

## Emergency Alerts and Warnings and Disability Access

This annotated bibliography includes resources focused on disabled populations and disability access in warning or alert systems. This bibliography only includes references published in the last 20 years (2003-2023), in English, and focused on the United States. This bibliography is meant to support the State of Colorado's Inclusive Language Bill HB23-1237. These references were compiled through searching Web of Science, EBSCOhost, ProQuest, Google Scholar databases, and agency websites. If you identify missing references, please send them to [melissa.villarreal@colorado.edu](mailto:melissa.villarreal@colorado.edu), and we will review them for inclusion in this list.

---

## ACADEMIC JOURNAL ARTICLES, MASTER'S THESES, AND DISSERTATIONS

### Citation

Bennett, D., LaForce, S., Touzet, C., and Chiodo, K. (2018). American sign language and emergency alerts: the relationship between language, disability, and accessible emergency messaging. *International Journal of Mass Emergencies and Disasters*, 36(1), 71-87. <https://doi.org/10.1177/028072701803600104>

### Abstract

Emergency alert messages are not always completely accessible for people who are Deaf that rely on American Sign Language (ASL). ASL is a visual and conceptual language that has its own unique syntax and grammar. ASL has no roots in English and is the 3rd most taught foreign language in our colleges today. Not all individuals who are deaf rely on ASL for "clear and effective" communication. For many individuals who become hard-of-hearing or deaf later in life (late-deafened), closed captioning can provide accommodations. For individuals who are Deaf and rely on ASL as their primary language, closed captioning is not a useful means of communication because the information is being conveyed in a language most ASL users do not fully comprehend. Similarly, emergency alert messages delivered via SMS text or email can also present confusion to ASL users who may struggle to understand the written English messages. One size does not fit all; and in this case, English text as a sole means of communication is not entirely accessible for people who rely on ASL. This paper outlines the relationship between language, disability, and emergency messaging as learned from several research studies examining the accessibility of public alerts and warnings.

---

### Citation

Bennett, D., Phillips, B.D., and Davis, E. (2017). The future of accessibility in disaster conditions: how wireless technologies will transform the life cycle of emergency management. *Futures*, 87, 122-132. <https://doi.org/10.1016/j.futures.2016.05.004>

**Abstract**

By describing a transformed life cycle of emergency management, this paper re-envisioning how emergency managers may prepare for, respond to, recover from, and mitigate against disaster impacts in the future. Additionally, this paper also reveals how the broader social, political, economic, and cultural levels must change to foment a culture of safety with and for people with disabilities. The authors use the framework to identify how future wireless technologies can empower people with disabilities with regards to individual (or household) emergency preparedness and in coping with the drastic life changes following a disaster.

---

**Citation**

Calgaro, E., Craig, N., Craig, L., Dominey-Howes, D., & Allen, J. (2021). Silent no more: Identifying and breaking through the barriers that d/Deaf people face in responding to hazards and disasters. *International Journal of Disaster Risk Reduction*, 57, 102156.

<https://doi.org/10.1016/j.ijdrr.2021.102156>

**Abstract**

The Sendai Framework for Disaster Risk Reduction (2015–2030) mandates stronger inclusion of persons with disability in DRR. Yet pathways to achieving new targets for disability-inclusive disaster risk reduction (DiDRR) and their feasibility remain unclear and are under-researched. To redress this gap, we undertake a three-step longitudinal assessment that: (i) examines the challenges the d/Deaf community, a cultural and linguistic minority with an invisible disability, in New South Wales, Australia face in accessing the support they need to effectively respond to risk; (ii) presents a range of community-driven resilience-building solutions that derived from the research; and most critically (iii) follows the implementation and outcomes of key resilience building solutions over a 6-year period and the impact these ‘system feedbacks’ may have on future initiatives. Our findings show that the d/Deaf community’s vulnerability and resilience levels are influenced by insufficient levels of human capital in the d/Deaf community and emergency services, limited and uneven access to social capital (most notably information in accessible forms) and unsupportive governance structures that inhibit access to resources and inclusion in DRR processes that erodes trust. But the greatest inhibitors to building resilience over time are: (i) the absence of funds and clear directives to support long term sustainable change; and (ii) failures in understanding, engaging with and overcoming deeply embedded cultural divides that exist within the d/Deaf community and between the d/Deaf and hearing worlds.

---

**Citation**

Castro, V. (2022). Vulnerable populations and flooding: a bay area county public alert and warning case study [Master’s thesis, San Jose State University]. SJSU ScholarWorks.

<https://doi.org/10.31979/etd.72cx-77nw>

## **Abstract**

Public alert and warning systems are crucial tools that save lives and protect property in times of emergencies. In the past several decades, natural disasters have struck the nation, and effective public alerts and warnings were not disseminated to all impacted populations, calling into question the effectiveness of emergency communication systems (Wimberley, 2012).

As an example, in 2012, when Hurricane Sandy hit the east coast, public alert and warning systems reached those who had access to technological devices. However, emergency managers and alerting authorities faced the challenge of alerting all groups, including the homeless and individuals with access and functional needs, who may not have access to traditional communication methods like television and radio broadcast stations, cell phones, or landlines. In addition, individuals who experience language barriers and limited English language proficiency struggle to fully understand public alerts (Wimberly, 2012).

Locally, emergency and disaster communications have also left some of the most vulnerable populations behind. In 2017, the Coyote Creek flood in Santa Clara County devastated the City of San José. The flooding disproportionately impacted several low-income communities and households with little English proficiency, and there was limited communication between the agencies involved and the communities affected (Wadsworth et al., 2017; Wadsworth and Koehn, 2017). A history of inadequate emergency communications and floodplain mismanagement, and a lack of communication between the City of San José and the Santa Clara Valley Water District, contributed to the disaster (Rogers, 2017), and in February 2017, two consecutive atmospheric rivers led to severe flooding. The Anderson Dam, which is a reservoir, not a flood control dam, - had reached capacity and began to overflow. This event forced 14,000 residents out of their homes, with little time to evacuate (Rogers, 2017). By July 2017, there were still an estimated 200 residents that had not been able to return to their homes and were living in temporary housing (Sykes, 2017). The flooding was particularly devastating in low-income Vietnamese and Hispanic households, and mobile home parks, where there were many senior citizens and/or people with limited English proficiency (Wadsworth et al., 2017; Wadsworth and Koehn, 2017). Improved emergency communications could have provided an opportunity to warn residents and provide notice about the evacuation in multiple languages, which could have potentially avoided the substantial property damage, and the emotional distress caused by prolonged displacement (Alexander, 2020; Sykes, 2017). Drawing from these disasters, this research analyzed how four Bay Area counties issue public warnings, with a particular focus on how they engaged vulnerable populations during crisis communication. By exploring this facet of crisis communication, this research proposes potential solutions to improve communication and engagement with vulnerable populations.

---

## **Citation**

Cooper, A. C., Bui, H. T. T., Nguyễn, L. T., Nguyễn, P. K., Nguyễn, T. H. T., & Phan, D. P. N. (2021). Deaf-led organizations and disaster communication in Việt Nam: Interdisciplinary insights for disability inclusive disaster risk reduction planning. *International Journal of Disaster Risk Reduction*, 65, 102559. ISSN 2212-4209. <https://doi.org/10.1016/j.ijdr>

## **Abstract**

This paper examines the ways that disaster risk information and communication is received, shared, and acted upon by deaf-led organizations in Việt Nam, and the nature of deaf organizational participation in disaster risk reduction initiatives. Global indexes rank Việt Nam as the 6th highest country in exposure and vulnerability to extreme weather events. Việt Nam also demonstrates a high incidence of people with disabilities per capita, who are shown to have lower levels of participation in all social domains including public information and communication. Conducting language-centered original ethnographic research in six deaf organization sites in northern, central, and southern Việt Nam, this study engaged semi-structured interviews, group surveys, participant-generated disaster drawings and photographs, and participant observation to identify disaster communication and Disaster Risk Reduction (DRR) practices and challenges. Research findings identified: (i.) deaf people's access to DRR information and communication is extremely limited leading deaf-led organizations to mobilize their own disaster action; (ii.) deaf people have little-to-no access to DRR training, and available training does not reflect deaf culture or local sign languages; (iii.) deaf organizations attribute lack of access to disaster information and resources to government inattention to deaf community needs and contributions; (iv.) deaf organizations share a strong sense of responsibility to train and protect the broader deaf community. Foregrounding recommendations by deaf organization leaders, the paper advocates for establishing sustainable mechanisms for engaging deaf-led organizations in developing disaster communication, DRR training, and in disaster management.

---

## **Citation**

Engelman, A.A. (2012). Addressing disparities in emergency communication with the deaf and hard-of-hearing: cultural competence and preparedness for first responders [Dissertation, University of California Berkeley]. UC Berkeley Electronic Theses and Dissertations. <https://escholarship.org/uc/item/4j843811>

## **Abstract**

It is critically important to foster a resilient Deaf and hard-of-hearing (Deaf/HH) population empowered to act in a pre-event phase before and respond during and after critical large-scale public health emergencies. Standard all-hazards emergency preparedness risk & response communication efforts don't always reach people with barriers relating to literacy, language, culture or disability. This is a significant problem given that there is a growing body of evidence of higher risk during disasters for injury, death, property loss for 32 million Deaf/HH Americans and for 90 million Americans with low-literacy skills. It is beneficial to use a participatory, community-directed approach to improve all-hazards preparedness capacity for the Deaf/HH.

This dissertation is in a three-paper format. Part I, a literature review, systematically examines all-hazards emergency communication access for the Deaf/HH during large-scale disasters with an eye towards maximizing emergency preparedness capacity within the Deaf community. The literature review does not simply examine lessons learned from any access issues that have been documented in previous disasters but also reviews the peer reviewed and gray literature (non-

peer-reviewed literature, often non-published reports) to determine the need for interventions or systemic change on a policy-level. By identifying the scope and magnitude of the problem, this literature review is a stepping stone for Parts II and III, which aim to develop best practices for educational outreach and training for first responders.

Part II is a program evaluation utilizing mixed methods of a training program for law enforcement officers at the scene of domestic violence (DV) emergencies involving the Deaf/HH. A program evaluation of cultural competency training for the Deaf/HH has never been published, to my knowledge, despite several available trainings for first responders or medical professionals and students nationally (Appendix 1). Once trainings are developed, standardized and shown to be beneficial, they can be distributed to Deaf/HH audiences and/or first responders, which can sustain longer-term development efforts that might mitigate the impact of future emergencies or improve the quality of life/infrastructure on broader levels.

Part III is a qualitative exploration of barriers, attitudes, perceptions, and knowledge of law enforcement and first responders regarding working with the Deaf/HH in an emergency. Specific abstracts for each Part can be found in the corresponding section.

The closing section provides a summary of policy and legislative developments on a national level that are informed by Deaf/HH experts in emergency communication; these developments have implications for further research and practice to address disparities in emergency preparedness communication for the Deaf/HH.

---

### **Citation**

Morris, J.T., Mueller, J.L., and Jones, M.L. (2014). Use of social media during public emergencies by people with disabilities. *Western Journal of Emergency Medicine*, XV(5), 567-574. [10.5811/westjem.2014.4.21274](https://doi.org/10.5811/westjem.2014.4.21274)

### **Abstract**

*Introduction:* People with disabilities are generally more vulnerable during disasters and public emergencies than the general population. Physical, sensory and cognitive impairments may result in greater difficulty in receiving and understanding emergency alert information, and greater difficulty in taking appropriate action. The use of social media in the United States has grown considerably in recent years. This has generated increasing interest on the part of national, state and local jurisdictions in leveraging these channels to communicate public health and safety information. How and to what extent people with disabilities use social and other communications media during public emergencies can help public safety organizations understand the communication needs of the citizens in their jurisdictions, and plan their social media and other communications strategies accordingly.

*Methods:* This article presents data from a survey on the use of social media and other communications media during public emergencies by people with disabilities conducted from November 1, 2012 through March 30, 2013.

*Results:* The data presented here show four key results. First, levels of use of social media in general are high for people with disabilities, as well as for the general population. Second, use of social media during emergencies is still low for both groups. Third, levels of use of social media are not associated with income levels, but are significantly and strongly associated with age: younger people use social media at higher rates than older people in both groups ( $p=0.001$ ). Fourth, differences in the use of social media during emergencies across disability types are slight, with the exception of deaf and hard-of-hearing respondents, the former more likely to have used social media to receive ( $p=0.002$ ), verify ( $p=0.092$ ) and share ( $p=0.007$ ) emergency information.

*Conclusion:* These last two results suggest that effective emergency communications strategies need to rely on multiple media types and channels to reach the entire community.

---

### **Citation**

Mueller, J., Morris, J., and Jones, M. (2010). Accessibility of emergency communications to deaf citizens. *International Journal of Emergency Management*, 7(1), 41-46.  
<https://doi.org/10.1504/IJEM.2010.032043>

### **Abstract**

Since 2001, the Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) has taken an active role in promoting accessibility of emergency alerting systems for Americans with disabilities. Among federal government initiatives is a new rule that will take effect in 2010, requiring that emergency alerts be sent using Short Messaging Service (SMS) from all cell phone towers in areas affected by emergencies. This paper shares consumer input on wireless emergency communication via analysis of data gathered through the Survey of User Needs (SUNs) conducted by the Wireless RERC since 2001 and through focus groups conducted with deaf individuals.

---

### **Citation**

Putkovich, K. (2013). Emergency warning for people with disabilities. *Journal of Emergency Management*, 11(3), 189-200. [10.5055/jem.2013.0137](https://doi.org/10.5055/jem.2013.0137)

### **Abstract**

The intent of this article is to assess the current state of Emergency Warning capabilities in the United States and make recommendations on what needs to be done to cost effectively establish a National Emergency Warning System to best serve the people of the United States, including those with disabilities. As part of this assessment, terminology will be defined, existing systems will be examined, critical needs and functions will be explained, and recommendations made for

a system to deliver emergency messages to those people immediately at risk from natural and human-caused disasters in a timely and effective manner, regardless of location or situational circumstance. The assessment will include the needs and available technologies for delivering emergency warnings to people with disabilities, which are generally little understood, poorly addressed, and often ignored

---

### **Citation**

Sherman-Morris, K., Pechacek, T., Griffin, D. J., & Senkbeil, J. (2020). Tornado warning awareness, information needs and the barriers to protective action of individuals who are blind. *International Journal of Disaster Risk Reduction*, 50, 101709. ISSN 2212-4209.  
<https://doi.org/10.1016/j.ijdr.2020.101709>

### **Abstract**

Individuals with disabilities are often vulnerable to the impacts of weather hazards, such as tornadoes. This is especially true in the Southeast where vulnerability to tornadoes is already heightened due to both physical and socioeconomic factors. To better understand and possibly reduce this vulnerability, we conducted interviews with 25 residents of Alabama, Louisiana, and Mississippi who are legally blind. The goal of the interviews was to understand how people who are blind receive and respond to tornado warnings. Participants were asked to discuss the sources they use for severe weather information, their likes and dislikes about the current warning system, warning elements that allow them to personalize the risk, and barriers in their ability to obtain warning information, assess risk, or respond to it. Results suggest that good verbal description or the lack of detailed verbal description were of the greatest importance in our participants' ability to effectively use warning information and act on it. This included audio for television warning crawls, and the level of description provided during severe weather coverage. Ample geographic description was important in their ability to personalize the threat. The greatest number of barriers were associated with the risk assessment phase; however, the single most common barrier mentioned by participants was that they would have no safe place to go during a tornado.

---

### **Citation**

Villeneuve, M., Abson, L., Pertiwi, P., & Moss, M. (2021). Applying a person-centred capability framework to inform targeted action on Disability Inclusive Disaster Risk Reduction. *International Journal of Disaster Risk Reduction*, 52, 101979. ISSN 2212-4209.  
<https://doi.org/10.1016/j.ijdr.2020.101979>.

### **Abstract**

In Australia, there are no nationally consistent standards to ensure the access and inclusion of people with disability in Disaster Risk Reduction (DRR). This research focused on raising awareness about Disability Inclusive DRR (DIDRR) as a cross-sector responsibility. The Sendai Framework advocates for people-centred preventative approaches to reducing disaster risk. Grounded in the Capability Approach, the Person-Centred Emergency Preparedness (PCEP)



Framework was used in this study to direct attention to the opportunities and choices that people with disability have in emergency situations and the factors influence safety and well-being. We adapted the Structured Interview Matrix methodology to conduct seven multi-stakeholder consultations with 190 participants, including 66 people with disability in four Queensland communities. Qualitative data was analysed in two stages. First, inductive analysis was used to provide a rich, thematic description of the entire data set which gave voice to the multiplicity of perspectives. Second, the PCEP Framework was used deductively, to provide a more detailed understanding of the capabilities and support needs of people with disability in emergencies. Findings from this study enabled deep insight into the diversity and interrelatedness of factors that increase the vulnerability of people with disability and their support networks to disaster; offering new perspectives on why Australian's with disability are disproportionately affected by disaster. The Capability Approach is used to consider what is required for stakeholders to work together across sectors to increase the safety and resilience of people with disability to disaster.

### **Citation**

---

Waugh, W.L. (n.d.). Access to warnings by people with sensory disabilities: a review of the social science warning literature. [http://ncamftp.wgbh.org/ncam-old-site/file\\_download/Warning\\_people\\_with\\_disabilities.pdf](http://ncamftp.wgbh.org/ncam-old-site/file_download/Warning_people_with_disabilities.pdf)

### **Abstract**

N/A

---



## AGENCY REPORTS AND STATEMENTS

### Citation

County of Los Angeles Department of Public Health. (2017). *Strategies for inclusive planning in emergency response*.

[http://publichealth.lacounty.gov/eprp/documents/Strategies%20for%20Inclusive%20Planning%20in%20Emergency%20Response\\_FINAL.pdf](http://publichealth.lacounty.gov/eprp/documents/Strategies%20for%20Inclusive%20Planning%20in%20Emergency%20Response_FINAL.pdf)

---

### Citation

Federal Communications Commission. (2022, December 6). Access to emergency information on television. <https://www.fcc.gov/consumers/guides/accessibility-emergency-information-television>

---

### Citation

Federal Emergency Management Agency. (n.d.). Alerting people with disabilities and access and functional needs. <https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/public/alerting-people-disabilities>

---

### Citation

Intergovernmental Advisory Committee and Federal Communications Commission. (n.d.). *In the Matter of Multilingual Emergency Alerting*. <https://docs.fcc.gov/public/attachments/DOC-360696A3.pdf>

---

### Citation

Kailes, J.I. (2015). *Tips for emergency use of mobile devices*. Disability Policy Consultant. <http://www.jik.com/Mobile%20Devices.pdf>

---

### Citation

Kailes, J.I. (2020). *Checklist for integrating people with disabilities and others with access and functional needs into emergency preparedness, planning, response & recovery*. Disability Policy Consultant. <http://www.jik.com/plancklst.pdf>

---

### Citation

National Association of the Deaf. (n.d.). Position statement on accessible emergency management for deaf and hard of hearing people. <https://www.nad.org/about-us/position-statements/position-statement-on-accessible-emergency-management-for-deaf-and-hard-of-hearing-people/>

---

**Citation**

National Council on Disability. (2014). *Effective communications for people with disabilities: before, during, and after emergencies*. <https://ncd.gov/publications/2014/05272014>

---

**Citation**

Simmons, P. (2020, March 4). Making emergency alerts accessible for people with hearing disabilities. Rocky Mountain ADA Center. <https://rockymountainada.org/news/blog/making-emergency-alerts-accessible-people-hearing-disabilities>

---

**Citation**

World Association of Sign Language Interpreters and World Federation of the Deaf. (2015). *Communication during natural disasters and other mass emergencies for deaf people who use signed language*. <https://wfdeaf.org/news/resources/wasli-and-wfd-communication-during-natural-disasters-and-other-mass-emergencies-for-deaf-people-who-use-signed-language-january-2015/>