated during the flood response, demonstrating how shared purpose can mobilize collective effort. Discussions of communities based on shared interests reflected a strong awareness of the bonds forged on common values. A strong theme in the data reflected that some types of community consisted of people working together towards a common goal. In some cases, this related to preparing for the flood, and in others, it was about everyone pitching in to get things cleaned up.

> everybody helps everybody … our neighbors gets really close together; because we don't have all the things we need to clean. … together; the whole neighborhood of the street, …; they all came. … and create this feeling of community. I think that is probably the best thing out of this very unfortunate event; is the closeness of the neighbors. (2212)

> … some people came and took washing; things that needed … to be washed; that might have been savable. … -an old box of photo albums that got wet. My neighbor across the road took them; and diligently dried them … for the next six weeks. (2257)

These perspectives highlight how shared values—such as care, reciprocity, and responsibility—can underpin community identity and action and suggest the value of action in its contribution to individual agency. These examples resonate with Dunham et al.'s [20] communities of interest and practice, while suggesting a hybrid form where shared values and collective action converge in response to crisis. Such moral economies illustrate how normative commitments can mobilize agency and strengthen resilience [12].

4.1.4. Community as pop-ups: an ephemeral response to a time-bound event

A novel category emerged: pop-up or ephemeral communities—temporary, situationally emergent groups formed to address immediate needs during the flood. These collectives were characterized by transience, informality, and functional orientation, often dissolving once recovery progressed. These pop-up communities were defined by their responsiveness to immediate needs, rather than by enduring ties, interests or formal structures. Temporary or transient communities or those that emerged as an ephemeral response to a time-bound event were identified by participants recognizing this was a unique situation in response to a disaster.

> When we decided to evacuate and take our furniture across the road to [name] place, nine people turned up in our house; just strangers, some neighbors, some friends; and within an hour, the house - well, it wasn't empty but they took our bed; they took the lounge; they took lots of things … So within an hour, honestly, these nine people had either put things up on top of the tables, just praying that if the water came in the house, it wouldn't go above table height. (2272)

The identification of pop-up communities challenge static models of community resilience by demonstrating that social organization can be rapidly improvised in response to crisis. Unlike organized volunteer groups, these formations lacked formal structure and continuity, yet were instrumental in resource sharing and coordination. Their emergence underscores the importance of theorizing community as temporally contingent and hazard-responsive [42,46]. These were temporary, situationally emergent collectives that form in response to a time-bound event and are defined by their transience, informality, and functional orientation. They were not sustained by shared history or identity, but by immediate need and spontaneous coordination. These data show that these communities often operated outside formal structures, relying on improvisation and digital platforms to mobilize resources and information. This challenges traditional models of community resilience, which assume continuity and cohesion, and suggests the need for a more fluid and responsive framework. In this sense, the community formed because of the disaster, so it was transient or short lived. Shared experiences and consequent needs during the flood created a connection between people who otherwise would not be connected.

> The worst part was: when I did come the next day … there were just strangers everywhere in the house; throwing my belongings out onto the footpath. So when I arrived, there was a big pile of stuff already out there. … People were saying, "It was great to get help but people were just throwing things out". (2224)

Social media played a key role in enabling these ephemeral networks. One participant noted that a previously inactive Facebook page became a vital communication tool:

> I live in a complex of 90 townhouses; … but there were people that evacuated; and there were certainly people that stayed within the complex. And a Facebook page got set - well, there had always been a Facebook page but I don't think many people had been using it; but lots of people started using it during that time period, to just let people know what was going on. (2210)

These communities were not necessarily connected through anything other than their need to respond to the challenge of the floods. Many of the comments relating to ephemeral communities also recognized the centrality of social media such as Facebook and Twitter to the formation of groups and their operation. Temporary communities were connected at a point in time (relating to the flood) but after the flood, most participants indicated they regarded these connections as situational and did not keep them going.

4.1.5. Interpretive summary: study aim 1

Together, these four conceptualizations illustrate that community in disaster contexts is multi-dimensional, dynamic, and contingent. While some forms are rooted in place or identity, others are activated by circumstance and dissolve once the crisis abates. The findings affirm existing typologies [1,20] but extend them by introducing temporality and emergence as critical dimensions. The identification of pop-up communities highlights a previously overlooked form of social organization, underscoring the need for EM frameworks that anticipate and support ephemeral networks alongside enduring ones. While these categories were often described as discrete, overlap was evident, particularly between physical and ephemeral communities. For example, existing neighborhood Facebook pages became hubs for flood-related coordination, drawing in residents of a complex who had not previously engaged with the Facebook group.

Participants provided four categories of community: groups of people bound by a shared space, shared connections, shared interests and values, and shared ephemeral challenges. Except for ephemeral communities, these community conceptualizations resonated with many of the categories identified in extant literature in the preceding section of this paper.

While there was potential for overlap between these four categories, participants tended to provide examples where they were positioned as discrete entities. However, there were examples where communities had clearly been established prior to the floods but had been given fresh impetus from the flood situation. Many place-based communities had established Facebook pages, yet these pages were accessed by people in the area who had not previously connected with the group, but who needed to find out what was happening and who could help them. While the literature recognizes a person can be members of multiple types of communities, ephemeral or pop-up communities were unique to the disaster event, and their ties quickly dissolved once the event had passed.

4.2. The role of community in preparing for, responding to, or recovering from, a disaster event

The second aim of this study was to examine the roles communities played across the disaster cycle—before, during, and after the 2022 Queensland floods. Analysis revealed three primary functions enacted by communities: providing support, demonstrating leadership, and facilitating the flow of relevant, timely, and trusted information. These roles were not discrete; they often overlapped and evolved as the disaster unfolded, reflecting the adaptive and distributed nature of community action in disaster contexts.

4.2.1. Community as a source of support

Support emerged as a foundational function of community during the flood event. This support was both material and emotional, and it was enacted through pre-existing relationships as well as newly formed connections. What is particularly notable is that support was not limited to formal or institutional actors; rather, it was community members themselves who became the primary providers of care and assistance.

> *You could argue that the flood events re-enforced that because people support each other. But it's more than that. For whatever reason, people know each other; people are there for each other; people connect in all sorts of ways. And this has happened since 2011 [*last flood event*]; … there's a WhatsApp group for this little pocket. And people will send each other a message to say they are going to* [hardware store] *Bunnings, "And does anyone want anything?" … it's a very genuine and consistent connection between people. (2251)*

This finding reinforces the centrality of social capital as a critical resource in disaster resilience ([11]; Putnam, 1994). However, the data also suggest that support was not simply a function of strong ties. In many cases, weak or newly formed ties—such as those between neighbors who had not previously interacted—proved equally valuable. This highlights the importance of bridging social capital and suggests that resilience is not only about the strength of existing networks but also about the capacity of communities to rapidly generate new ones.

4.2.2. Community as a site of leadership

Leadership within communities was both formal and emergent during and after the floods. While some participants identified local councilors or known figures as established leaders, many described situational leadership—individuals who stepped into leadership roles because they had resources, information, or simply the willingness to act. These leaders were often not designated or trained but were recognized by others for their initiative and responsiveness. Often, the resources these emergent leaders were able to provide addressed needs that formal systems and leaders had not been able to address. More importantly, many participants were seeking out others in their community to lead and guide them during this situation. While in many cases, local authorities and pre-existing community leaders did step up and take these roles, in other cases, local community members filled the gap. For example, this comment from a local councilor suggested the importance of sharing their responsibilities with citizens in their area:

> The other thing that I loved about this situation that evolved … because it was local help and I was sending people … "Oh, you need help and you are in this street … there were neighbors meeting neighbors, and for me, that was really important; because the support you need after an event like that is ongoing … (2237)

The incidental leaders came in many forms, some assuming responsibility for sharing information while others took more active roles.

> There was someone coming to the complex every day, dropping off bread rolls, sandwiches and baked goods. And they would just leave them on a table outside someone's townhouse and someone would come around and put it on the Facebook page … People were just driving through with soft drinks and really great food … It was really sad when they stopped coming! (2211)

This challenges traditional models of emergency leadership that rely on hierarchical structures and predefined roles. Instead, the findings point to a distributed model of leadership, where authority is fluid and context dependent. Leadership in this sense is not about command and control but about facilitating connections, coordinating resources, and enabling others to act. This has important implications for EM, suggesting that building community resilience requires not only engaging formal leaders but also recognizing and supporting informal leadership capacity within communities.

4.2.3. Community as an information network

A key finding was the central role communities played in producing and disseminating information. Participants consistently described community-based sources—particularly social media groups and neighborhood networks—as more relevant, timely, and trustworthy than official channels, echoing King and Gurtner's [37] observations on detail, consistency, and localization. This was especially evident in the early stages of the disaster, when institutional communication was perceived as delayed, generic, or overly cautious. Information emerged as a dominant theme across interviews, with participants emphasizing the value of community-provided updates that were localized, immediate, and credible. These qualities—relevance, timeliness, and trustworthiness—were considered critical during the flood, and for many individuals, their communities were the primary source of such information.

The analysis differentiated these three types of information (relevant, timely, and trusted) due to participants wanting more (hyper) localized flood information that was relevant or tailored to their own area. In most cases, this information was collated, shared, and contextualized through social media, or newly developed ephemeral groups formed due to the flood. The most desired information was viewed as being relevant because it was localized to a specific place or area.

> It [social media] became a really strong source of information for what was happening in the community because everybody would put in their two bits about, "Have they got power or light; which food shops are open; where can you get ice?" - ice was a big one - tradies is a big one … "who can charge my phone?" (2216)

The value of community-based information lay in its local specificity and contextual relevance. People needed to know which streets were flooded, which shops were open, and who had power or supplies. This kind of hyper-local intelligence was often unavailable from formal sources but was readily shared through community networks. Trust was also a key factor: information from

known neighbors or community pages was more likely to be acted upon than messages from unfamiliar or bureaucratic sources. Trusted information was viewed as information that could be taken on face value. Trust was enhanced when people had an existing contact or connection with the group.

> The community have an amazing community page in the [suburb] area. I love the [suburb] community, to be honest. (2272)

> I keep in touch with my local neighbors and community via a private Facebook page for our neighborhood/suburb so we were all aware of who was more badly affected. (2207)

At a time of crisis when people had to make quick decisions about which information to trust, they prioritized sources and connections in which they already had trust. This finding aligns with research on risk communication and trust [7,51] but extends it by showing that communities are not just recipients of information; they are active producers and curators of it. In this sense, communities function as decentralized communication systems, capable of filling gaps left by formal institutions. This has significant implications for emergency communication strategies, which must move beyond top-down messaging to integrate and support community-based information flows.

4.2.4. Interpretive summary: study aim 2

The roles enacted by communities during the flood—support, leadership, and information—demonstrate their capacity to respond adaptively and fill critical gaps left by formal emergency systems. These roles were not pre-assigned but emerged organically, reflecting the dynamic nature of community resilience.

Support was mobilized through both strong and weak ties, showing that social capital is not only drawn from existing relationships but can be rapidly generated in a crisis. Leadership was often informal and situational, challenging traditional models of authority and highlighting the importance of distributed leadership. Community-based information networks were perceived as being more relevant and trusted than official sources, underscoring the need to integrate local knowledge into emergency communication strategies.

These findings suggest that community resilience is enacted through everyday practices and emergent behaviors, not just through formal preparedness. Communities are not passive recipients of aid; they are active agents of coordination, care, and communication. Recognizing and supporting these roles is essential for more responsive and inclusive EM.

5. Discussion

This study aimed to explore how ‘community’ is understood by those directly affected by a natural hazard event and to understand the roles communities play in disaster preparedness, response, and recovery. While the concept of community is widely referenced in EM literature, it is often treated as a static or geographically bounded entity [25]. The findings challenge this assumption by presenting a more nuanced, empirically grounded understanding of community as dynamic, relational, and contextually emergent. This section discusses three key contributions: extending conceptualizations of community, reframing social capital mobilization and reconceptualizing community roles in EM.

5.1. Extending the conceptualization of community: an ephemeral community

The findings reaffirm existing literature that strong communities—those with robust social ties and shared purpose—are more resilient in the face of disaster [11,12]. While the findings also affirm existing typologies of community—such as those based on place, interest, and practice [1,20]—this study goes further by demonstrating how different types of community mobilize social capital in distinct ways. Building on Dunham et al.’s [20] typology, this study proposes an extension that incorporates temporality as a defining dimension. Ephemeral communities differ from place-, interest-, and practice-based communities by their situational emergence and short-lived nature. This addition complements Räsänen et al.’s [1] interaction-based model by emphasizing crisis-driven relational formation rather than everyday social ties. Participants described community not only in terms of shared geography or values but also as a product of shared experience and emergent connection. For example, communities of place and interest often rely on pre-existing networks, while ephemeral communities emerge spontaneously, driven by situational need and urgency. These ephemeral communities, formed in response to time-bound events, represent a previously overlooked but critical dimension of disaster resilience: the formation of ephemeral communities, which arose spontaneously in response to the flood and dissolved once the immediate risk passed.

While ephemeral communities share characteristics with spontaneous volunteer groups and mutual aid networks, they differ in their formation, scope, and temporality. Unlike organized volunteer efforts, ephemeral communities arise organically, like a pop-up, often without prior affiliation or coordination. They are defined by their responsiveness to immediate, localized needs and typically dissolve once the disaster event subsides. This distinction positions pop-up communities as a unique form of social organization in disaster contexts.

The ephemeral community concept challenges static models of community resilience and calls for a more flexible, hazard-responsive framework. Unlike traditional community forms, ephemeral communities are defined by temporality, functionality, and informality. They are not sustained by long-term relationships or institutional structures but by immediate need and rapid coordination. This pattern shows that communities in disaster settings are both enduring and emergent, arising through the pressures of crisis.

Table 3 synthesizes the empirical findings with existing literature to present a refined typology of five community types—Place,

Interest, Practice, Virtual/Networked, and Pop-up—highlighting their defining characteristics, formation contexts, and roles across preparedness, response, and recovery. This framework extends traditional models by incorporating temporality and emergence as critical dimensions, offering a more nuanced understanding of community dynamics in disaster contexts.

5.2. Community as a mechanism of social capital mobilization

The study reinforces the centrality of social capital in disaster resilience ([11]; Putnam, 1994) but goes further by illustrating how different types of community mobilize social capital in distinct ways. Place-based communities activated bonding capital through proximity and familiarity. Communities of interest and practice leveraged shared goals and routines to coordinate action. Ephemeral communities demonstrated the rapid generation of bridging capital, connecting strangers through shared urgency and informal networks to meet needs that were not being addressed elsewhere. This supports Oh et al.'s [36] multilevel model of group social capital as embedded in both formal and informal structures. The findings suggest that resilience is not solely a function of existing social ties but also of a community's capacity to generate new ties under pressure and mobilize latent resources.

These insights have practical implications: EM strategies often focus on strengthening pre-existing networks but may overlook the importance of enabling emergent ones. Recognizing the dynamic nature of social capital mobilization can inform more adaptive and inclusive resilience-building approaches.

5.3. Reframing community roles in emergency management

The roles enacted by communities—support, leadership, and information—highlight their active agency in natural hazard contexts. Communities were not passive recipients of aid or instruction; they were primary actors in response and recovery. Support was mobilized through both strong and weak ties, demonstrating that social capital is not only drawn from existing relationships but can be rapidly generated through emergent connections.

Leadership within communities emerged organically and was often informal and situational, challenging hierarchical models and underscoring the importance of distributed authority. Participants described individuals who stepped into leadership roles based on proximity, initiative, or access to resources, rather than formal designation. These leaders facilitated coordination, shared information, and mobilized support, often filling gaps left by formal emergency systems. This distributed model of leadership challenges conventional EM frameworks and underscores the importance of recognizing and empowering informal leadership capacity and trusting communities to be resourceful and self-sufficient but recognizing when they need support.

Equally significant was the role of communities as decentralized information networks. Participants consistently relied on community-based sources, particularly social media and neighborhood groups, for relevant, timely, and trusted information, echoing findings by King and Gurtner [37]. These informal channels often outperformed official communication [7,51] in terms of responsiveness and local specificity. Communities thus functioned as dynamic communication ecosystems, capable of producing and curating information critical to hazard response.

These findings challenge conventional EM models that rely on hierarchical leadership and centralized communication. Instead, they point to a distributed and participatory model of resilience, where communities operate as self-organizing systems capable of complementing formal structures. This aligns with recent calls for community-centered approaches in EM [52,53 [54]] and underscores the need to engage communities not only as stakeholders but as co-creators of resilience.

Importantly, this study provides empirical support for Oh et al.'s [36] multilevel model of group social capital, showing how communities access socially generated resources both formally and informally. Participants described how support, leadership, and information—particularly relevant, timely, and trusted information—were provided by community members rather than formal institutions. This underscores the importance of recognizing community as a dynamic system of relationships and resources, rather than a static geographic or demographic entity.

Fig. 2 and Table 4 illustrate how five distinct community types—Community of Place, Interest, Practice, Virtual/Networked, and Pop-up – contribute to resilience across preparedness, response, and recovery. By integrating temporality and emergence into community theory, this study provides a refined conceptual framework for understanding community dynamics in disaster contexts. Recognizing and supporting these diverse formations is essential for developing more responsive, inclusive, and sustainable EM strategies.

Each community type arises from different formation contexts and is defined by unique characteristics that shape its role across the phases of disaster: preparedness, response, and recovery. The Pop-up Community, in particular, extends traditional conceptualizations of community by forging a role for emergent, situationally formed collectives that arise spontaneously in times of crisis. Fig. 2 illustrates how all five communities contribute to resilience through both everyday practices and adaptive, emergent behaviors. This conceptualization underscores the value of participatory approaches in emergency management, where communities are engaged not as passive recipients but as co-creators of resilience. By recognizing and supporting their inherent capacities to lead, communicate, and care during times of disruption, emergency management can foster more inclusive, responsive, and sustainable resilience strategies.

6. Implications for emergency management practice

The findings of this study have several implications for emergency management (EM) practice. They underscore the need for more adaptive, inclusive, and community-centered approaches that recognize the diversity and dynamism of community formations during disasters.

Table 3
Community typology and roles in emergency management (EM).

	Community of Place	Community of Interest	Community of Practice	Virtual or Networked Community	Pop-up Community
Defining Characteristics	Shared geographic location, place attachment, spatial proximity	Shared interests, and values; collective identity	Informal networks, shared experiences, relational ties	Interaction-based configured online or through digital modality	Time-bound, ephemeral, situationally emergent, informal and functional, spontaneous
Formation Context	Pre-existing, neighborhood-based	Pre-existing or emergent around shared purpose	Pre-existing, often catalyzed by events	Pre-existing around shared interest	Emergent during disaster, addresses unmet need/s, dissolves post-crisis
Roles in Preparedness	Fosters local awareness, builds trust through proximity	Promotes advocacy, education, and preparedness campaigns	Limited role unless previously connected	Limited role unless aligned with local needs	No role prior to event: does not exist until a need arises
Roles in Response	Enables rapid mutual aid, activates local networks	Coordinates collective action, mutual aid	Facilitates emotional and material support, solidarity	Facilitates rapid information sharing, coordination via digital platforms	Rapid coordination, resource sharing, decentralized leadership
Roles in Recovery	Supports long-term rebuilding and emotional support	Drives community rebuilding, shared recovery goals	Strengthens social cohesion, maintains informal support	Supports ongoing communication, emotional support, and resource exchange	Short-term support, often dissolves post-response
Examples from Study	Neighbors helping each other, school volunteers, WhatsApp groups	Neighborhood clean-up efforts, shared moral economy	Communal barbecues, shared resources during isolation	Facebook pages used for flood updates and coordination	Strangers helping evacuate homes, Facebook coordination
Implications for EM Practice	Engage local leaders, map neighborhood assets, support place-based networks	Leverage shared values for engagement, support collective initiatives	Recognize informal networks, support spontaneous cooperation	Integrate digital platforms into EM communication strategies, support online engagement	Anticipate emergent groups, integrate ephemeral networks into response planning
Ref	[20]	[1,20]	[1,20]	[1,20]	This study

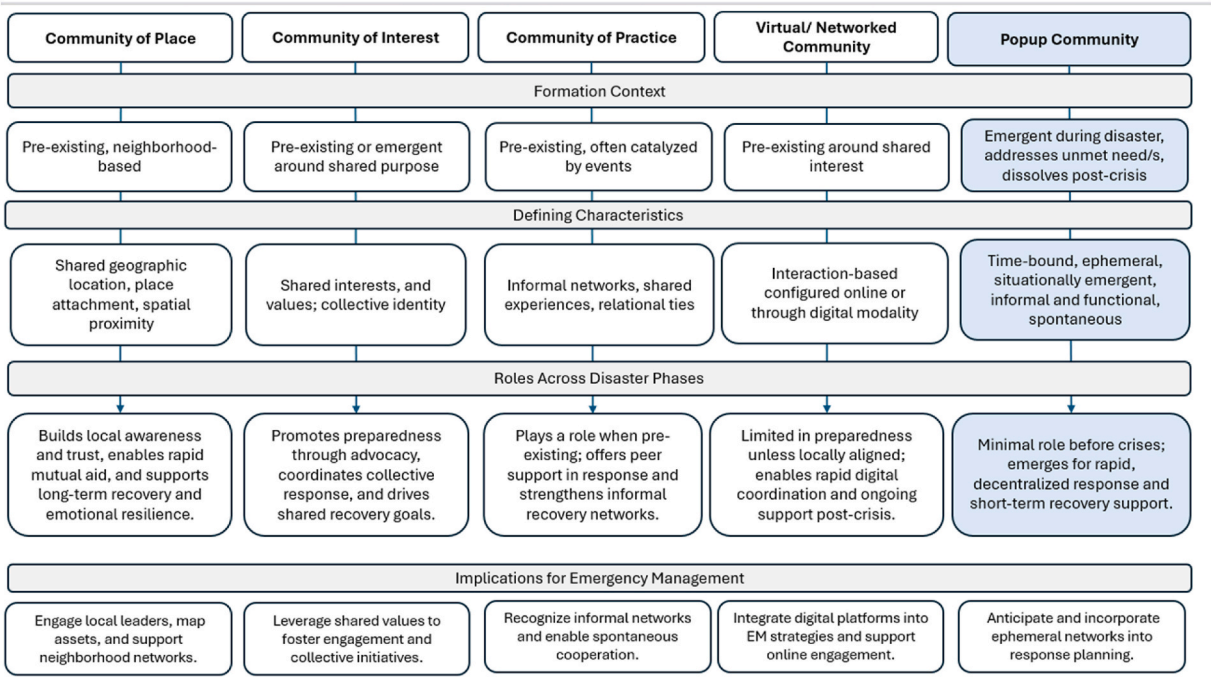

Fig. 2. Five community types: formation, characteristics and roles.

6.1. *Community typologies matter*

The findings from this study suggest a call to re-evaluate how community is defined and engaged in EM planning. Current EM planning often relies on narrow definitions of community, typically framed by geographic or demographic boundaries [25,27]. This study demonstrates that such definitions are insufficient in disaster contexts, where community is often emergent, situational, and relational. EM agencies should adopt a more flexible understanding of community that includes not only place-based groups but also communities of interest, practice, and ephemeral formations. Engagement strategies must be responsive to this fluidity, anticipating the potential for communities to emerge spontaneously during disasters. Tailoring communication and support to different community types—particularly pop-up communities—can enhance trust and effectiveness.

6.2. *Social capital as a resilience mechanism*

The findings reinforce the role of social capital as a critical determinant of resilience [11,12]. EM practice should prioritize the **mobilization of social capital** by fostering opportunities for connection, collaboration, and leadership within and across communities. This includes mapping active networks to identify areas with limited connectivity, which may indicate lower resilience. Strategies that strengthen both bonding and bridging social capital can improve preparedness and accelerate recovery.

6.3. *Information ecosystems*

Participants consistently relied on community-based sources of information and leadership, often in preference to official channels. This suggests that EM communication strategies move beyond top-down messaging and integrate community-generated information flows, particularly through social media and local networks [37]. Doing so can enhance the relevance, timeliness, and trustworthiness of disaster communication. The reliance on community-generated information, especially via social media, suggests that EM agencies must integrate community-based information channels into their information strategies. Trust and relevance are enhanced when information is localized and delivered by known, credible sources. Agencies should actively monitor and engage with these informal networks as part of their intelligence-gathering and risk communication processes.

6.4. *Informal leadership and decentralized networks*

Leadership in disaster contexts often emerges organically. Recognizing and empowering informal leaders within communities can strengthen coordination and foster more inclusive recovery efforts. EM agencies should consider training and supporting these leaders during preparedness phases, while also leveraging their capacity for rapid mobilization during response and recovery.

6.5. Ephemeral communities as critical actors

The emergence of pop-up communities during the Queensland floods highlights the need for EM agencies to anticipate and support informal, situational networks. These groups often fill gaps left by overwhelmed formal systems and can be instrumental in rapid response and recovery. Integrating ephemeral communities into response planning—through flexible protocols and resource-sharing mechanisms—can improve agility and resilience.

6.6. Community activation across disaster phases

Table 4 illustrates how five distinct community types—Place, Interest, Practice, Virtual/Networked, and Pop-up—are activated across preparedness, response, and recovery. Grayscale shading indicates the intensity of activation, with "High" representing strong, visible contributions to resilience.

This visual summary reinforces the need for EM strategies that recognize both enduring and emergent community types, particularly the critical role of pop-up communities during response and early recovery.

6.7. Limitations

While this study offers valuable insights into community conceptualizations and roles during disaster events, several limitations should be acknowledged. First, the research was geographically bound to a single hazard (flooding) and a single region (southeast Queensland) limiting the generalizability of findings to other cultural or hazard contexts. This study reports only the Queensland component of a larger multi-phase project, which constrains the breadth of comparative insights across regions. Future research should extend this analysis to the full dataset and explore longitudinal patterns to understand how ephemeral communities evolve or dissolve over time. Second, the reliance on retrospective accounts introduces potential recall bias [55], as participants may have reconstructed or selectively remembered events and interactions. Third, the sample was self-selected and may reflect the perspectives of individuals more inclined to participate in community or research activities, potentially excluding more marginalized or disengaged voices [56]. Finally, while the study identified ephemeral communities as a novel conceptual contribution, their transient nature poses challenges for integration into formal EM frameworks. Their short-lived nature makes it difficult to track their evolution over time and raises important questions about whether such situational networks can be sustained or integrated into formal emergency management systems. Future research could address these limitations through comparative, multi-region studies and mixed method approaches that can triangulate findings and extend theoretical development.

7. Conclusion

This study examined how communities are conceptualized and enacted during disaster events, drawing on the lived experiences of residents affected by the 2022 Queensland floods. By introducing the concept of ephemeral or pop-up communities—situationally emergent, short-lived collectives—the research extends traditional definitions of community beyond static, place-based or interest-driven models. These findings challenge assumptions that community is fixed or permanent, demonstrating instead that it can be fluid, relational, and temporally contingent, yet still capable of mobilizing social capital and facilitating collective action during crises.

The study reframes community as an active and adaptive agent of resilience. Participants described how communities—whether enduring or emergent—provided support, leadership, and trusted information, often complementing or compensating for formal emergency management systems. This dynamic mobilization illustrates how resilience is not solely a product of pre-existing ties but can be cultivated rapidly through shared experience and collective response. It also reinforces the importance of participatory

Table 4
Community activation across disaster phases.

Community Type	Preparedness	Response	Recovery
Community of Place	High	High	High
Community of Interest	Medium	High	High
Community of Practice	Medium	High	High
Virtual/Networked Community	Medium	High	Medium
Pop-up Community	None/Low	High	Medium

Legend.
- Low Activation: Minimal role or latent presence.
- Medium Activation: Moderate engagement or support.
- High Activation: Strong, visible contribution to disaster resilience.

engagement and capacity-building as foundational elements of disaster preparedness and recovery [54].

However, the transient nature of ephemeral communities raises important questions about sustainability and integration into formal emergency management frameworks. Their short-lived existence poses challenges for longitudinal analysis and prompts inquiry into whether such networks can persist beyond the immediate crisis or evolve into more stable formations. Addressing these questions is critical for developing flexible, community-centered resilience strategies.

Future research should employ longitudinal designs to track the lifecycle of pop-up communities—from formation through dissolution or transformation—and conduct comparative studies across different hazard types and cultural contexts to refine the proposed typology. There is also a need to examine how institutional actors can better recognize, engage with, and integrate community-led efforts into formal systems, ensuring that the strengths and capacities of communities—both enduring and ephemeral—are fully leveraged in building resilience.

In conclusion, this study offers a refined, empirically grounded framework for understanding community in disaster contexts—one that acknowledges complexity, diversity, and dynamism. Strong communities are not only those that exist prior to a disaster but also those that can emerge, adapt, and mobilize in its wake. Supporting these communities, whether enduring or ephemeral, is essential to reducing disaster risk and enhancing collective capacity to respond and recover.

CRediT authorship contribution statement

Kim A. Johnston: Writing – review & editing, Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Anne B. Lane:** Writing – review & editing, Writing – original draft, Visualization, Investigation, Formal analysis, Conceptualization. **Barbara Ryan:** Writing – review & editing, Methodology, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: All Authors report financial support was provided by Natural Hazards Research Australia. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

The authors acknowledge the contributions of the broader project team involved in the *Learning from the Experiences of Residents: January to July 2022 Floods* research project; particularly Mel Taylor and Fiona Harris for their leadership and support. We also appreciate the guidance provided by the Natural Hazards Research Australia node research managers, Kat Haynes and Nicola Moore. Finally, we are deeply grateful to the participants who generously shared their experiences.

Data availability

The data that has been used is confidential.

References

[1] A. Räsänen, H. Lein, D. Bird, G. Setten, Conceptualizing community in disaster risk management, Int. J. Disaster Risk Reduct. 45 (2020) 101485, https://doi.org/10.1016/j.ijdrr.2020.101485.
[2] N. Spezia, S. De Rosis, S. Nuti, Sense of community in the context of disease prevention and health promotion: a scoping review of the literature, BMC Public Health 24 (1) (2024) 3090, https://doi.org/10.1186/s12889-024-20515-8.
[3] T. Turin, M. Kazi, N. Rumana, M. Lasker, N. Chowdhury, Conceptualising community engagement as an infinite game implemented through finite games of research, community organising and knowledge mobilisation, Health Expect. 26 (5) (2023) 1799–1805, https://doi.org/10.1111/hex.13801.
[4] S. Carrasco, T. Egbelakin, N. Dangol, Fostering recovery through stakeholders-community collaboration in post-earthquake recovery in Nepal, Int. J. Disaster Risk Reduct. 88 (2023) 103619, https://doi.org/10.1016/j.ijdrr.2023.103619.
[5] C. Mutch, How schools build community resilience capacity and social capital in disaster preparedness, response and recovery, Int. J. Disaster Risk Reduct. 92 (2023) 103735, https://doi.org/10.1016/j.ijdrr.2023.103735.
[6] B. Ryan, K.A. Johnston, M. Taylor, R. McAndrew, Community engagement for disaster preparedness: A systematic literature review, Int. J. Disaster Risk Reduct. 49 (2020). https://doi.org/10.1016/j.ijdrr.2020.101655.
[7] M. Granatt, On trust: using public information and warning partnerships to support the community response to an emergency, J. Commun. Manag. 8 (4) (2004) 354–365, https://doi.org/10.1108/13632540410807745.
[8] Queensland Reconstruction Authority, 2021–22 Southern Queensland floods. https://www.qra.qld.gov.au/2021-22-Southern-Queensland-Floods, 2022.
[9] D. Every, J. McLennan, A. Reynolds, J. Trigg, Australian householders' psychological preparedness for potential natural hazard threats: an exploration of contributing factors, Int. J. Disaster Risk Reduct. 38 (2019) 101203, https://doi.org/10.1016/j.ijdrr.2019.101203.
[10] D. Aldrich, Building Resilience: Social Capital in Post-disaster Recovery, University of Chicago Press, 2012.
[11] D.P. Aldrich, M.A. Meyer, Social capital and community resilience, Am. Behav. Sci. 59 (2) (2015) 254–269, https://doi.org/10.1177/0002764214550299.
[12] C. Firth, D. Maye, D. Pearson, Developing "community" in community gardens, Local Environ. 16 (6) (2011) 555–568, https://doi.org/10.1080/13549839.2011.586025.
[13] Federal Emergency Management Agency, Whole community. https://www.fema.gov/about/glossary/whole-community, 2020.
[14] Department of Home Affairs, National strategy for disaster resilience. https://www.homeaffairs.gov.au/emergency/files/national-strategy-disaster-resilience.pdf, 2011.

[15] T.K. Bradshaw, The post-place community: contributions to the debate about the definition of community, Community Dev. 39 (1) (2008) 5–16, https://doi.org/10.1080/15575330809489738.
[16] G.A. Hillery, Definitions of community: areas of agreement, Rural Sociol. 20 (1) (1955) 111–123.
[17] A. Mason, Community, Solidarity, and Belonging: Levels of Community and their Normative Significance, Cambridge University Press, 2000.
[18] G. Delanty, Community, third ed., Routledge, 2018.
[19] K.M. MacQueen, E. McLellan, D.S. Metzger, S. Kegeles, R.P. Strauss, R. Scotti, L. Blanchard, R.T. Trotter II, What is community? An evidence-based definition for participatory public health, Am. J. Publ. Health 91 (12) (2001) 1929–1938, https://doi.org/10.2105/AJPH.91.12.1929.
[20] L. Dunham, R.E. Freeman, J. Liedtka, Enhancing stakeholder practice: a particularized exploration of community, Bus. Ethics Q. 16 (1) (2006) 23–42, https://doi.org/10.5840/beq20061611.
[21] D.M. Hummon, Community attachment, in: I. Altman, S.M. Low (Eds.), Place Attachment, Springer, 1992, pp. 253–278, https://doi.org/10.1007/978-1-4684-8753-4_12.
[22] L.C. Manzo, D.D. Perkins, Finding common ground: the importance of place attachment to community participation and planning, J. Plann. Lit. 20 (4) (2006) 335–350, https://doi.org/10.1177/0885412205286160.
[23] D.A. Long, D.D. Perkins, Community social and place predictors of sense of community: a multilevel and longitudinal analysis, J. Community Psychol. 35 (5) (2007) 563–581, https://doi.org/10.1002/jcop.20165.
[24] L. Xie, J. Pinto, B. Zhong, Building community resilience on social media to help recover from the COVID-19 pandemic, Comput. Hum. Behav. 134 (2022) 107294, https://doi.org/10.1016/j.chb.2022.107294.
[25] L. Pearce, Disaster management and community planning, and public participation: how to achieve sustainable hazard mitigation, Nat. Hazards 28 (2–3) (2003) 211–228, https://doi.org/10.1023/A:1022917721797.
[26] J. Buckland, M. Rahman, Community-based disaster management during the 1997 Red River flood in Canada, Disasters 23 (2) (1999) 174–191, https://doi.org/10.1111/1467-7717.00112.
[27] G. Marsh, P. Buckle, Community: the concept of community in the risk and emergency management context, Aust. J. Emerg. Manag. 16 (1) (2001) 5–7.
[28] O. Patterson, F. Weil, K. Patel, The role of community in disaster response: conceptual models, Popul. Res. Pol. Rev. 29 (2) (2010) 127–141, https://doi.org/10.1007/s11113-009-9133-x.
[29] H. Tariq, C. Pathirage, T. Fernando, Measuring community disaster resilience at local levels: an adaptable resilience framework, Int. J. Disaster Risk Reduct. 62 (2021) 102358, https://doi.org/10.1016/j.ijdrr.2021.102358.
[30] A. Ostadtaghizadeh, A. Ardalan, D. Paton, H. Jabbari, H.R. Khankeh, Community disaster resilience: a systematic review on assessment models and tools, PLOS Currents Disasters (2015), https://doi.org/10.1371/currents.dis.f224ef8efbdfcf1d508dd0de4d8210ed.
[31] L. Okdinawati, M.I. Dwiputranti, R.A. Oktora, The role and multi parties interaction and coordination mechanism on disaster management, Int. J. Emerg. Manag. 15 (2) (2019) 187–204, https://doi.org/10.1504/IJEM.2019.10099380.
[32] B. Jin, S. Lee, Enhancing community capacity: roles of perceived bonding and bridging social capital and public relations in community building, Public Relat. Rev. 39 (4) (2013) 290–292, https://doi.org/10.1016/j.pubrev.2013.08.009.
[33] K.A. Johnston, A.B. Lane, Building relational capital: the contribution of episodic and relational community engagement, Public Relat. Rev. 44 (5) (2018) 633–644, https://doi.org/10.1016/j.pubrev.2018.10.006.
[34] E.J. Sommerfeldt, The civility of social capital: public relations in the public sphere, civil society, and democracy, Public Relat. Rev. 39 (4) (2013) 280–289, https://doi.org/10.1016/j.pubrev.2013.08.005.
[35] S. Sobhaninia, The social cohesion measures contributing to resilient disaster recovery: a systematic literature review, J. Plann. Lit. 39 (4) (2024) 519–534, https://doi.org/10.1177/08854122241238196.
[36] H. Oh, G. Labianca, M.-H. Chung, A multilevel model of group social capital, Acad. Manag. Rev. 31 (3) (2006) 569–582, https://doi.org/10.5465/amr.2006.21318918.
[37] D. Y. (2025). Information and communication for disaster resilience. Aust. J. Emerg. Manag., 40(3), 17– 28..
[38] J.Z. Hou, G. Hearn, K.A. Johnston, M. Villeneuve, A. Hebbani, M. Carroll, Embedding humanity in building sustainable community disaster resilience in Australia: a humanistic communication perspective, Aust. J. Emerg. Manag. 40 (1) (2025) 48–56, https://doi.org/10.47389/40.1.48.
[39] M. Bastian, Time and community: a scoping study, Time Soc. 23 (2) (2014) 137–166, https://doi.org/10.1177/0961463X14527999.
[40] M. Grillitsch, B. Asheim, H. Nielsen, Temporality of agency in regional development, Eur. Urban Reg. Stud. 29 (1) (2022) 3–20, https://doi.org/10.1177/09697764211028884.
[41] M. Kornberger, S. Leixnering, R.E. Meyer, The logic of tact: how decisions happen in situations of crisis, Organ. Stud. 40 (2) (2019) 239–266, https://doi.org/10.1177/0170840618765578.
[42] P. Posio, Aspired communities: reconsidering community in light of the temporal dimensionality of social life, Anthropol. Theor. 24 (4) (2024) 371–396, https://doi.org/10.1177/14634996241231667.
[43] J.R. Holley, K.A. McComas, C.E. Lambert, N.P. Snider, G.K. Tucker, Responding to flood risk in Louisiana: the roles of place attachment, emotions, and location, Nat. Hazards 113 (1) (2022) 615–640, https://doi.org/10.1007/s11069-022-05316-9.
[44] A. Hofflinger, À. Boso, J. Leiva, J. Garrido, C. Leiva, Wildfires and social capital: evidence from Chile, Int. J. Disaster Risk Reduct. 127 (2025) 105665, https://doi.org/10.1016/j.ijdrr.2025.105665.
[45] C.B. Cuadra, M. Rämgård, A community-based response to the COVID-19 pandemic: social capital in action, Int. J. Disaster Risk Reduct. 116 (2025) 105158, https://doi.org/10.1016/j.ijdrr.2024.105158.
[46] F.H. Norris, S.P. Stevens, B. Pfefferbaum, K.F. Wyche, R.L. Pfefferbaum, Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness, Am. J. Community Psychol. 41 (1–2) (2008) 127–150, https://doi.org/10.1007/s10464-007-9156-6.
[47] Taylor, M., Miller, F., Johnston, K., Ryan, B., Lane, A., King, R., Narwal, H., Miller, M., Simon, H., & Dabas, D. (2023). Learning from the experiences of residents: January to July 2022 floods. Aust. J. Emerg. Manag. 38(3). Australian Institute for Disaster Resilience. https://knowledge.aidr.org.au/resources/ajem-july-2023-learning-from-the-experiences-of-residents-january-to-july-2022-floods/.
[48] E. Newman, E. Risch, N. Kassam-Adams, Ethical issues in trauma-related research: a review, J. Empir. Res. Hum. Res. Ethics. 1 (3) (2006) 29–46, https://doi.org/10.1525/jer.2006.1.3.29.
[49] S. Smillie, J. Riddell, Supporting emotionally demanding research: developing guidance for a university research centre, in: Qualitative Researcher Vulnerability, Taylor & Francis, 2023.
[50] H.F. Wolcott, Writing up Qualitative Research, third ed., Sage, 2009.
[51] R.L. Heath, D.D. Abel, Proactive response to citizen risk concerns: increasing citizens' knowledge of emergency response practices, J. Publ. Relat. Res. 8 (3) (1996) 151–171, https://doi.org/10.1207/s1532754xjprr0803_01.
[52] K.A. Johnston, M. Taylor, B. Ryan, Emergency management communication: the paradox of the positive in public communication for preparedness, Public Relat. Rev. 46 (2) (2020) 101903, https://doi.org/10.1016/j.pubrev.2020.101903.
[53] K.A. Johnston, M. Taylor, B. Ryan, Engaging communities to prepare for natural hazards: a conceptual model, Nat. Hazards 112 (3) (2022) 2831–2851, https://doi.org/10.1007/s11069-022-05316-9.
[54] B. Ryan, K. Johnston, M. Taylor, Recognising and measuring competency in natural hazard preparation: a preparedness competency index, Int. J. Disaster Risk Reduct. 73 (2022) 102882, https://doi.org/10.1016/j.ijdrr.2022.102882.
[55] S.S. Coughlin, Recall bias in epidemiologic studies, J. Clin. Epidemiol. 43 (1) (1990) 87–91, https://doi.org/10.1016/0895-4356(90)90060-3.
[56] J. Heckman, Varieties of selection bias, Am. Econ. Rev. 80 (2) (1990) 313–318.