NATURAL HAZARDS CENTER

PRINCIPLES OF RISK COMMUNICATION

A Guide to Communicating with Socially Vulnerable Populations Across the Disaster Lifecycle

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Overview

This document is intended to be used as a high-level guide for advancing risk communication best practices. It synthesizes academic research and available guidance on the topic of hazards and disaster risk communication. It draws from an array of evidence-based recommendations for effectively communicating risk across the disaster lifecycle and synthesizes them into three overarching principles:

1) Communicate Through Familiar and Trusted Messengers (pages 5-11)
2) Provide Clear, Actionable Information (pages 12-17)
3) Tailor Message and Information Pathways for Target Audiences (pages 18-23)

Additionally, this guide integrates key insights that can be applied to communication involving socially vulnerable populations. Social vulnerability influences the capacity to anticipate, cope with, resist, and recover from the impact of a disaster. Socially vulnerable populations are thus more likely to experience disproportionate negative impacts from disasters including emotional distress, loss of property, temporary or permanent displacement, illness, and death. Rather than generate a different set of rules for engaging these groups, this document aims to highlight how general, widely accepted risk communication principles can be thoughtfully applied to populations that are often marginalized, overlooked, or difficult to reach.

Organization of the Guide

Each overarching risk communication principle is presented in a table that breaks it down into underlying concepts and introduces general implications for socially vulnerable groups. Practice-oriented tips are provided about how to apply the principles in different contexts. Each section concludes with a set of examples that demonstrate how the principle has been documented in research and practice at each phase of the disaster lifecycle (see Figure 1 for a color-coded breakdown of these phases that matches the layout of the example tables).

The guide concludes with "Additional Guidance: Connecting with Your Audience" at pages 24-27 with information on identifying vulnerable groups and connecting with a diverse audience of potential stakeholders.

For additional resources including best practices and academic research relating to this topic, see *Risk Communication Involving Vulnerable Populations: An Annotated Bibliography*, a resource that is intended to serve as a companion to this guide.

Figure 1: Stages of the Disaster Lifecycle

Principle I. Communicate Through Familiar and Trusted Messengers

Underlying Concepts	Implications for Socially Vulnerable Populations
Credibility is essential if message recipients are to be receptive to risk communications, believe them, and take them seriously.	Careful **planning and relationship-building** are critical for risk communicators. Government actors and other officials may lack credibility with some communities due to pre-existing conflicts, historical injustices, or simple lack of familiarity. It is essential for risk communicators to understand how they are perceived and **empathize** with message recipients.
Risk communicators **must be viewed as legitimate and trustworthy** sources of information, or their messages may not reach or resonate with their intended recipients. Institutions must strive to build trust and partnerships within the communities they serve.	Working with credible, well-connected partners in target communities helps to ensure that messages are appropriately constructed and disseminated. These "gatekeepers" or "cultural brokers" hold valuable expertise about their communities and may be comparatively well-received by the target audience.
It is essential to **find the right person or entity** to deliver the message.	Expertise and rank alone do not automatically provide credibility or authority in these circumstances. Rather, this kind of influence is developed by building trusting and mutually respectful relationships with credible partners. Such partners are particularly important in circumstances where **misinformation and distrust** may influence perceptions of unknown experts.

Tips for Communicating Through Familiar and Trusted Messengers

Getting to Know Your Audience
- Use publicly available data as a first step toward identifying vulnerable populations and learning about their needs. Remember that different social groups belong to different networks and may have varying degrees of trust in any given source of information. Understanding these dynamics is essential. The CDC Social Vulnerability Index is a key source of information that can help to develop a baseline understanding of the demographic diversity in a community.
- Effective partnerships and relationships are the foundation of trust. Invest time in building connections with partners and stakeholders by being genuine, listening to them, learning about their concerns, and empathizing with them.

Engaging Community Partners and Gatekeepers
- Although technical experts possess important knowledge, community gatekeepers (e.g., informal leaders, organizational representatives, other influential persons) hold vital expertise about their constituents. Approach these potential partners with humility and respect.

- It can be easy to overlook groups that are not typically represented in decision-making and planning. Ask community contacts to help identify who is missing from important discussions and how to reach them.
- Outreach to key entities that organize or provide services to vulnerable residents may provide opportunities to "snowball" contacts through introductions to other connected stakeholders.
- Working with a variety of partners to have the right messengers deliver a consistent message increases likelihood that the intended recipients will receive important information from a trusted source and heed the guidance provided. Service providers, civic associations, churches, and other well-respected local entities can help extend the reach and amplify the impact of the message.
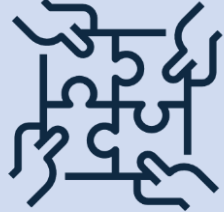
Relaying Technical Information

- Highly technical information can be confusing and may invite misinterpretation without appropriate explanation and context, especially when message recipients lack trust in the messenger. When relaying important technical details to external partners or the public, provide opportunities for input, questions, and clarification to help reduce the potential for misunderstandings.
- When relaying messages through external partners, be sure to discuss the delivery method (e.g., using social media, email lists, visual tools, etc.). Even trusted messengers with established relationships can benefit from applying techniques such as inclusive language, accounting for barriers to access, and considering power dynamics.
- Storytelling is an important way to get audiences engaged and personalize information so that it will resonate with them. Whenever possible, pair technical information with storytelling to demonstrate its relevance to the everyday lives of target audience members.
- Incorporate local knowledge into discussion of technical details whenever possible to reinforce the relevance of the information to message recipients.

Examples Across the Disaster Lifecycle

Each box below contains a set of concrete examples and findings from empirical research and practice that illustrate the principle of communication through trusted and familiar messengers. The boxes are organized according to the different stages of the disaster lifecycle: Preparedness, Response, Recovery, and Mitigation. These cases are intended to illustrate for practitioners how this core principle relates to risk communication with a range of vulnerable populations.

These examples have been drawn from case studies, best practices documents, and academic research involving socially vulnerable populations in a range of different settings. Further details about these resources can be found in the references section and the associated annotated bibliography.

Disaster Preparedness

Examples	Key Takeaways
Phillips (2015) argues that failure to include the perspectives of persons with disabilities in emergency planning contributes to the challenges these groups face with disaster response and recovery. Partnering on outreach efforts with organizations that routinely serve these populations can help emergency response personnel better reach these community members in risk communication and other disaster-related activities.	Researchers have found that strategic partnerships with organizations that serve vulnerable populations can enhance the reach and influence of emergency preparedness outreach.
The Indiana Silver Jackets team has led multi-year education efforts that reach out to children to educate them about flooding and severe weather and the measures they and their families can take to ensure their personal safety. The team relied on several member agencies to help distribute activity books and engage various groups specifically working with children throughout the state (U.S. Army Corps of Engineers [USACE] N.D.-A). Agencies that already had relationships with children served as valuable partners who could leverage their trust and familiarity with the target audience to relay this important guidance.	Partnering with local agencies that work directly with a target population enables risk communicators to leverage their existing trust and relationships in educational outreach.
The City Engineer in Pasadena, Texas spent years building strategic relationships to improve the community's flood preparedness. As part of this effort, she formed a steering committee with representatives of the insurance industry, school district, nature center, a local business association, the citizens' advisory council, and others to support the City's Program for Public Information (PPI) activities as part of the FEMA's Community Rating System. Committee members offered their own resources and helped with outreach activities as the City developed targeted messaging that encouraged flood knowledge and preparedness (Abt Associates Team 2016). Involving diverse partners with different realms of influence helped to improve the reach of these efforts to audiences beyond those that could be reached by the City alone.	Forming diverse partnerships with groups that have unique reach throughout the local community helps to improve the scope of communication efforts beyond the limitations of city governments.

In Minnesota, USACE partnered with NOAA National Weather Service, state agencies, counties, and local communities to host workshops to cover the entire river basin and discuss an Emergency Action Plan. These events preserved local institutional knowledge of flood safety, encouraged local participation, helped the agencies develop credibility, and extended connections between communities, counties, and state levels of government. All of these efforts built a foundation of trust and mutual respect (USACE 2018).	Community involvement in workshops that incorporate local knowledge and convey relevant information about flood risk help build a foundation of credibility, trust, and mutual respect among agencies, practitioners, and the communities they serve.

Disaster Response

Examples	Key Takeaways	
Communicating warning messages through service providers, media outlets that cater to linguistic minorities, and other entities with established networks in hard-to-reach communities has been shown to maximize message receipt and the taking of appropriate and recommended protective actions (Phillips and Morrow 2007.	Scholars have found that outreach through minority language media channels improves message receipt and encourages appropriate action in emergencies.	
The City of Fort Collins, Colorado has invested heavily over the years in flood warning systems, mitigation measures, message testing, and regular risk communication through public outreach. This pre-disaster legwork helped build residents' faith in City's expertise and trust in its concern for their safety. When severe flooding struck the area in 2013, these investments paid off. When the City launched a social media campaign and shared safety updates during this active response situation, messages were effective and were taken seriously because residents found the information to be relevant and valuable (Abt Associates Team 2016).	Testing messages and identifying appropriate information channels before a disaster strikes maximizes the effectiveness of messages and outreach during times of crisis.	

Disaster Recovery	
Examples	**Key Takeaways**
Military veterans who were experiencing homelessness in coastal New York and New Jersey at the time of Hurricane Sandy experienced secondary difficulties with meeting basic needs such as food, shelter, and water in the aftermath of the storm. Research found that a local Veteran's Affairs (VA) health care center served as a critical source of disaster-related information for this population because traditional channels, such as television and radio, were largely inaccessible to them (Gin et al. 2019). The VA served as a critical partner by leveraging its status and reach as a trusted actor to relay important recovery-related information.	Studies have found that organizations that work regularly with hard-to-reach populations, such as unhoused persons, can relay information that might otherwise fail to reach them.
Shortly after the 2013 Colorado floods, local officials learned that many older residents found busy disaster assistance centers to be overwhelming, rendering them unable to obtain the help they needed. To address this challenge, the Boulder County long-term recovery committee coordinated with senior-serving organizations to address elders' needs in more comfortable environments (Campbell 2019).This relationship provided population-specific expertise for the recovery effort and enabled older residents to turn to a trusted source for support and information.	As disaster recovery assistance bureaucracies can be overwhelming for some groups, trusted organizations that have population-specific expertise can provide critical support to ensure they don't fall through the cracks.

Hazard Mitigation	
Examples	**Key Takeaways**
Research has found that simple facts and technical data about risks are insufficient to prompt action because this kind of information is filtered through the lens of personal experience—particularly for those who have experienced a disaster but avoided major losses. Efforts to encourage or generate public support for mitigation activities may therefore be more effective when technical details are paired with relevant, relatable stories that highlight the experiences of others, especially narratives that counteract near-miss experiences (Dillon, Tinsley, and Cronin 2011). Such stories may feel more relatable and credible to the audience, particularly when delivered by those with firsthand experience.	Pairing technical details with relevant and relatable content (e.g., storytelling) makes hazard mitigation material more likely to be acted-upon by the public and counteracts complacency.
In St. Bernard Parish, a team of Parish leaders, the levee district, and a consultant group collaborated on messaging and outreach activities as part of a campaign to increase flood risk awareness, educate the public about construction projects funded by FEMA's Hazard Mitigation Grant Program, and encourage them to take mitigation actions themselves. Brochures disseminated to residents were branded with a joint logo from the Parrish and the consulting team due to concerns that local residents would be less receptive to messages sent by external consultants as opposed to their own local leaders (Abt Associates Team 2016). The team also coordinated with a local newspaper to ensure that its public outreach activities received adequate coverage. Engagement indicators suggest that public interest in and response to the projects was quite positive.	Disseminating hazard mitigation messages through trusted local sources (e.g., local government, media) increases the likelihood that the public will take an interest in and act upon the measures recommended by external agencies.

The District of Columbia Silver Jackets team collaborated on a multi-stage public outreach campaign to inform residents of a low-income community about increasing flood risks and to discuss the importance of flood insurance. However, because the target area did not have a history of significant flooding, the team recognized that the issue might not be a priority of residents who faced more immediate challenges. The team determined that the best way to communicate about flood risk would be by understanding the priorities and concerns of local stakeholders. Silver Jackets representatives began regularly attending community planning meetings and learning about goals and challenges the community was facing. By establishing relationships and actively listening to stakeholder discussions, the team was able to connect the flooding issue with the community's broader discourse about resilience. Team members then engaged residents about their experiences with past flood events and used their stories to personalize information about future flood projections.	Active listening enables risk communicators to understand stakeholders' priorities and contextualize risk information in ways that resonate with their lived experiences.
The Yukon-Kushkokwim Adaptation and Resiliency Workshops in Alaska focused on community adaptation, mitigation, and policy needs in the context of climate change across the state's Delta region, which is home to over 50 Native communities. In planning these events, the organizers took steps to tailor their framework to the local context. They utilized outside facilitation by experts specializing in working with rural and indigenous communities and conducted research prior to the workshops to ensure that identified threats and hazards did not contradict or duplicate other agencies' ongoing work. Further, the workshops were designed to be community-driven, with a steering committee formed by community leaders from the region with oversight provided by the Silver Jackets team and partners (USACE 2018). Measures such as these result in greater understanding of community needs and accessible resources to develop appropriate solutions. They also increase the probability of local support and action.	Identifying community leads who are willing to take ownership of outreach and planning activities can help to ensure that proposed mitigation measures utilize local knowledge, speak to local sensibilities, and are appropriate for the local context.

Principle II. Provide Clear, Actionable Information

Underlying Concepts	Implications for Socially Vulnerable Populations
Messages should be designed and tested to ensure that they **are clear, consistent, and comprehensible**. This requires ensuring that information is delivered at appropriate times and in volumes that are digestible by message recipients.	Risk communicators must consider how information will be interpreted by message recipients. Overly complicated messages can fail to adequately signal the risks people face or the steps to reduce it. Language barriers, cognitive limitations, competition for attention, and other considerations can hinder information uptake.
Knowledge alone is insufficient for prompting action. Instead, information about risk must be linked to **actionable** guidance so that people know how to respond appropriately.	Threat-related information can be frightening and overwhelming for some people, particularly persons with emotional and other mental and physical health challenges, the very young, and the very old. Pairing risk warnings with actionable information and examples can help mitigate these negative responses by empowering message recipients to take protective action. It is essential to establish the intent of the communication and its desired effect. Yet it is equally important to understand the constraints the audience faces so that the recommended actions are reasonable and possible in light of the recipient's circumstances.

Tips for Providing Clear, Actionable Information

Getting to Know Your Audience
- Effective message design requires forethought and practice. Creating surveys, holding focus groups, or engaging in other evaluation activities can provide critical insights into which messages are more or less effective in conveying meaning and prompting action. Be willing to make changes based on this feedback.

Engaging Community Partners and Gatekeepers
- Get to know the target audience beyond simple demographics. Ask about political, ethical, and other issues that may shape people's attitudes toward risk and their capacity to take steps to reduce it. Learn what concerns motivate them and what barriers exist for them in order to inform messaging content and recommend appropriate actions.

- Listen to partners and gatekeepers to identify experiences that can be used to frame risk information and recommended actions in terms that resonate with the target audience.
- Community partners and gatekeepers are essential partners in situations where misinformation is circulating. Coordinate closely with them to stay on top of the information flow and ensure that communications are clear, consistent, and responsive to competing messages.

Relaying Technical Information

- While technical information is an important resource that underpins many decisions and activities, risk communication cannot stop with "just the facts." Messages must resonate with recipients and clearly state what is being asked of them. Detail potential impacts and emphasize protective actions that the audience has the capacity and resources to implement.
- Be honest about what you don't know while emphasizing what you do know about the risks. Create space for audience members to share their thoughts and ideas. Respectfully refute misinformation by explaining the evidence instead of providing flat rebuttals.
- When possible, facilitate a discussion to identify which actions are most locally and culturally appropriate, given the needs and conditions in the community.
- Use or encourage storytelling to find opportunities to link technical details with the audience's lived experiences.

Examples Across the Disaster Lifecycle

The table below contains a set of concrete examples that showcase different ways that practitioners have worked across different stages of the disaster lifecycle to incorporate clear and actionable information into risk communications. As with the previous section, the table contains a combination of observations from practice and from academic research. Full citations for each example can be found in the references section at the end of the guide.

Disaster Preparedness	
Examples	**Key Takeaways**
As part of a community-based participatory research program, Eisenman and colleagues (2014) conducted focus groups on disaster preparedness with low-income Latinx[1]/Latino residents in the Los Angeles area to identify common barriers and opportunities for preparedness. This information helped generate guidance that accounted for residents' everyday	Research suggests that focus groups can be used to consult with representatives of target audiences to identify barriers to action and develop appropriate guidance.

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[1] Latinx is a gender-neutral term used to refer to people of Latin American cultural or ethnic identity.

challenges and recommended actions that were achievable.	
In partnership with the American Samoa Government, the USACE's Honolulu District completed a plan to strengthen American Samoa's ability to prepare for, respond to, and recover from tsunami hazards. This effort specifically sought local stakeholder participation to ensure consideration of cultural norms and customary practices. Ultimately, the plan identified specific actions geared toward enhancing resilience within American Samoa by improving knowledge, protocol, and infrastructure. In addition to developing the plan itself, the group designed a multi-year implementation plan that built from the traditional approaches that Samoans follow to govern village life and the existing resilience developed over thousands of years of oceanic living (USACE N.D.-C).	Seeking to understand cultural nuances and use those to build on strengths demonstrates respect and ensures that recommendations are both appropriate and actionable. This understanding may reveal that socially vulnerable groups possess characteristics that make them resilient and can be incorporated into preparedness plans.
In Florida, the Silver Jackets High Water Mark (HWM) mobile application was designed to help field personnel and volunteers collect real-time field coordinates, data, and gage readings in support of decision-making by federal, state, and local government agencies during flood events. USACE delivered outreach presentations to agencies demonstrating how to use the HWM application which would provide information relevant to evacuation, road closures, and the allocation of resources based on flood conditions. Broadly, these outreach efforts sought to improve understanding about how to use the data to proactively respond to on-the-ground conditions. The agencies used the application as part of the response to Hurricanes Hermine and Matthew (USACE 2017).	When developing new tools and technologies for practitioners, testing these products and training on them in advance of a disaster can help to ensure that the data they produced can be utilized and communicated appropriately during emergencies.

Disaster Response

Examples	Key Takeaways
Individuals displaced by Hurricane Katrina pointed to conflicting and vague messaging from local authorities as a challenge for evacuation decision-making. Research on their experiences suggests that greater specificity regarding the nature of the risk, whether evacuations were warranted, and where residents should go for shelter may have better facilitated decision-making and appropriate action on the part of residents (Eisenman et al. 2007).	Research demonstrates that failure to provide clear information that addresses recipients' needs and access barriers can hinder their compliance with evacuation orders.

Disaster Recovery

Examples	Key Takeaways
Low-income households face recovery challenges that can constrain their capacity to reduce their risk in the aftermath of a flood or other disaster. For instance, while buyout programs are intended to help homeowners relocate from flood-prone structures, the process can take years. Researchers have found that households with limited financial resources may be unable to afford to continue paying their mortgages to maintain ownership of damaged structures while also paying for alternative accommodations. For many, the only seemingly viable options are to quickly sell, abandon, or repair their flood-damaged property—actions that often place them or future residents in harm's way during the next flood event (Brokopp Binder and Greer 2018). Scholars emphasize the need for risk communications to present message recipients with recommendations that are actionable and that reflect the realities of their day-to-day lives.	Risk communicators must account for the day-to-day considerations their audience must make throughout the disaster recovery period in order to develop recommended actions that are feasible.

After Wildfire (https://afterwildfire.org) is a comprehensive website created in partnership with New Mexico Silver Jackets to help wildfire-affected residents access resources and navigate the post-disaster environment. The guide identifies specific steps that should be taken to address immediate safety concerns; provides information about the risk of post-wildfire hazards and how to protect against them; and lists detailed actions that individuals and communities can take to mobilize and address their needs in the aftermath of a fire. The website was designed using web content accessibility guidelines to ensure that it is accessible to a wide range of users, including persons with disabilities (New Mexico Silver Jackets and New Mexico State Forestry N.D.).	Websites and online tools can be extremely useful in providing recovery-related information. To be inclusive, these resources should be accessible and responsive to the needs (e.g., language, 508 compliance) of potential end-users.
The Montana Disability Health Program (2016) recommends partnering through established interagency networks after a disaster to assess needs and obtain necessary resources and appropriate information for persons with disabilities in the aftermath of a disaster. Such partnerships leverage the power of existing expertise to ensure that recommended actions are appropriate and achievable for target populations. Collaborative efforts such as these create a recovery process that is more inclusive.	Generalized guidance is often inappropriate for persons with disabilities. Risk communicators should partner with organizations that serve this population to develop guidance that is inclusive and appropriate for their circumstances.

Hazard Mitigation	
Examples	**Key Takeaways**
A retrospective analysis of the 2003 California wildfires found that residents with functional limitations were unable to create defensible spaces around their homes because guidance did not provide information about how to find assistance with labor-intensive mitigation measures (California State Independent Living Council 2004). When designing risk messaging, it is essential that risk communicators consider the breadth of capacities and limitations among the	As studies have found that recommended mitigation actions sometimes do not account for functional limitations, communicators should work with community-based service providers and direct those who cannot complete the recommended measures to the appropriate sources for assistance.

intended audience. Barriers to action identified through this process may potentially be addressed through collaborative planning and interagency networks. Messages that clearly identify alternatives facilitate greater compliance.	
The Clinton Levee Safety Risk Communication project in Iowa was initiated to communicate risks drivers associated with the levee. USACE collaborated with other federal, state, and local partners to engage the community in working to reduce and manage their risk. A key strategy for this effort involved identifying specific mitigation actions for each risk driver (each source of risk associated with the levee) and identifying programs that could help the community to implement each action (USACE 2018).	Linking each piece of information about risk to an action or set of actions that could be taken to reduce it can help make mitigation efforts seem more manageable and actionable.
The City of Charlotte and Mecklenburg County in North Carolina leveraged key stakeholders in the local real estate and development communities to prompt action in the form of improved building standards. The county's Storm Water Services (SWS) Divisions presented the results of a study highlighting future flood conditions to key real estate and development interests to engage them and demonstrate the need for action on their part. Strategic partnerships resulting from these conversations led industry leaders to advocate for changes to floodplain development and building elevations that would help reduce the likelihood of flood losses. To date, all new construction in the area is now consistent with the proposed standards (Abt Associates Team 2016). Providing data and relatable information (avoiding economic losses) demonstrating how an action can result in reduced flood damages resulted in support from organizations with influence to support the implementation of identified mitigation actions within a community.	Provide information and data about effective mitigation actions to gain the support of influential organizations that can in turn serve as vital partners in explaining, promoting and assisting with implementation of these mitigation measures—particularly to audiences that might otherwise resist such actions.

Principle III. Tailor Messages and Information Pathways for Target Audiences

Underlying Concepts	Implications for Socially Vulnerable Populations
A one-size-fits-all approach is ineffective in the context of risk communication, as all communities are characterized by some level of diversity. Different populations require variation in the channels or sources through which information is relayed.	Risk communicators should familiarize themselves with the various technologies and media used by their target audiences. Leveraging diverse forms of media ensures that risk communicators can cast a wide enough net to reach community members with different abilities and information pathways. However, the message should remain consistent across pathways to avoid confusion.
Risk communication guides consistently emphasize the need to "**know your audience**."	Advance planning is necessary to ensure that messages are framed appropriately and accurately for all relevant stakeholders. Community partners can support message tailoring by applying population-specific expertise.

Tips for Tailoring Message and Information Pathways

Getting to Know Your Audience
- Be mindful about the contexts in which the audiences you are attempting to reach live or operate. Consider whether the message you are designing resonates with their responsibilities and needs. Be respectful of local expertise and link your guidance to issues that are important to locals.
- Ask audience members to share their stories to create a connection and encourage mutual understanding.
- Remember that different audiences may rely upon diverse information formats and pathways. Social media, television, radio, newspapers, and word of mouth are all channels through which information may reach various segments of a community.
- Sometimes too much information can be overwhelming. When appropriate, phase information dissemination efforts to build over time so that the target audience will not have to process everything at once.

Engaging Community Partners and Gatekeepers
- Partners that work with the groups of interest may be able to help develop culturally relevant messages, translate messages into multiple languages, identify useful information channels, and provide feedback to improve their impact. Communication pathways should be similarly diversified, as outlets such as

television, radio, social media, word of mouth, and other sources may be used to varying degrees by different audiences.

Relaying Technical Information

- An important step in designing any message is determining its purpose or intended outcome (e.g., to prompt action, encourage two-way communication, etc.). Clearly identifying a goal helps to ensure that the message and communication strategy are consistent with it.
- Combining visual and verbal information can help to relay technical details in a way that is more easily understood by a wider audience. Qualitative details help put numbers into context. Try creating storyboards, illustrations, and detailed examples.
- While maps can serve as valuable visualization tools, they can be confusing and may be difficult for some people to interpret. Pair mapped examples with other visual tools and detailed explanations to emphasize the important details.

Examples Across the Disaster Lifecycle:

The table below highlights different ways in which messages and message pathways can be tailored for a range of audiences and calls attention to different considerations when developing messages. While each community is different, these cases draw from practice documents and published empirical studies to illustrate the many considerations that may inform targeted messaging efforts. Further details about these cases can be found in the references section.

Disaster Preparedness	
Examples	**Key Takeaways**
One study (Neuhauser et al. 2013) found that the majority of emergency preparedness materials from a sample of community-based organizations serving deaf/hard of hearing populations and older adult clients tested above the literacy level recommended for these populations and the broader public. Further, less than half of organizations serving these groups even offered such materials. The authors recommend designing preparedness materials to be accessible at a maximum 4th grade reading level, depending on the target audience. They also suggest involving members or representatives of these populations in participatory design processes and incorporating "universal design" principles that maximize the accessibility of materials for all audiences.	Research has found that using "universal design" principles to develop emergency preparedness materials helps to ensure that they are accessible by persons with different levels of ability, literacy, and other access and functional needs.

The Nevada Silver Jackets team created a series of public service announcements to increase individual flood awareness and encourage preparedness to reduce future flood risk. To maximize the reach of their messages across a linguistically diverse population, the messages were created in both English and Spanish (USACE 2017).	Be aware of the languages spoken in the target community and have public outreach messages translated to ensure that vulnerable groups are not overlooked in emergency preparedness planning.

Disaster Response

Examples	Key Takeaways
Research by Mando and colleagues (2011) found that some Muslims would avoid evacuating to a public shelter in response to a hurricane threat due to lack of accommodation for religious expressions (e.g., prayer rooms, halal food) and fear that they would be discriminated against or attacked by other evacuees due to their faith. In some cases, these concerns were informed by experiences with backlash in the aftermath of 9/11. Such findings highlight the need for understanding of racial, ethnic, and religious diversity among risk communicators to ensure that tailored messages speak to their specific concerns and lived experiences.	Consider the needs of religious, racial, and ethnic minorities when communicating emergency guidance and advisories to ensure that the recommended actions are achievable and do not present an unnecessary conflict for these groups.
In 2006, the USACE Dam Safety program classified Lake Isabella Dam, located in Kern County, California, as very high urgency (the highest risk relative to all dams that USACE owns or operates). The risk was due to seismic, hydrologic, and seepage issues combined with high potential consequences. USACE lowered the water level behind the dam to reduce the likelihood of dam failure and notified the public. USACE also coordinated with the County's Office of Emergency Services to update their evacuation plans. Coordination efforts revealed that consequence assessments lacked details about community demographics, including vulnerable residents with mobility challenges and those who	Communicating with local stakeholders is essential to identifying population-specific needs and incorporating them into planning so that vulnerable residents, such as persons with disabilities, are not left behind during emergencies.

could not access the Emergency Alert System. To make the public outreach more inclusive, the County recommended incorporating tailored assessments of these populations' needs into any future emergency warning or response plan. This dialogue led to greater understanding of local population-specific challenges and needs (Abt Associates Team 2016).	
The South Carolina Hurricane Evacuation Study, supported by the South Carolina Silver Jackets team, sought to estimate the numbers and general locations of residents in coastal areas who would need transportation assistance during an evacuation. The team assessed data from multiple sources including the U.S. Census, the South Carolina Emergency Management Agency's evacuation zone special dataset, and a telephone survey of 3,000 residents. The team specifically sought to account for persons with low income, those aged 65 and older, persons with disabilities, and those who lacked private vehicles, enabling targeted evacuation outreach in a future crisis (USACE N.D.-B).	Analyzing demographic data enables risk communicators to anticipate and respond to the needs of socially vulnerable groups to ensure that crisis communications, such as evacuation orders, reach all who are affected.

Disaster Recovery	
Examples	**Key Takeaways**
Recovery-related information sheets disseminated at community meetings are often used to provide helpful documentation in an easily shareable format. Minnesota Homeland Security and Emergency Management recommends tailoring these materials to accommodate the needs of individuals who are blind, deaf-blind, or have low vision or cognitive disabilities by using large print (e.g., Arial 18-20-point font) and having someone read the information aloud at the meeting. A PDF-to-audio conversion or recording can also be loaded onto a tablet for listening. Community agencies that provide services for these groups may be able to provide technical assistance to support these	Large font and PDF-to-audio conversion can be used to ensure that people with vision impairment and cognitive disabilities are able to access handouts disseminated at community meetings.

efforts (Minnesota Homeland Security and Emergency Management 2013).	

Hazard Mitigation	
Examples	**Key Takeaways**
Burby and colleagues (2003) found that renters were significantly less equipped than homeowners to survive disasters caused by both natural and technological hazards. They attributed this heightened vulnerability to a combination of characteristics that limited renters' ability to prepare, and to specific barriers to preparedness that extended directly from their housing tenure status. Renters generally lacked the authority to make structural modifications to their dwellings without first seeking permission, and many had significantly lower incomes than homeowners. These constraints rendered most hazard mitigation guidance irrelevant or inaccessible. These scholars reason that, in order to effectively promote mitigation action, risk communicators must understand the barriers to action commonly encountered by the intended audience and tailor their messages/guidance to be relevant and achievable.	Studies have found that renters tend to face unique barriers to hazard mitigation. The range of realistic options available to them should be considered in designing mitigation messaging to ensure that the information they receive is relevant to their circumstances.
When Hurricane Maria made landfall in Puerto Rico in 2017, it triggered more than 70,000 landslides across the island. These landslides, in combination with other hurricane related damage, disrupted transportation routes, damaged and destroyed homes, and caused direct and indirect loss of life, especially among low-income and isolated rural residents. In response to the widespread destruction, university researchers in the U.S. and Puerto Rico partnered with the U.S. Geological Survey to develop an English and Spanish language landslide hazard mitigation guide. The guide is highly visual and is intended for low literacy populations and for use by emergency managers and mitigation professionals (Davis et al. 2020).	To make mitigation guidance accessible to members of the public as well as practitioners, ensure that the writing is appropriate for low literacy populations and translated into languages spoken by the target audience.

"So, You're a Floodplain Manager?" is a training video created through partnerships with the Silver Jackets team in Idaho to help introduce the basic concepts of floodplain management.

Recognizing that floodplain officials often have multiple jobs within their local government or rotate in and out of the position, the team sought to create a fun, engaging, but short video that captured the attention of the target audience. The video was accompanied by an organized, searchable library of reference documents and training materials designed to empower inexperienced floodplain managers to build up knowledge about their important role (USACE 2017, 2018). In addition to presenting information in an engaging and accessible format for busy officials, the dissemination strategy was tailored for easy distribution throughout the state by formatting the video and accompanying materials for DVDs, flash drives, and online access.

Videos and other visual formats can be used to break information down in ways that are relevant, engaging, and easily accessible to individuals with multiple responsibilities competing for their attention.

Additional Guidance: Connecting with Your Audience

Identifying Target Message Recipients

Risk communication has always been an important topic of study among researchers and area of focus for practitioners in the hazards and disaster field. However, as the population grows and becomes more diverse and stratified, it is important to understand how diverse and potentially vulnerable populations may receive and respond to risk communications. The demographics of this country are changing. The population is aging; it is increasingly racially and ethnically diverse; 40 percent of households are considered poor or low-income; and one in five adults in the United States has some form of disability, among other trends.

A critical step in all risk communication efforts involves identifying which populations, organizations, or groups are the intended message recipients. Potential targets may include federal, state, or local government agencies; members of the public; or other community stakeholders such as businesses or environmental groups. Defining the audience enables you to identify the most appropriate message formats, pathways, and content. Such considerations are important in any risk communication effort, but they are essential when trying to reach vulnerable groups.

Moving Beyond "The Public": Considerations for Focused Message Tailoring

While the "the public" serves as a convenient catch-all that encompasses residents, workers, and other community members, the term is a broad concept that must be broken down into more detail to effectively communicate risk and prompt action. Studies of social vulnerability tell us that certain groups are less likely to receive vital information about hazard risks, and many encounter barriers that hinder them from responding appropriately when they do

Figure 2: Potential Target Audiences

receive and understand risk-related information. Potentially vulnerable populations often include low-income persons, racial/ethnic/religious minorities and immigrants, persons with physical or mental disabilities, chronically ill populations, children, older adults, pregnant women, and many others who tend to be socially and/or economically marginalized. At the same time, it is important to recognize that people's identities are complex, and their demographic characteristics alone do not determine social vulnerability.

The table below lists the characteristics that may require additional consideration on the part of risk communicators. This is not an exhaustive list of factors that contribute to social vulnerability. Rather, these examples represent a sample of documented challenges that risk communicators should consider.

Population Characteristic	Example
Age	Older adults are more likely than younger persons to experience chronic health conditions and disability (Kwan and Walsh 2017). Warning systems often fail to take into account the accessibility needs of older persons, and guidance may not take their physical or financial limitations into account (Campbell 2018). On the other end of the age spectrum, including children in drills and exercises can help to ensure they understand how to respond to warnings (Lee and Chen 2019).
Citizenship Status	Undocumented immigrants may be reluctant to visit shelters or otherwise engage with formal government systems due to concerns about deportation. Refugees from conflict zones may have negative associations with government authorities due to experiences with abuse and inappropriate treatment (Siddiqui, Purtle, and Andrulis 2011). These considerations may undermine the credibility of risk-related information or hinder adherence to official guidance.
Cultural Group	Cultural and linguistic differences can distort the meaning of emergency warnings. Messages that are too generic may fail to properly signal appropriate action to cultural minorities, leaving them differentially exposed to hazards (Ogie et al. 2018).
Disability Status	Individuals with cognitive disabilities may find overly complex messages difficult to understand. Some message formats are inaccessible to persons with disabilities that hinder them from using traditional media and technologies (Campbell 2018)
Educational Attainment	Studies suggest that individuals with lower levels of educational attainment tend to have lower levels of disaster awareness due in part to fewer opportunities for exposure to information about a disaster (Teo et al. 2018).
Gender	Risk perception may vary according to gender. Some studies have found that women tend to have a higher level of risk awareness and aversion relative to men (Teo et al. 2018). Higher rates of risk tolerance may lead men to ignore warnings and other important risk information which leads to men and boys being at greater risk for death in disaster in the U.S. (Zahran, Peek, and Brody 2008). On the other hand, women are more likely to experience other factors that contribute to vulnerability, such as poverty, advanced age, and renter status (Kiefer et al. 2008).
Health Conditions	Persons with sensitive medical conditions have special considerations that may require accommodation from authorities and modified guidance from risk communicators. For instance, some nursing homes may only follow evacuation guidance as a measure of last resort due to the potential for "transfer trauma," or potentially fatal physical and psychological stress that can result from rapid forced relocation.
Home Ownership Status	Renters are more likely than homeowners to be low income earners; they are less likely to have regular access to cable and satellite television, cell phones, or other technologies; and they typically do not have control over recovery actions or mitigation to their properties (Kiefer et al. 2008). Information targeting to this group should be compatible with their circumstances and delivered through pathways that are most accessible to them.

Population Characteristic	Example
Household Income	Low-income households have fewer resources for disaster response and recovery; are more likely to live in substandard housing; and tend to be more reliant on public transportation and other public services relative to higher-income households (MacIntyre et al. 2019; Thrush, Burningham, and Fielding 2005).
Language Spoken	Without translation or additional outreach, persons who do not speak the dominant language are less likely to receive important warnings and other risk-related information (Donovan, Borie, and Blackburn 2019; Galarce and Viswanath 2012).
Literacy Status	Risk communication materials often require a level of literacy that far exceeds the average level within the general population. This discrepancy particularly affects non-dominant language speakers, linguistic minorities, and individuals with low levels of education (Neuhauser et al. 2013; Teo et al. 2018).
Population Density	Municipal services tend to be limited in rural communities, and many lack the resources for robust risk communication plans. Media outlets are often limited in number and range (Cole and Murphy 2014). These and other characteristics of rural communities can hinder the ability to relay important information.
Race/Ethnicity	Racial and ethnic minorities are more likely than majority groups to suffer from social and economic marginalization that limits their exposure to warnings and other relevant risk-related information. They are more likely to lack financial resources to support disaster preparedness, response, recovery, and mitigation. These groups may use communication pathways that differ from the mainstream and may therefore miss important information about risks and protective behaviors through these channels.

Questions to Consider

The questions listed below can help to define your audience and determine how to facilitate the desired responses. Asking these questions will assist you in clearly articulating the issues at stake, who needs to be made aware of them, and how to support them in responding appropriately.

Questions for Defining Your Audience

- What is the geographical area affected?
- Who lives, works, and goes to school here?
- Which groups will experience direct impacts or otherwise be affected by this issue?
- What is the specific request to be made?
- Which entities have the power, authority, and capacity to produce the desired outcomes?
- What prior experience do they have with hazards and disasters?

- What challenges or constraints might the target entities encounter in responding to this request?
- What support is needed to work around   these barriers, and who can provide it?
- What are their trusted sources of information?
- Once the audience has been defined, what relationships or connections can be leveraged to engage them?

Further Information

For additional information on this topic, please see ***Risk Communication Involving Vulnerable Populations: An Annotated Bibliography***, which is intended to accompany this guide as a companion document. The bibliography includes summaries of published academic research, publicly available reports, and guidance documents that discuss risk communication, particularly in the context of social vulnerability.

If you have questions about this guide, please contact us at hazctr@colorado.edu.

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