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Short communication

When natural disasters occur in unexpected places

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Abstract
Climate change is contributing to an increase in the frequency, intensity, and geographic reach of natural disasters, exposing communities historically considered low risk to potential harm. This editorial examines how disasters occurring in unexpected locations challenge conventional preparedness assumptions and offers preliminary lessons derived from work in South Carolina after Hurricane Helene. First, effective preparedness requires stronger pre-disaster relationships between government agencies, nonprofit organizations, and vulnerable communities to facilitate rapid and trusted mobilization of resources. Second, strong place attachment influences residents' preferences for rebuilding rather than relocating, suggesting that resilience strategies should prioritize in-place adaptation and community participation in recovery planning. Third, disaster recovery unfolds over extended, multi-stage processes that require coordinated cross-sector collaboration addressing housing, health, employment, infrastructure, and social support systems. As climate-driven disasters increasingly affect previously unexposed regions, proactive planning, community engagement, and integrated institutional networks will be essential for health and social workers.

Lessons learned when natural disasters occur in unexpected places

The general consensus is that climate change originating from human activity is contributing to a global increase in natural disasters (Wen et al., 2023; Worou and Messori, 2025; Xekalakis et al., 2025). As the number and magnitude of natural disasters increases, so does the number of places impacted, including communities historically considered at low risk. Because of the potential for substantial social and economic losses, even communities perceived at low risk would benefit from preparing for the possibility of a disaster. This editorial examines how the increase in natural disasters are affecting unsuspecting communities, reflects on preliminary lessons learned from Hurricane Helene (Category 4), which impacted inland South Carolina, (USA) and includes research ideas.

Natural disasters increasingly occurring in new places

Climate-related natural disasters (e.g., floods, storms, droughts, wildfires, and extreme temperatures) account for the majority of disaster events and associated losses globally (United Nations Office for Disaster Risk Reduction, 2025). Many of the most common disasters involve the transfer of water between land and the atmosphere and are linked to increased atmospheric moisture, higher sea-surface temperatures, and altered circulation patterns (AghaKouchak et al., 2020; Wen et al., 2023; Worou and Messori, 2025). Compound disaster events, such as co-occurring droughts and heatwaves or drought–flood sequences, are also increasing in frequency and intensity (Worou and Messori, 2025). In contrast, geophysical disasters (e.g., earthquakes and volcanic events) have remained relatively stable over time (Fernández García et al., 2024; Ronco et al., 2026).

Globally, several communities have recently experienced disasters in ways that challenged historical expectations of risk. Within the United States alone, multiple areas have experienced certain disasters for the first time. In 2021, prolonged freezing temperatures in Texas crippled an energy system designed primarily for heat resilience, leading to widespread power outages and fatalities. This weather-related occurrence was significant not only because of the extreme cold but also due to the failure of the power infrastructure, which was ill-prepared for such conditions, leading to consequences that highlighted severe systemic vulnerabilities (Lee et al., 2022). In another example, a heat dome in the United States brought record-breaking temperatures to Washington and Oregon (regions known for mild summers), resulting in excess mortality and infrastructure stress in communities unaccustomed to extreme heat (Arnold et al., 2022; White et al., 2023).

More recently, in 2023 and 2024, Vermont experienced five federal disaster declarations related to flooding. Two of the contributing storms hit on the exact same days. Severe flooding across Vermont and other parts of New England revealed the vulnerability of inland regions that have traditionally been considered low-risk, as intense rainfall overwhelmed aging drainage infrastructure and small river basins ill-equipped to handle such volumes of water (Soares et al., 2026). Finally,

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large-scale wildfires into parts of the southeastern and northeastern United States, regions traditionally considered less fire-prone than the West, were driven by severe drought conditions, land-use changes, and forest management practices (Mitchell et al., 2014).

Extreme weather events often expose vulnerabilities in infrastructure, governance systems, and public preparedness. For example, cascading effects – where one disruption triggers secondary disruptions across infrastructure, health, and supply systems – can magnify overall impact (Shakour et al., 2024; Simpson et al., 2023). Moreover, communities with limited prior disaster experience may be less likely to evacuate promptly or maintain adequate insurance coverage (Thériault et al., 2021). A variety of structural factors contribute to increased vulnerability, including urban expansion (Wen et al., 2023), poverty (Hallegatte et al., 2018), inadequate public funding (Seddighi and Seddighi, 2020), and poor governance (Barriga Delgado et al., 2023; Simpson et al., 2023). When disasters strike communities unaccustomed to such events, misinformation, unclear communication, and inexperience among officials can increase stress and erode public trust.

Hurricane Helene

In September 2024, Hurricane Helene made landfall in Florida, tracked inland, and produced unexpected and catastrophic flooding across several southeastern states (Hong et al., 2025; Shapiro et al., 2024). Spanning approximately 600 miles, the storm resulted in more than 200 fatalities (Shapiro et al., 2024), displaced millions of residents, and disrupted access to electricity and essential infrastructure across affected communities. The scale of destruction positioned Helene among the most damaging storms in recent U.S. history (Hong et al., 2025). Several communities were unprepared, including the upstate region of South Carolina, home to the authors of this editorial.

The immediate impact was unsurprising. Heavy rains contributed to flash flooding, landslides, and widespread infrastructure damage, especially for houses build on the slopes of hills (Callaghan, 2025). Contemporary news reporting documented hundreds of confirmed deaths and sustained search-and-rescue operations, residential displacement, prolonged power outages, and disruptions to transportation corridors (Shapiro et al., 2024). Predictably, health care workers experienced access barriers and medically vulnerable populations were at increased risk (Shakour et al., 2024). The economic and social losses are still being calculated.

In the immediate aftermath of Hurricane Helene, we convened a multidisciplinary team of faculty and graduate students from civil engineering and social sciences to examine disaster preparedness and recovery decisions in communities not traditionally characterized as being at high risk. We conducted focus group discussions with affected residents, distributed a community-wide survey, and initiated partnerships with local agencies and nonprofit organizations. From our early reflections on collecting data in a community newly experiencing a disaster, we offer a few preliminary suggestions to better prepare other communities for potential disasters.

Before disaster strikes

Recent scholarship calls for a shift in how disaster recovery is conceptualized and communicated (Frameworks Institute, n.d.). Rather than framing disasters as inevitable catastrophes, public messaging should balance urgency with clear, actionable preparedness steps and locally grounded resilience strategies. For example, Sanderson et al. (2025) argued that conventional, top-down recovery models, which often frame recovery as something delivered to communities by authorities, obscure community agency, perpetuate "them and us" distinctions, and limit meaningful participation in decision-making. Their work with disaster-affected communities in Australia highlights widespread dissatisfaction with command-and-control approaches and emphasizes the importance of reframing recovery around community-centered ownership, voice, and leadership. Recasting narratives to recognize affected populations as active agents – not passive recipients – not only aligns practice with community priorities but also better addresses underlying vulnerabilities and yields more equitable and sustainable recovery outcomes.

Our early work following Hurricane Helene supports this bottom-up perspective. Collaboration with a local foundation that maintains long-standing relationships with vulnerable communities enabled rapid identification of affected residents and meaningful engagement in recovery planning. Consistent with community-centered approaches (Sanderson et al., 2025), residents were able to articulate their needs and shape institutional responses. Through a network of nonprofit organizations, existing psychosocial resources and trusted community networks were mobilized effectively (Cass et al., 2025). The lesson is that the more connected potential post-disaster government and nonprofit recovery organizations are with vulnerable communities prior to disasters, the more likely aid will be effective. An additional lesson is that building stronger neighborly relationships before a disaster should foster an expectation of mutual assistance when a disaster strikes.

Place attachment

A robust finding in disaster research is that most individuals prefer to remain in place following disaster (Sobhaninia, 2025). Even after significant loss, residents frequently express strong attachment to their homes, neighborhoods, and social networks. This preference has implications for mitigation and adaptation policies. Programs that assume voluntary relocation as a primary pathway to safety may encounter resistance or exacerbate distress if they fail to account for place attachment, social cohesion, and the meaning embedded in local environments. Research should therefore continue to explore the conditions under which relocation is acceptable, as well as the support necessary for in-place recovery to be both safe and sustainable. Outreach efforts can benefit from engaging residents as partners in co-designing rebuilding strategies that strengthen local infrastructure while preserving valued aspects of community life.

Our preliminary findings indicate that attachment to place remained strong among residents despite substantial housing damage and dissatisfaction with aspects of the recovery process. Social ties play an important role in decisions about rebuilding or relocating. One lesson is that disaster planning might prioritize in-place resilience strategies whenever feasible and incorporate community members as partners in co-designing rebuilding efforts.

Recovery takes time

Recovery unfolds across multiple stages, including immediate response, short-term stabilization, intermediate rebuilding, and long-term adaptation. Each stage involves distinct material, psychological, and social needs. For example, financial assistance that addresses emergency shelter may need to be followed by programs that support rebuilding, mental health services, workforce reintegration, and community planning. Future research should refine stage-based models of recovery

and identify markers that signal transitions between phases, particularly in communities with limited prior disaster experience. Policy frameworks that integrate these insights can better align resources with evolving needs, reducing gaps that often emerge when short-term relief expires before long-term stability is achieved.

Recovery is also prolonged because disasters also affect multiple domains of life simultaneously, including housing, employment, education, health, transportation, and social relationships. No single program can address all dimensions of recovery. Consequently, cross-sector collaboration is essential. Coordination among public health agencies, housing authorities, educational systems, local governments, nonprofit organizations, and community groups enhances responsiveness and sustainability.

Our experiences following Hurricane Helene illustrate how partnerships among public health officials, community social work organizations, and local stakeholders facilitated flexible responses and service restoration (see also, Matheson and Silver, 2025). Such examples underscore that when organizations share information, align efforts, and involve community members in decision-making, recovery efforts are more responsive and sustainable. An important lesson is that building and maintaining these cross-sector relationships before disasters occur may be just as important as the technical aspects of preparedness itself. As more communities risk experiencing disasters for the first time, preparation will be critical to reducing loss.

Ethical aspects and conflict of interest

The authors have no conflict of interest to declare.

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