

## From connection to engagement: the role of community connectedness in urban flood risk management

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This study investigated individual perceptions of community connectedness and the spillover effects of flood risk information within communities to address a critical gap in the flood risk reduction research. The individualisation of flood risk management (Kuhlicke et al., 2020) means a greater emphasis on experts advocating for households to adopt proactive risk mitigation behaviours (Emergency Management Commissioner 2023). However, empirical research on the factors influencing individuals to act remains limited. Further, current methods of top-down information dissemination have been critiqued for not accounting for social, psychological, and geographical factors that affect behaviour (Beck, 2010; Cook & Overpeck, 2018; McEwen et al., 2018). As a result, understanding community connectedness and its influence on flood preparedness behaviours has become a key area of focus. While community connectedness is often framed within social capital and collective resilience (Aldrich & Meyer, 2014), less attention has been paid to the individual perceptions of connectedness and how these perceptions influence preparedness behaviours. By examining the factors that shape individual perceptions of community connection, this study aimed to highlight the significance of community connectedness for individuals in the context of flood risk management (FRM). My analysis was guided by three questions: 1) how connected do individuals living in an area at risk of flooding feel to their community? 2) what influences perceptions of community connection? and 3) how does community connection influence spillover effects?

The CEDRR research team conducted doorknocking in Kingston, Australia, targeting households with a 1% Annual Exceedance Probability. The objective was to engage residents face-to-face, build rapport, and invite participation in the study. Participants ( $n = 272$ ) completed a 30-minute semi-structured initial engagement, followed by a 10-minute follow-up engagement six months later. To explore factors influencing community connectedness, I completed an inductive analysis. Developing a framework for community connection allowed for the investigation of underlying factors that influence an individual's perception of their connectedness. The second phase of analysis involved exploring whether community connection influences spillover effects – in other words, whether connection influences the dissemination of flood risk information throughout a community.

Through qualitative analysis, three key findings emerged: 1) the influence of reciprocal care on connection, 2) the influence on transience on individual feelings of connection to community, and 3) the role of connection to community in amplifying spillover effects. Reciprocal care among neighbours was a central theme, with 34 participants (12%) describing mutual support and a sense of familiarity with their neighbours. Individuals who know and engage with their neighbours tend to feel more connected, with reciprocal care manifesting as both 'structured care' (built through established ties and routines) and 'spontaneous care' (emerging in crises). These two temporalities reflect the relational nature of community connection, often influenced by the longevity of residence, particularly in this sample of mostly homeowners (84%). Existing literature shows that emergencies can shift these interactions, prompting individuals to mobilise resources and their connections to community (Kanakakis & McShane, 2016), which inadvertently strengthens community resilience. These actions not only reveal individual agency but also a latent capacity for reciprocal care during crises, reinforcing community connectedness and improving emergency preparedness. This study highlights how everyday exchanges – through, for example, text groups or habitual interactions with neighbours – play a vital role in enhancing both individual connectedness and collective preparedness.

Secondly, participants who articulated a lack of community connection reported 'transience' as a significant factor ( $n = 41$  or 15%). Transience was described in two ways: long-term residents lamented changes due to frequent neighbour turnover, while 'temporary' residents, especially renters, felt disconnected after recently moving to the area. This distinction suggests that the permanence of residents directly affects their sense of connection. Frequent demographic shifts can erode connections among long-term residents, while temporary residents may lack the desire or capacity to establish strong ties, hindering community involvement. Previous studies have highlighted the role of time in the neighbourhood (Boon, 2013; Marsh & Buckle, 2001) and homeownership (Mulilis et al., 2006) in disaster preparedness. This study built on this to suggest that homeowners, with a vested interest in the area, are more likely to engage in community risk discussions and exhibit 'structured' community connections. In contrast, temporary residents may feel less invested in their neighbourhoods, limiting their motivation to engage in community preparedness. This has implications for how flood preparedness initiatives are designed and targeted, suggesting that efforts should consider the differing levels of engagement and connection among transient versus established residents

to effectively target community resilience and preparedness strategies. This is particularly relevant in the context of strategic plans such as the State Emergency Management Plan in Victoria, which indicates that individuals moving to a new area have a responsibility to a) learn about the risks of the area and b) make social connections (Emergency Management Commissioner 2023).

Finally, and perhaps most significantly, was the impact of community connectedness on spillover effects. Three in four or 75% of participants reported sharing something about the initial engagement to a non-participant. Participants spilled over various information to non-participants, including targeted information around flood risk, but also non-targeted information about for example, street security. Of the 98 participants who indicated in the initial engagement that they feel either 'very' or 'extremely' connected, 79 (81%) reported in the follow-up that they had spilled over to a non-participant. On the other hand, of the 68 participants who indicated that they did not spillover, 71% ( $n = 48$ ) of them had reported feeling only 'moderately', 'slightly' or 'not at all' connected to their community. This suggests that individuals who do not feel a sense of connection to their community are significantly less likely to spillover, highlighting a) the significance of community connectedness and b) the imperative for participatory approaches to FRM which acknowledge these hindrances and seek to foster community connectedness.

Half of the participants who spilled over had spoken with members of their household ( $n = 101$  or 50%), and/or 'family and friends' ( $n = 83$  or 41%), while 28 (14%) had spoken with their neighbours. The most frequently identified topics included targeted information about flood risk ( $n = 121$  or 60%) and ancillary spillovers, i.e. spillovers into a context or situation that is not related to flood risk mitigation or preparedness (secondary hazards including personal health, security, other hazards) ( $n = 93$  or 46). Participants also discussed emergency planning ( $n = 35$  or 17%) and 'all hazards', i.e. conversations about different types or multiple hazards ( $n = 41$  or 20%). This suggests that the focus on risk (in particular, flood risk) in the initial engagement was of interest or perhaps concern to many. Interestingly, 50 participants (25%) spilled over information regarding the CEDRR methods around relationship-building and community engagement.

These findings exemplify how community engagement approaches can leverage community connections to create spillover effects that amplify risk knowledge and proactive behaviours among individuals. This is reinforced by the term "integrated connectedness to a storytelling network" (Kim & Ball-Rokeach, 2006), whereby community connections enhance communications infrastructure amongst individuals and therefore dissemination of knowledge and resources. In other words, those with strong connections to a 'storytelling network' are more likely to engage in disaster preparedness activities because they are better positioned to access information, resources, and motivation (Kim & Kang, 2010). This can be seen in the findings through participants who, for example, noted that the initial engagement 'prompted conversations with neighbours' and ignited 'local discussions'. The initial engagement spilled over into informal networks of concerned and interested residents through existing connections to community, highlighting the value of community engagement approaches in fostering conversation, interest and the dissemination of risk knowledge.

This study identified factors that enhance and hinder individual feelings of community connection, providing a framework through which practitioners, researchers and governments can better understand the dynamics of these connections. Participants with greater feelings of connection to their community spilled over more readily from the initial engagements to non-participants. On the other hand, individuals who felt less connected to their community were less likely to share information, indicating that feelings of connection directly impact knowledge dissemination. The findings suggest that fostering engagement among motivated individuals can amplify spillover effects, highlighting the potential for targeted outreach strategies that leverage community connections to enhance disaster preparedness and resilience. Community engagement initiatives that focus on enhancing connectivity – such as neighbourhood events, door-knocking campaigns to facilitate conversations, or broader community-led initiatives in collaboration with organisations – can initiate important dialogues and prompt these spillovers. On the other hand, further research building upon the ideas of hindrance to and inequalities of community connection is vital for flood risk practitioners. Transience affects both long-term residents and transient individuals or households, ultimately begging the question, 'how might governments or flood risk managers better target these 'disconnected' individuals?'

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