RESEARCH COUNTS

THE DISASTER CYCLE

SPECIAL COLLECTION

University of Colorado Boulder

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THE DISASTER CYCLE

This special collection of ***Research Counts*** grew out of a longstanding collaboration between the ***International Journal of Mass Emergencies and Disasters* (IJMED)** and the **Natural Hazards Center.** Our commitment in this special collection is to bring key findings and ideas from recent IJMED scholarly articles to a broader audience of emergency managers, disaster risk reduction professionals, and policy makers in the hazards and disaster field.

For this special collection, we identified 10 IJMED articles that were published under the distinguished editorial leadership of Shih-Kai (Sky) Huang and Tristan Wu. The collection is broadly organized around the following phases of the disaster cycle:

- Preparedness
- Emergency Response
- Impacts
- Recovery
- Mitigation and Resilience

These articles were selected because they cover a range of hazard types, geographic locations, cultural contexts, and population groups. In addition, they are methodologically rigorous and have strong practical implications.

Once the articles were selected, we then worked with the original article authors, science writer, **Laurie J. Schmidt**, and freelance science journalist and editor, **Zach Zorich**, to develop and curate this special collection.

Research Counts articles are intended for a broad audience of emergency managers, public health practitioners, policy makers, journalists, and others interested in the causes and consequences of disaster. The Natural Hazards Center regularly publishes ***Research Counts*** contributions. We have also developed two other special collections to date, with one focused on **Children and Disasters** and the other focused on **Mass Sheltering and Disasters**.

RESEARCH MATTERS, AND WE WANT TO HELP MAKE IT COUNT.

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For the online version of this ***Research Counts*** **Special Collection on The Disaster Cycle,** please visit:
hazards.colorado.edu/news/research-counts/special-collection/disaster-cycle

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Three environments show drought, field, and ocean. Image Credit: Piyaset, 2018

INTRODUCTION: THE DISASTER CYCLE

BY LORI PEEK, HEATHER CHAMPEAU, JENNIFER TOBIN, SUDHA ARLIKATTI, LAURIE J. SCHMIDT, AND ZACH ZORICH

Researchers and emergency managers have long used the disaster cycle as a conceptual tool to organize activities associated with each overlapping phase of a disaster. This special collection includes articles focused on the preparedness, emergency response, impacts, recovery, mitigation, and resilience phases of the disaster cycle. The goal of the collection is to summarize key findings from recently published scientific research for a broader audience.

This special issue grew out of a long-standing collaboration between the **International Sociological Association (ISA) Research Committee on the Sociology of Disasters (RC-39)** and the Natural Hazards Center. In September 2017, Shih-Kai (Sky) Huang and Tristan Wu became co-editors of the RC-39 flagship journal, the ***International Journal of Mass Emergencies and Disasters* (IJMED)**. That same year, the Natural Hazards Center established the ***Research Counts*** series, which is dedicated to sharing actionable research with emergency managers and others committed to mitigating harm from disasters. Since then, the IJMED editors have worked closely with the Natural Hazards Center team to solicit submissions to the journal, to spotlight new collections, and now, to publish this special issue on The Disaster Cycle in both IJMED and *Research Counts*.

ABOUT THIS COLLECTION

This special collection includes 10 brief contributions that were published as full-length research articles during Huang and Wu's tenure as co-editors of IJMED. These articles were selected for inclusion because of the strength of the research and their potential for broader impacts. As noted, several widely researched **phases of the disaster cycle** are represented in this collection. The pieces address multiple types of disasters such as tsunamis, floods, earthquakes, and hurricanes that have affected communities in Canada, Chile, China, Finland, New Zealand, and the United States, as well as the global COVID-19 pandemic. They also highlight the work of authors who bring expertise from a wide range of disciplines. The original articles upon which the special collection contributions are based ranged between 7,000 to 10,000 words. Freelance science journalist and editor, Zach Zorich, and science writer, Laurie J. Schmidt, distilled the articles into 700 to 900 word pieces that appear in this online collection and the **November 2022 issue of IJMED**.

Often, important research findings **do not reach those who need the information** most—including emergency managers, public health practitioners, elected officials, and journalists—because academic journals may only be accessible through university libraries or via paid subscription websites. Similarly, key findings are often buried in lengthy academic articles, making it difficult for time-strapped practitioners to find the information that matters most to their daily work.

With this special collection, as with all *Research Counts* publications, we look to reshape traditional ways of presenting academic information. Here, we have adopted the **vision and approach** that informs *Research Counts*, which is more journalistic than academic. The pieces are written in jargon-free, non-academic language. Sentences and paragraphs are brief, and authors use the active voice throughout. In addition, each contribution begins with one big lesson, insight, finding, or idea

that readers can take away from the article. Of course, most research contains more than one big idea, but here we focus on what is most important for a wider audience to know (**see Figure 1**).

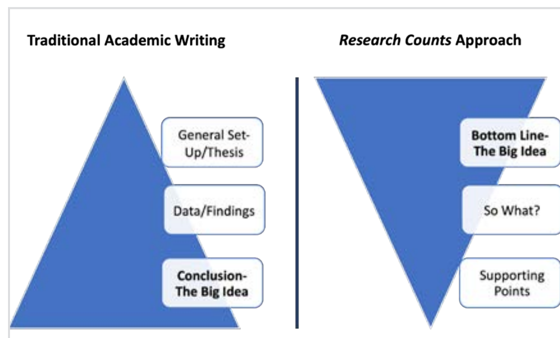

Figure 1. A Comparison of Approaches to Presenting Research Findings. ©Natural Hazards Center, 2023

By flipping the traditional academic approach to writing in this way, this collection brings already published research findings to the fore. We hope that the contributions can serve as inspiration for future scholarly translation and dissemination efforts for academics, while also providing key information to those who are working to reduce the loss and suffering from disasters.

Thank you for taking the time to read this special collection. **Research matters, and we want to help make it count.**

Fill your own sandbags limit of 25 per household sign at Osceola County Heritage Park - waiting for hurricane and tropical storm Dorian. Image Credit: Cari Rubin Photography, 2019

ABOUT THE AUTHORS

LORI PEEK is professor in the Department of Sociology and director of the Natural Hazards Center and CONVERGE at the University of Colorado Boulder. She is author of ***Behind the Backlash: Muslim Americans after 9/11***, co-editor of ***Displaced: Life in the Katrina Diaspora***, and the ***Handbook of Environmental Sociology***, and co-author of ***Children of Katrina*** and ***The Continuing Storm: Learning from Katrina***. She also served as a contributing author to FEMA P-1000 ***Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety***. She earned her PhD in Sociology from the University of Colorado Boulder.

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ZACH ZORICH is a freelance science writer and a contributing editor at Archaeology magazine. His work has also appeared in the *New York Times, Science, newyorker.com*, and *Scientific American*.

FIRST AID

ARTICLES:

PREPAREDNESS

Signage and barriers warn children away from a public playground during the Covid 19 lockdown in New Zealand, September 6, 2021. Image Credit: Lakeview Images, 2021

STRATEGIES FOR PROMOTING
DISASTER PREPAREDNESS IN CHILDCARE CENTERS

BY ALICE FOTHERGILL

Large numbers of infants, toddlers, and preschool-age children spend their days in childcare centers. In turn, the youngest members of society depend on adult caregivers to make evacuation decisions, secure shelter, and assist in reuniting child survivors with their parents should a disaster occur. While previous research has focused on **preparedness** and **disaster risk reduction in schools**, less attention has been given to organizational preparedness in childcare settings.

This research examined how New Zealand (Aotearoa) addresses disaster preparedness among childcare facilities. New Zealand was selected for this case study because of its history of innovative preparedness and its commitment to learning from past disasters. The nation is also **vulnerable to a variety of hazards**, including earthquakes, volcanic eruptions, floods, and tsunamis. In 2016, the Kaikoura earthquake triggered a tsunami and landslides, causing severe damage on both the South Island and in the city of Wellington on the North Island. In 2020 and 2021, the entire country of New Zealand dealt with significant flooding.

During my time in New Zealand as a Fulbright Fellow, I conducted interviews in person in and around the city of Wellington, a region that experiences significant risk to multiple hazards. Participants included individuals working directly in childcare (including center directors); those who study, write, or disseminate policies; and those who conduct preparedness training for regional government. Interviews were augmented by observations done during visits to four childcare centers.

Data analysis provided valuable insights into the perspectives of those working directly in the childcare field and of those charged with developing and implementing policy. These insights highlighted the most essential aspects of childcare center emergency preparedness and five factors that help or hinder preparedness and policy implementation.

REGULATION CLARITY

The first key element of effective preparedness is clear regulations. Policies that are ambiguous can be a barrier to preparedness, recovery, and the reopening of childcare centers after a disaster. Teachers, parents, center directors, and researchers all expressed their concern about vague regulations. They want to be informed about what the law requires and what the best practices are.

Because childcare centers are classified as businesses, they are not under the jurisdiction of New Zealand's Ministry of Education; therefore, they do not follow the same guidelines as schools. However, the centers do receive a **guidance document** from the national emergency management agency to help with planning and developing an emergency plan. While interviewees had a range of views about the right amount of regulation of childcare centers, all agreed that policy clarity was essential. One interviewee, the director of a childcare center, suggested the sharing of best practices among childcare centers in a specific region, which would help disseminate information based on the hazards in that area.

COMMUNICATION

Informal and formal communication between government agencies and childcare centers is especially important, as it

relates directly to regulation clarity. Regional government training is seen as particularly useful in gaining knowledge about how to prepare childcare centers.

Center directors and administrators also need to communicate clearly with their staff, especially about various disaster scenarios and expectations surrounding staff members' abilities to remain at the center during and after a disaster. Communication among childcare centers is important as well, as it is helpful for staff to learn how other centers are preparing. Effective communication between childcare centers and families is critical to having effective and clear reunification plans for parents and children in the aftermath of a disaster. Parents may take unnecessary risks trying to get to childcare centers; indeed, at trainings they stressed to the centers how unclear communication with parents, and sometimes a lack of trust, has led to the loss of lives in disasters in other countries.

LEADERSHIP

The role of leadership emerged as a key component of preparedness in childcare centers. The centers that appear to be the most prepared are those where the leaders are effective communicators who are respected by their staff. These directors make sure their center has an evacuation plan and that the staff are informed of these plans. Trust between staff and families is also key to effective leadership. When parents have confidence in a center director's leadership, they also feel reassured about their child's safety.

TRAINING

Research has shown that **childcare center teachers and schools want more training** to help them gain the skills to prepare for and respond to disasters. This includes not only training within their own centers, but also with other centers, where they can share their experiences from previous disasters. The training sessions observed as part of this study revealed how participants were able to think through various scenarios together in a relaxed environment. Many attendees acknowledged the importance of reunification drills but shared that they had never been involved in one.

NETWORKS

The final theme that emerged in this research regarding effective preparedness was related to networks. Businesses, residents, and families **located in the vicinity of a childcare center** can be an integral part of preparedness. In the past, local businesses have allowed employees to leave after an earthquake to assist the childcare with evacuation. Others, such as hotels, have provided backup evacuation space following a disaster. In addition, tight-knit Māori communities can assist with preparedness by offering communal spaces, such as meeting houses. New Zealand researchers have found that **Māori community-led disaster management practices** are often collaborative and informed by strong cultural values.

Adequate preparedness in childcare settings helps ensure physical and emotional safety for children, their families, and those who work in the childcare sector. By implementing policies and practices that address the above obstacles, childcare centers can be better prepared for future disasters.

ABOUT THE AUTHOR

ALICE FOTHERGILL is professor of sociology at the University of Vermont. She is the author of ***Heads Above Water: Gender, Class, and Family in the Grand Forks Flood***, co-editor of ***Social Vulnerability to Disasters*** (first and second editions), and co-author, with Lori Peek, of ***Children of Katrina***.

Researcher Alice Fothergill stands by a tsunami evacuation route in New Zealand. © Carol Stewart, 2017

ABOUT THIS ARTICLE

This *Research Counts* article was written by science writer, **Laurie J. Schmidt**. It is based upon the following publication:

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CLIMBING THE LADDER

TOWARD SECURITY: CO-CREATING A SAFER FINLAND

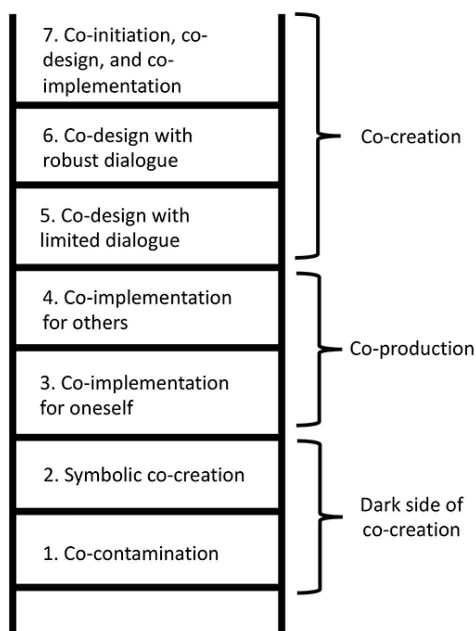
BY HARRI RAISIO, ALISA PUUSTINEN, AND VESA VALTONEN

As disaster responses become more complex, there is a greater need to coordinate the activities of public authorities with business operators, non-governmental organizations (NGOs), and citizen volunteers. To achieve the goal of improving disaster response, we recommend a process of "co-creation" where each of these groups is involved in planning disaster responses and the roles of each group are clearly defined. This approach allows public authorities to take advantage of the experiences, resources, and ideas of these diverse groups. In turn, it allows groups outside of traditional government response structures the opportunity to contribute.

The approach described here is being taken in Finland where it has been used to develop a comprehensive **Security Strategy for Society**. In response to this new approach, we organized eight regional forums involving a total of 188 people from the public sector and NGOs to discuss how co-creation occurs in planning safety and security functions and to discover what challenges are not being met.

TAKING STEPS TOWARD SECURITY AND SAFETY

We use a model developed by Torfing, Sørensen, and Røiseland called the **Ladder of Co-Creation** to provide a framework for our findings. This is a highly useful model, but Torfing and colleagues' ladder does not address the negative aspects of co-creation. Therefore, we added a rung to the beginning of the ladder to account for what we refer to as co-contamination, which is anything that is added to the co-creation process that is harmful or undesirable. Co-contamination can occur, for example, between spontaneous volunteers and established professional emergency management agencies. These different groups may have competing priorities or conflicting



The Ladder of Co-Creation, adapted based on work by ***Torfing, Sørensen, and Røiseland***

Finnish Lifeboat Institute Training Manager presents training and equipment.

ideologies that stymie collaborative processes. We added a second rung for co-creation processes that are symbolic and do not actually consider the input of citizen groups. We next turn to the widely used concept of co-production, which is understood as a limited case of co-creation, highlighting the aspect of co-implementation. Thus, the third step on the ladder involves empowering citizens to enhance their own capacities to respond to disasters. Enhancing one's capacity to respond to disaster simultaneously encourages co-implementation for oneself. This can take the form of developing family emergency plans, having a home emergency supply kit, and individuals taking part in training programs such as first aid courses. Of course, these "individual action" can have strong co-benefits for families and even entire communities.

This leads to the fourth rung of the ladder, co-implementation for others, which entails creating value for others by performing volunteer work carried out in cooperation with public authorities. Some examples of this are volunteer firefighter organizations or the Red Cross and Red Crescent organizations.

The fifth rung occurs when these groups or individuals provide input in designing new tasks and solutions. This takes place in co-design processes with limited dialogue. Examples include: focus groups, interviews, written consultations, and public hearings.

While the fifth level is limited in its dialogue, being at its worst only one-way communication—public actors wanting to obtain feedback from citizens and other stakeholders—the highest rungs on the ladder aim for genuine two-way communication where joint solutions are sought. Co-creation begins with co-design processes with limited dialogue before evolving into co-design with robust dialogue, like deliberation. Examples include service design and **deliberative security cafés**.

On the final rung of the ladder, the approach is most comprehensive and can extend as far as joint agenda-setting and problem definition. In the spirit of collaborative innovation, variety of societal actors are then taking part in co-initiation, co-design, and co-implementation of safety and security services. An example of this stage is comprehensive **safety and security clusters**.

ISSUES WITH CO-CREATING A SAFER SOCIETY

Some problems revealed by our interviews were as simple as members of the public sector scheduling meetings and exercises at times when volunteers were at work making it difficult for them to participate in planning and training. Another problem is that public authorities are concentrated in urban population centers, which leaves people living in rural areas with a greater need for self-sufficiency. A third problem was that the bureaucracy and level of qualification needed to become a volunteer for some organizations may discourage people from participating.

The latter issue emerged with the Finnish Lifeboat Institution, a volunteer organization that has had a long-standing cooperative relationship with the Finnish Coast Guard. Volunteer qualifications were seen as being nearly that of a professional, which led to concern that people would not commit themselves to action in the long term. It is worth noting, though, that in other ways, the Finnish Lifeboat Institution provides a good model of how public authorities should interact with NGOs. The Coast Guard conducts regular training exercises and audits of the volunteers so that they know exactly what their capabilities are and how to use them in an emergency. Such training and working together was mentioned as the best way to create effective partnerships between public authorities, the volunteer sector, and the private sector.

The rise of social media also presented problems according to our research participants. "Pop-up volunteering" poses a logistical challenge for public authorities and NGOs. In some crises that received considerable media attention, groups of untrained volunteers would organize themselves on Facebook or another platform and show up to places where search operations were underway to form their own unofficial search parties. These volunteers' goals sometimes ran counter to what emergency managers were trying to accomplish, and they ended up wasting time by searching areas that had already been covered or searching in a non-systematic fashion. This problem could be addressed by creating a "bridge" between spontaneous volunteers and emergency service agencies. This bridge would ideally provide a clear set of responsibilities that could be handled by spontaneous volunteers and a way to organize them to accomplish those tasks.

MOVING FORWARD IN FINLAND AND BEYOND

Further research is needed to understand the best way to make use of spontaneous volunteers. It would be worthwhile to investigate the options to include spontaneous volunteers in the co-creation process, preserving their innovation potential and adaptability, while also reducing their susceptibility to risk. The role of business operators was not part of this study, and more research is needed to fully understand how they may use their knowledge and resources to assist in emergency situations. We also suggest more research into the downsides of collaboration and co-creation, such as how co-contamination occurs and how that can be stopped or controlled. In the end, we are stronger when we work together, but we also must be smarter to achieve the best outcomes.

ABOUT THE AUTHORS

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ABOUT THIS ARTICLE

This *Research Counts* article was written by freelance science journalist and editor, **Zach Zorich**. It is based upon the following publication:

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ARTICLES:

EMERGENCY RESPONSE

Donation Center without needed clothing and shoes.

AVOIDING THE "SECOND DISASTER"

OF UNWANTED DONATIONS

BY **MARY M. NELAN**, **SAMANTHA PENTA**, AND **TRICIA WACHTENDORF**

The outpouring of charitable acts following a disaster can reveal humanity at its best. But this can also take the form of spontaneous acts of generosity that flood supply chains with unwanted or low priority goods that slow down the distribution of supplies most needed by disaster survivors. The challenges of sorting and distributing donations as well as disposing of inappropriate donations can be so bad that it is sometimes referred to as the disaster that follows the disaster. To understand how to prevent this, we interviewed donors, donation collectors, and disaster relief distributors following Hurricane Sandy in 2012 and two tornadoes that struck near Oklahoma City in 2013. Our observations showed that misalignments between the needs and motivations of these groups leads to the "second disaster" caused by the influx of donations.

A DISASTER DONATION DISCONNECT

Donors give to disaster relief for many reasons including that they receive tax breaks, that charitable giving feels good in an altruistic way, that people can gain social status by appearing generous, or because people have a desire to clean out unwanted items from their closets and basements. Donors, of course, also often are driven by a strong desire to connect with and help disaster survivors. Yet, donor desires often conflict with the needs of the organizations that distribute disaster aid.

Large non-governmental organizations (NGOs) such as the American Red Cross **recommend monetary donations** because they can be used to meet whatever needs disaster survivors might have, and they don't pose the logistical challenges that physical donations can create.

Many donors in our study, however, reported that they felt monetary donations were impersonal, so they were not able to feel a connection to the people harmed by the disasters. There was also a fear that monetary donations would be spent on overhead costs rather than directly helping survivors. One donor said, "You donate money, you have no idea where it's going, who it's affecting." The interviewee continued, "But when you donate items, especially when you can see the delivery, you know you that you've had an impact on those people's lives." Our interviews with donors showed that they prioritized their needs to feel useful, to have a connection with survivors, to come together as a community, and to get rid of unwanted material goods.

People who collect goods through donation drives also reported preferring material goods to donations of money. Some lacked the capacity to process financial donations or did not want the responsibility of being accountable for how the money might be spent. A desire for transparency in how donations are used led both donors and drive coordinators to prefer material donations or monetary donations that were earmarked for a specific purpose. Both can lead to the problem of having too many resources devoted to one type of need, such as water or diapers, and not enough to meet other needs.

The disconnect between donors and drive collectors on one hand and relief distributors and disaster survivors on the other led to situations where no ones' needs were met. Without knowing what a disaster-stricken community might need, donations of material goods can quickly create problems. One example occurred at a small mobile home community in Oklahoma that turned into a dumping ground for donations. With no clear guidance on where to take their donations, the desire to connect with survivors transformed into a need for the donors to get rid of their goods. The mobile home community ended up with more diapers and hygiene supplies than they could possibly use but lacked access to financial contributions that could help them begin to rebuild their lives.

The desire to purge unwanted goods motivated donors in the aftermath of both Hurricane Sandy and the Oklahoma tornadoes. Many donors used the phrase "getting rid of" to describe their motivation for donating items. "Purging with a purpose" was a recurrent theme in our interviews, but it led to the collection of large amounts of inappropriate items including unwashed or worn out clothing, and expired food. One volunteer in Oklahoma described the donations there as a "yard sale dump." A common statement by relief distributors about donated goods was, "if donors don't want them, we don't either."

While material donations are thought of as more desirable by donors and collectors because they give them more control and foster a sense of connection with disaster survivors, the lack of coordination between them and relief supply distributors can slow down high-priority goods from reaching survivors. A lack of communication between different parts of the disaster relief supply chain was a major contributor to this problem.

GIVING FOR THE GREATER GOOD

We recommend that disaster organizations should continue to explain why monetary donations are preferable to material donations. Testimonials by disaster survivors saying how monetary donations benefited their communities may provide a way for donors to feel a greater connection to them and to further understand the importance of sending funding instead of physical supplies. Another possible solution is to encourage donations of gift cards, which can be easily transported while also giving the donor a measure of control over how their donation is used. Ultimately, all actors in the disaster relief supply chain need to be included in a conversation with disaster survivors about what an affected community's real needs are, and they need to be empowered to create an effective supply chain strategy to meet their immediate needs.

Housekeeping recycling concept. Deciding to keep, donate or discard clothing. Image Credit: Celia Ong, 2021

ABOUT THE AUTHORS

MARY NELAN is a member of the Department of Emergency Management and Disaster Science at the University of North Texas. Nelan earned her PhD in sociology at the University of Delaware, where she held the position of research assistant at the Disaster Research Center. Nelan's interest in disasters began during a response volunteer trip to Haiti in May 2010. It was then that she started to research volunteers in disasters. Her research broadened throughout her career to include disaster donations and therapeutic communities that emerge after disasters.

SAMANTHA PENTA is an Assistant Professor of Emergency Preparedness in the College of Emergency Preparedness, Homeland Security and Cybersecurity at SUNY Albany. Penta's research focuses on health and medical care in crises, decision-making in preparedness and response, and humanitarian logistics. Her most recent work examines the processes involved in planning and implementing international crisis medical relief efforts, focusing on health and medical responses to the 2015 Nepal earthquake and the 2014-2016 Ebola epidemic in West Africa. Her published work is featured in outlets including the *International Journal of Mass Emergencies and Disasters, Risk, Hazards & Crisis in Public Policy, Earthquake Spectra, Sociological Forum*, and the *International Journal of Disaster Risk Reduction*.

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ABOUT THIS ARTICLE

This *Research Counts* article was written by freelance science journalist and editor, **Zach Zorich**. It is based upon the following publication:

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Free mask line in Hong Kong during pandemic.

PERCEPTIONS DRIVE

PROTECTIVE ACTIONS DURING INFLUENZA OUTBREAKS

BY HUNG-LUNG WEI, MICHAEL K. LINDELL, CARLA S. PRATER, JIUCHANG WEI, FEI WANG, AND YUE "GURT" GE

According to the Centers for Disease Control and Prevention, **the annual impact of seasonal influenza** in the U.S. is 9 to 41 million illnesses, 140,000 to 710,000 hospitalizations, and 12,000 to 52,000 deaths. Researchers have examined risk perceptions about influenza to identify ways that information sources can motivate people to take protective actions. However, few studies have looked at how people perceive characteristics of the stakeholders that serve as sources of information and protective action.

UNDERSTANDING PROTECTIVE ACTIONS DURING INFLUENZA OUTBREAKS

The protective action decision model (PADM) proposed by Lindell and Perry (2004, 2012) identified three perceived stakeholder characteristics that may affect people's adoption of protection action recommendations (PARs): expertise, trustworthiness, and protection responsibility. In this study, we compared perceptions of stakeholder characteristics among respondents in the United States and China to understand whether these perceptions are related to protective actions for influenza.

During the summer of 2013, avian influenza A (H7N9) infected 137 people and caused 45 deaths in China. Following this outbreak, the University of Science and Technology of China distributed 1,375 questionnaires to residents in the Chinese province of Anhui to assess their responses to the health threat. Of these, 762 questionnaires were collected and used for analysis.

The following year, the Hazard Reduction and Recovery Center at Texas A&M University mailed questionnaires to households in Bryan-College Station, Texas, to evaluate residents' reactions to seasonal influenza. Of the 1,000 randomly selected households, 405 usable questionnaires were returned.

Both surveys assessed perceptions of the same stakeholder types: health authorities, news media, internet and social media, peers, and immediate families. Respondents were asked to rate each stakeholder type on their expertise, trustworthiness, and protection responsibility (i.e., how much responsibility they have for protecting people from the disease). Respondents were also asked whether they were sick during the H7N9 outbreak (Anhui) or during the previous flu season (Texas), and whether they had taken specific protective actions during these outbreaks.

POWER, PERCEPTIONS, AND PROTECTIVE ACTIONS

China and the United States provide an interesting comparison, because the two nations are significantly different in terms of **cultural power distance and individualism**. Power distance refers to the way in which members of a society view the hierarchy of people in power versus subordinates. In high power-distance cultures, lower-ranking individuals tend to defer to power and accept their place in society. Low power-distance countries emphasize the individual and prioritize equality, which often results in subordinates questioning how things are done. On the Hofstede scale, China has a power distance score of 80, while the United States has a score of 40. The dimensions of power distance and individualism would be expected to influence people's perceptions of stakeholder characteristics.

Survey analysis showed that, with regard to expertise and trustworthiness, Texas respondents rated health professionals substantially higher than other stakeholders. Conversely, the Anhui respondents drew little distinction among the various stakeholders and the three characteristics. In addition, Texas respondents rated local news media as substantially less credible than public health authorities, whereas the Anhui sample rated news media as roughly equivalent to other sources. This may be related to the fact that news media in China is linked much more closely with the national government than in the United States.

CULTURE, CREDIBILITY, AND STAKEHOLDER CHARACTERISTICS

These differences in the Texas and Anhui samples support previous cross-national influenza research findings, which suggest that people in different countries can have very different perceptions of the same type of information sources. Therefore, those charged with communicating influenza risk must recognize that people in other countries can differ in their assessments of which sources are the most credible. In addition, countries should consider their own culture's social context when developing health risk communications that are based on research from other countries.

Second, in both samples, the ratings of stakeholder characteristics were consistently correlated with protective actions. This finding lends support to the PADM proposition that stakeholder characteristics influence protective actions. We can assume that when stakeholders are seen as having high levels of both expert knowledge and trustworthiness, people are likely to be more compliant with the protective actions they recommend. Therefore, messaging efforts related to influenza risk should not only communicate the protective actions people should take; they should also consider how to influence perceptions of stakeholders.

Because public health officials are perceived to have a higher level of protection responsibility than other stakeholders, these organizations and agencies must work to maintain their credibility by actively managing any respiratory infectious disease outbreaks. They must also proactively ensure they are identified as the source of information when disseminating information via news media, internet, and social media during a health emergency. This will maximize the likelihood that people will take the recommended protective actions and, ultimately, could save lives.

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HUNG-LUNG WEI has conducted several multidisciplinary research projects on hurricanes, floods, earthquakes, tsunamis, volcanoes, tornadoes, water contamination, and pandemic influenza that were supported by the National Science Foundation, National Natural Science Foundation of China, U.S. Army Corps of Engineers, Texas A&M University, and the City University of New York. Since 2014, Wei has published 11 scientific articles in top peer-reviewed journals (i.e., *International Journal of Disaster Risk Reduction; International Journal of Mass Emergencies and Disasters; Journal of Risk Research; Journal of Transportation Security; Natural Hazards; and Natural Hazards Review)*, and two entries in *Encyclopedia of Security and Emergency Management*.

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CAUTION
CUIDADO
CAUTION

ARTICLES:

IMPACTS

St Thomas USVI neighborhood with St. John in the distance.

LOOTING OR COMMUNITY SOLIDARITY?

RECONCILING DISTORTED POST-HURRICANE MEDIA COVERAGE

BY HANS M. LOUIS-CHARLES, BENIGNO E. AGUIRRE, AND JAMILE M. KITNURSE

Hurricane Irma made landfall in the U.S. Virgin Islands (USVI) on September 6, 2017, followed by Hurricane Maria less than two weeks later. These two Category 5 hurricanes pummeled the islands, causing widespread damage to infrastructure, homes, and residents' livelihoods.

Delayed assistance to the islands compounded the devastation, and restoration of electricity and essential health services took two to three months. Although the logistics of reaching the islands presented operational challenges to government relief, the Federal Emergency Management Agency (FEMA) later acknowledged its failure to respond equitably to the U.S. territories compared to their mainland responses in Texas and Florida.

FRAMING DISASTER

In the aftermath of the storms, U.S. news media inundated audiences with reports of pervasive looting and home burglaries. Online news publications used headlines describing scenes with phrases such as "hungry residents in survival mode" and "looters armed with machetes."

Contrary to these media reports, social science research has shown that in most cases **a pro-social environment develops**, following disasters, during which community members engage in altruistic acts and collective coping methods. Field studies have shown that when looting does occur after a hurricane, it is often perpetrated by people looking for emergency survival needs. Yet, disaster criminologists have historically asserted that hurricanes and other disasters increase the likelihood of criminal activities in a community. Quantitative research has helped to shed light on more **general patterns of crime in disaster**.

To add to the existing body of evidence, this study examined the credibility of claims regarding looting and home burglaries in the USVI following Hurricanes Irma and Maria. In addition, we investigated whether perceptions of post-hurricane looting and burglary influenced household evacuation and sheltering behavior.

We conducted 68 qualitative interviews two months after Hurricane Maria made landfall in the USVI. Interviewees included 30 hurricane-impacted households, 20 business owners, 15 police officers, and 3 senior government officials. To supplement the interview data, we analyzed available secondary crime data from the Federal Bureau of Investigation (FBI) Uniform Crime Reporting Program (UCR) and the Virgin Islands Police Department (VIPD) on looting and burglary incidents during the time period 2010-2018. We used a rigorous **ethical framework** to inform our fieldwork in the USVI. Our work revealed the following patterns.

LOOTING AND BURGLARIES VS. STRONG SOCIAL COHESION

One-third of the households we interviewed believed there was looting because it had occurred in the relatively distant

past after Hurricanes Hugo in 1989 and Marilyn in 1995. However, none had personally experienced home burglary or knew of a neighbor who had experienced burglary or theft of any kind. In fact, many of the interviewees had at least one story to tell about neighbors helping them or assisting others after the hurricanes. According to one, “Even some of my anti-social neighbors became friendlier. It was neighbors helping neighbors.”

In addition, the police officers we interviewed did not know of any residential burglaries or business lootings. They also indicated that criminal activities may have been curtailed due to the curfew and the governor’s activation of the Virgin Islands National Guard.

Our review of available data from the FBI-UCR and VIPD showed a sharp decline in reported burglary incidents since 2010, but a four percent increase when compared to the year before the hurricane. The increase spiked during the four months after the storms’ landfall and then was followed by a sharp decline in burglaries during months five to eight. Considering the delay in federal response immediately after the hurricane, we believe the momentary temporal increase in burglaries was likely related to survival appropriating acts, which decreased as humanitarian assistance began to arrive.

A home in Anna’s Retreat, St. Thomas destroyed in a neighborhood surveyed by the authors. © Hans Louis-Charles, 2017.

BUSINESSES SECURED AND PROTECTED

In St. Thomas, our interviews with business owners were focused in the area of Charlotte Amalie, a commercial area where luxury items are marketed to tourists. Although this is a high-risk area for theft-related crimes, interviewees revealed limited burglary concerns, and many attributed this to the strict curfew and the early presence of the National Guard.

In St. John, interviewees revealed no business looting in the main port area of Cruz Bay, although some stated that Coral Bay had experienced significant crime. However, a shop owner in Coral Bay said the burglary rumors were exaggerated and that “there were some kids misbehaving, but nothing serious occurred.”

A solar farm destroyed by Hurricane Maria. © Hans Louis-Charles, 2017

FALSE ALARMS AND SHELTERING BEHAVIOR

Fear of home burglary as well as **fear of crime in mass shelters** can discourage people from evacuating or otherwise seeking potentially safe shelter outside the home in a hurricane. To examine whether the fear of intruders influenced decision-making, we included interview questions about how and why household members made the choice to shelter at home or evacuate.

Most of the people we spoke to (85 percent) sheltered at home or with friends or family and did not seek public shelter. When asked why they did not go to a shelter, 90 percent stated they did not think the storm would be severe, especially because so many “false alarms” had occurred during previous hurricane seasons. Others said they could not reach the shelters because of road conditions. None of the respondents said their reason for not evacuating was due to fear of looting or home burglary.

FOCUSING ON HUMANITARIAN NEEDS AND COMMUNITY SOLIDARITY IN THE WAKE OF THE STORM

Contrary to the widespread reporting of mass looting and violent home burglaries, our interview data revealed a strong community solidarity in the immediate aftermath of the hurricanes. The discrepancy between our findings and the pervasive reporting of looting supports previous research asserting that disaster journalists are often encouraged to exaggerate and focus on sensational aspects of a disaster. They have the **power to amplify** certain aspects of an event to far-removed audiences, potentially reinforcing myths of post-disaster social disorder.

At the same time, other important aspects of a disaster may be downplayed, or even ignored. During the course of our interviews, and outside the scope of our questions, many respondents voluntarily raised concerns about food insecurity, housing inequity, infrastructure improvement, and underinsured homes in the islands. The resources allocated to curfew enforcement and property protection often eclipses funding for housing recovery and disregards the more immediate needs of residents, such as shelter, food, and medical care. Prioritizing the humanitarian needs of hurricane survivors not only addresses threats to residents' health and livelihoods, it also helps mitigate the survival appropriation behavior that may account for some criminal activity in the absence of assistance.

Building with FEMA Disaster Recovery Center and SBA Disaster Assistance banners.

ABOUT THE AUTHORS

HANS LOUIS-CHARLES is an associate professor at The Wilder School of Government and Public Affairs at Virginia Commonwealth University. He teaches risk assessment, hazard mitigation, and disaster recovery courses within their Homeland Security and Emergency Preparedness program. His research focuses on emergency management, collective behavior in disaster, risk communication, social vulnerability, and disaster research ethics. Louis-Charles earned his PhD from the University of Delaware and is a former research assistant at the Disaster Research Center. He is a founding fellow and the current vice president of the William A. Anderson Fund for Hazard & Disaster Mitigation Education and Research.

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ABOUT THIS ARTICLE

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Young adult cleaning out house.

DISASTER IMPACTS
ON COLLEGE STUDENTS: LIFE TRAJECTORIES AT STAKE

BY KYLE BREEN AND MICHELLE ANNETTE MEYER

College students in the United States occupy a unique social space between adolescence and adulthood. Traditional-age college students are learning how to live independently from their parents, although many still depend on their family members for financial and emotional support. In addition, college students often move away from home to new geographic locations, potentially exposing them to different hazard contexts. Their position within the social structure may generate unique risks for college students during disasters.

The purpose of this research was to gain insight into how college students' educational experiences were affected by the 2016 Louisiana floods and its aftermath. While studies have looked at the **vulnerability of children** in **elementary and secondary schools** during disasters, current college students have been under-represented in hazards research and emergency management applications. Some universities have begun to acknowledge the **unique challenges that college students face** during disasters. The impacts of these difficulties include displacement, attendance issues, grade fluctuations, and changes in motivation. There is still more to be learned, however, regarding the experiences of young adults in disasters.

THE 2016 LOUISIANA FLOODS

In August 2016, prolonged rainfall dropped 20 inches of rain in the Baton Rouge region over a three-day period. The ensuing floods destroyed more than 55,000 homes, many of which lacked flood insurance. The disaster occurred about one week before the start of the Fall 2016 academic semester, and many college campuses started a week late. Although the universities in the region avoided major damages, many of the students were from areas impacted by the floods.

At Southern University in Baton Rouge, enrollment declined due to the costs of a university education as well as to flooding, with about 400 enrolled students failing to report for the Fall semester. The parent of one student encapsulated the feelings of many: "My home is lost. My automobile is lost. We're under a financial burden, and our mental state is not one where I want my child starting college or continuing college under these conditions."

In spring 2017, approximately six months after the flood, we interviewed 33 college students. The interviewees were all enrolled at four-year public universities in Louisiana and had experienced the flood either personally or through effects on their immediate families. Open-ended questions posed during the interviews were designed to gain information about their personal experiences in the disaster, the college students' role in flood recovery, and their educational experiences following the flood. They were each asked to self-identify their family's social class, as well as how they paid for their tuition (financial aid, family, or self-funding), along with other demographic questions.

STRONG FAMILY TIES AND SHARING THE HARDSHIP

Analysis of the interviews revealed that one of the most significant impacts on students after a disaster is when their families are affected. Students with closer family ties who felt a strong sense of responsibility to help their families experience greater stress and emotional trauma, which increases the risk of negative impacts. Three additional themes related to educational experiences emerged in the data.

FAMILY OBLIGATIONS

During and after a disaster, some students feel an obligation to their families that is stronger than their responsibility to stay in school. One student described how helping her family find living arrangements severely limited the amount of time she was able to devote to her studies. "When the flood happened, all of a sudden I had to help take care of them," she said. "There was only so much I could do, so as far as my education timeline goes, I was set back." Another student said she needed to go home more to help her parents recover, and often her classes had to be put on the back burner.

SOCIAL STRATIFICATION

College students can **provide unique skillsets and important labor** to communities as well as financial and emotional resources to their families; the need for these resources is amplified after a disaster. For the students, this results in a diversion of effort from studying and employment to supporting their families' resilience, which often occurs at the detriment of their own educational outcomes. Student interviewees who categorized themselves as upper-middle or upper-class did not express the same feelings of financial burden as middle- and working-class students.

Students whose families had the financial means to take responsibility for flood recovery experienced no change in their grades, because they were able to stay focused on their studies. One student said her family encouraged her to concentrate on school and ignore the distractions caused by the flood. Conversely, another student shared that he needed to contribute some of his part-time job earnings to his family to help them during the recovery.

STRESS AND MOTIVATION

All interviewees experienced motivational changes, emotional trauma, and stress following the flood. Much of the stress was related to being enrolled in school at the time their family needed help during the recovery process. One student stated, "It was very depressing during the first few months, and there was a lot of pressure like 'you need to get a job,' so my motivation dropped from all of the pressure."

SHIFTING THE FOCUS TO FAMILIES IN CRISIS

Social vulnerability refers to the ways in which social systems and economic stratification operate to make certain people more vulnerable to disasters. This study helped reveal the ways that college students are uniquely affected by disasters

Baton Rouge Flood 2016. Image Credit: Ibrumf2, 2018

Girl sitting on red chair, waiting for mobile phone signal. Image Credit: Sakhorn, 2011

due to their position in society. While some institutions are taking action to mitigate these impacts through measures such as expanding emergency funds to students, more can be done.

Universities should work to enhance disaster response and recovery not just when their campuses are affected, but with the understanding that families in crisis during a disaster may present the greatest challenges to students. These obstacles have the potential to negatively impact the students' life trajectories. Likewise, future research should focus not just on how disasters impact students and campuses, but how impacts ripple through families to influence students' educational aspirations and achievements.

A forgotten recliner floats through flood waters covering James Chapel Road North of Livingston Parish in Albany, Louisiana on August 13, 2016. Image Credit: Bee Bordelon, 2016

ABOUT THE AUTHORS

KYLE BREEN is a postdoctoral research associate appointed in the School of Social Work at Dalhousie University in Halifax, Nova Scotia, Canada. He received his PhD in sociology from Louisiana State University in 2022. Breen's research centers on the impacts of hazards, disasters, and environmental injustice on historically marginalized groups. Additionally, his research focuses on how environmental hazards affect educational processes and outcomes.

MICHELLE MEYER is the director of the Hazard Reduction and Recovery Center and an associate professor in the Landscape Architecture and Urban Planning Department at Texas A&M University. She received her PhD in sociology at Colorado State University. She uses the lens of social capital and collective efficacy to theoretically understand how relationships between individuals and between governmental and nongovernmental organizations generate or hinder disaster risk and recovery. Hence, her interests have led her to research expansively on volunteer organizations, volunteerism, and philanthropy in disaster.

ABOUT THIS ARTICLE

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HIGH INCOME HOUSING
MEDIUM INCOME HOUSING
HIGH INCOME HOUSING
MEDIUM

ARTICLES: RECOVERY

Canadians helping neighbors post flood.

FOSTERING RECOVERY
THROUGH SOCIAL CONNECTIONS
BY TIMOTHY J. HANEY

On June 19, 2013, more than eight inches of rain fell in the Canadian province of Alberta in just 36 hours. This rainfall, coupled with significant snowmelt, led to seven rivers in Alberta overtopping their banks, triggering catastrophic flooding in Southern Alberta. The Canadian Armed Forces helped evacuate 175,000 people in multiple communities, with more than 75,000 residents evacuated in the City of Calgary alone. The flood became the costliest disaster in Canadian history.

SOCIAL CAPITAL AND DISASTERS

Beginning in the 1990s, the idea of social capital was introduced by scholars to explain how our social networks influence important life outcomes, such as employment, health, and education. In the context of disasters, researchers use social capital to analyze how people access necessary resources during and after a catastrophic event. In Building Resilience, Aldrich (2012) asserts that social capital is the most important resource that an individual, family, or community can mobilize in a disaster, because it helps people access required resources that may not be available through more formal channels.

The **2013 Southern Alberta Flood** provided an opportunity to examine how disasters motivate residents to generate new forms of social capital that help them both recover from the current disaster and prepare for future events. One year after the flood, in May 2014, I worked with a team of research assistants to collect survey data from 407 Calgary residents who lived in the **city's 26 flooded and/or evacuated neighborhoods**. The survey included questions related to participants' evacuation experience, their use of social networks during the disaster, and their plans for returning or rebuilding. To augment the survey data, we also conducted 90-minute interviews with 40 residents. The purpose of the study was to examine the factors that prompted residents to expand their social contacts, and the impacts of these new networks on attachment to place and civic engagement.

EMERGENT NETWORK TIES

Our analysis of survey data revealed that direct personal experience with the flood was the most important predictor of whether an individual would develop new social connections. Having their home flooded, being asked to evacuate, and the duration of the evacuation were all related to the generation of new social capital. In fact, participants whose homes had flooded were five times more likely to make new social contacts.

Those who experienced the most hardship during the floods were also more likely to stay in touch with new contacts in the year following the disaster. Notably, variables such as the number of neighbors they knew by name prior to the flood were not significant. This finding supports the idea that during disasters, new social capital is formed in response to a situation of need.

The personal interview data also highlighted the importance of situational need in creating new social capital. One interviewee who was forced to outrun the flood waters to escape her home told us: "I met more of my neighbors than I have met in the thirty years I have lived there. I am closer to them, and we were able to help our neighbors." Another explained how his new connections endured after the flood.

"Maybe you see them at the little coffee shop in the neighborhood now, and you know they were there to help you."

POST-DISASTER PLACE ATTACHMENT

Researchers have long known that experiencing a disaster can change the sense of attachment residents have to the place they live. Disasters can alter someone's attachment to place by making livelihoods more difficult, significantly altering the natural environment and landmarks, and disrupting social networks that are part of daily life. Based on this, we asked respondents questions related to how they felt about their neighborhoods a year after the disaster and whether they considered their post-flood neighborhood an "excellent" place to live.

Although having one's residence flood did not affect people's attachment to their neighborhoods, it did negatively impact their perception of the neighborhood's quality of life. It may be that people's evacuation experiences made them think about their neighborhood's vulnerability to future flooding, prompting them to question whether they wanted to continue living there. Based on these findings, we conclude that having an adverse flood experience and bearing flood-related financial costs caused residents to perceive their neighborhood as being less desirable.

POST-DISASTER CIVIC ENGAGEMENT

Research has shown that community issues, such as crime or poverty, often trigger civic engagement by residents. Following a disaster, residents may channel their new social connections into civic engagement and grassroots efforts to solve problems. We measured post-disaster civic engagement by asking participants (1) whether they spoke to their neighbors more after the flood than before, and (2) whether they had attended any community or neighborhood meetings since the flood.

Overall, personal experience with the flood was related to increased civic engagement; people whose homes had flooded were three times more likely to be active in their communities after the flood. The strongest predictor of post-disaster civic activity is pre-disaster community involvement. Respondents who described their pre-disaster activity as high were 37 times more likely to maintain this level of activity after the flood. One participant said his concerns about structural mitigation measures motivated him to become more active in **neighborhood meetings**. "I am on a committee, and we are lobbying. I am going to keep talking to people and keep actively participating in a proper mitigation strategy," he said.

The number of residents who made new connections and had higher levels of community involvement with their neighborhoods during and after the floods is noteworthy. It is important to also pay attention to who had these experiences. Our findings clearly show that the severity of impacts and material need are the key factors that trigger the formation of new social ties. In addition, those whose homes had flooded were more likely to have high levels of civic engagement. However, the experience of having their home flooded or having to evacuate appeared to erode people's attachment to place, even if their community involvement increased.

Understanding how disaster-affected residents expand their social networks after a disaster is critical to building more resilient communities in the disaster aftermath. Our results show that it is not simply pre-existing social capital that helps residents cope with a disaster, but instead that the disaster may actually bring together people who may not have otherwise interacted. These new bonds can strengthen communities and lead to community engagement, volunteering, and other altruistic efforts as well as foster a more robust recovery.

ABOUT THE AUTHOR

TIMOTHY HANEY is professor of Sociology and coordinator of the Sociology Program at Mount Royal University in Calgary, Alberta, Canada. From 2014-2019 he served as director of MRU's Centre for Community Disaster Research. Haney is an environmental, disaster, and urban sociologist. His work looks at risk perceptions, post-disaster environmental views, social capital and social networks in disaster, social inequalities in disaster recovery, the development of housing in proximity to natural hazards, as well as methods and ethics for disaster research. Haney is a former New Orleanian who went through Hurricane Katrina, and has taken several classes of undergraduate students to New Orleans to learn about disaster and to serve the community.

ABOUT THIS ARTICLE

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A self-constructed house in the mountain area uses traditional building materials and maintains the traditional architectural style. ©Haorui Wu

SUCCESSFUL DISASTER RECOVERY
GROWS FROM THE GRASSROOTS

BY HAORUI WU

On May 12, 2008, the province of Sichuan, China was rocked by a **7.9 magnitude earthquake**. What soon became widely known as the Wenchuan earthquake killed nearly 370,000 people, making it the fifth deadliest earthquake in the world since 1950. An estimated 375,000 people were injured, 18,000 went missing, and five-million were left homeless.

China's central government devoted **1.7 trillion Chinese Yuan** (roughly $250 billion) to a three-year long recovery effort. Rural populations were hit especially hard, and the central government saw the earthquake recovery effort as an opportunity to not just re-build but re-develop rural economies and livelihoods. The effort produced mixed results and offers some clear lessons for improving disaster recovery both in China and in rural communities around the world.

PROMOTING COMMUNITY THROUGH GENERATIONAL KNOWLEDGE

Immediately following the disaster, the central government plan called for constructing urban-style condominium units to house displaced people. The units were made available at no or very low cost to the residents and nearly everyone took advantage of the offer. The central government also offered to pay families to rebuild their own homes. These two different options offered a natural experiment showing which option worked best in the long term for the residents of rural Sichuan.

This long-term project was launched soon after the disaster and focuses on rural mountain communities that were devastated by the earthquake. I interviewed 19 members of 11 farming families located in nine communities. Eight families opted to rebuild their homes immediately after the earthquake. The remaining three families lived in the government-built condominiums for about one year before returning to their original homes to rebuild. The three families that had experience with both home types reported greater satisfaction living in their self-rebuilt homes than living in the condominiums.

Several factors help explain why the self-rebuilt homes were more desirable than the government condominiums for this sample. All 11 of the focal families had lived in the area for several generations and had an intimate knowledge of the environment around their homes. In addition, they each had strong ties to their communities. This practical knowledge and ability to draw upon the labor of friends and relatives are a large part of what made the self-rebuilding efforts a success. One middle-aged man emphasized the importance of traditional building skills in reconstructing his home: "There were skilled workers in my village or the village close to us, like mason and carpenter. Their skills are family inherited, developed for several generations."

All of the self-rebuilt homes used locally sourced stone and mud for the foundations and wooden frames sometimes reinforced with steel beams. This was an important safety feature for one older couple who noted that, "the collapsed buildings were [almost all] concrete boxes; our old houses all

survived." They went on to say: "My great grandfather built our old houses with stone and mud as the foundation and wooden framework. Four generations have lived in that house. It still stands and is usable." Self-rebuilding allowed the residents to make safer houses by choosing appropriate locations and materials for their homes, which protects their fundamental right to have a safe place to live.

The self-rebuilding effort also provided cultural benefits. One middle-aged woman with two children in elementary school said, "building a house is really one of the biggest events in the whole family." Her brother-in-law hired the laborers, and her sister-in-law bought most of the construction materials while her parents watched the children. Her two brothers and sister drove in to help. A middle-aged man said that building the house allowed him to spend time with friends and neighbors who were usually away doing migrant labor. He said, "it was like a festival in my village, just like a wedding or a lunar New Year gala...It was really teamwork, and all my neighbors came to help."

By contrast, living in the condominiums separated old neighbors and isolated elderly residents. One older woman reported that she couldn't see her friend who had trouble walking and lived on the fourth floor of a building with no elevator. A young mother worried about her daughter playing without adult supervision in the condominiums, saying that she never had to worry about kids playing in the village. Living in the condominiums also meant that residents had to give up farming as a livelihood. Many of them were employed through public works programs but when funding for those programs ran out, they struggled to find other jobs.

BUILDING A MORE PROSPEROUS FUTURE

While the central government's top-down approach of quickly building condominium units served the immediate need to house displaced people, it did not do as good a job of meeting their long term needs as the grassroots self-reconstructed homes did. Not all communities have the close-knit community ties and depth of local knowledge that the rural mountain town of Sichuan possess, but this community-driven approach to disaster recovery does provide a model that can be used in other settings. For example, villagers in Chile were provided with "**half a good house**" after an earthquake and tsunami devastated communities in 2010. These half-completed houses allowed residents to finish the other half in whatever way suited their needs. Another **example** comes from Sri Lanka where farmers collaborate to use weather and climate forecasting to predict droughts and allows them to divide farmland in a way that provides water equally to everyone.

These grassroots programs provide an effective complement to centralized government disaster responses. As this research shows, such programs can transform disaster survivors from being passive recipients of government aid to actively taking part in making their homes and communities more prosperous and resilient in the long term.

ABOUT THE AUTHOR

HAORUI WU is Canada Research Chair in Resilience and associate professor in the School of Social Work at Dalhousie University. His community-based interdisciplinary research and emerging practice have explored the nuances of disaster-driven vulnerabilities through the lenses of environmental justice and social justice in the global context of climate change, disaster, and willful acts of violence. His innovative socio-ecological protection strategies aim to stimulate the transdisciplinary application of engineering, social, cultural, ecological, economic, and political dimensions into the empowerment of grassroots-led community development initiatives that contribute to the enhancement of inhabitants and co-inhabitants' health and well-being.

The inner yard of a self-constructed house in the plain area maintains the traditional rural lifestyle. ©Haorui Wu.

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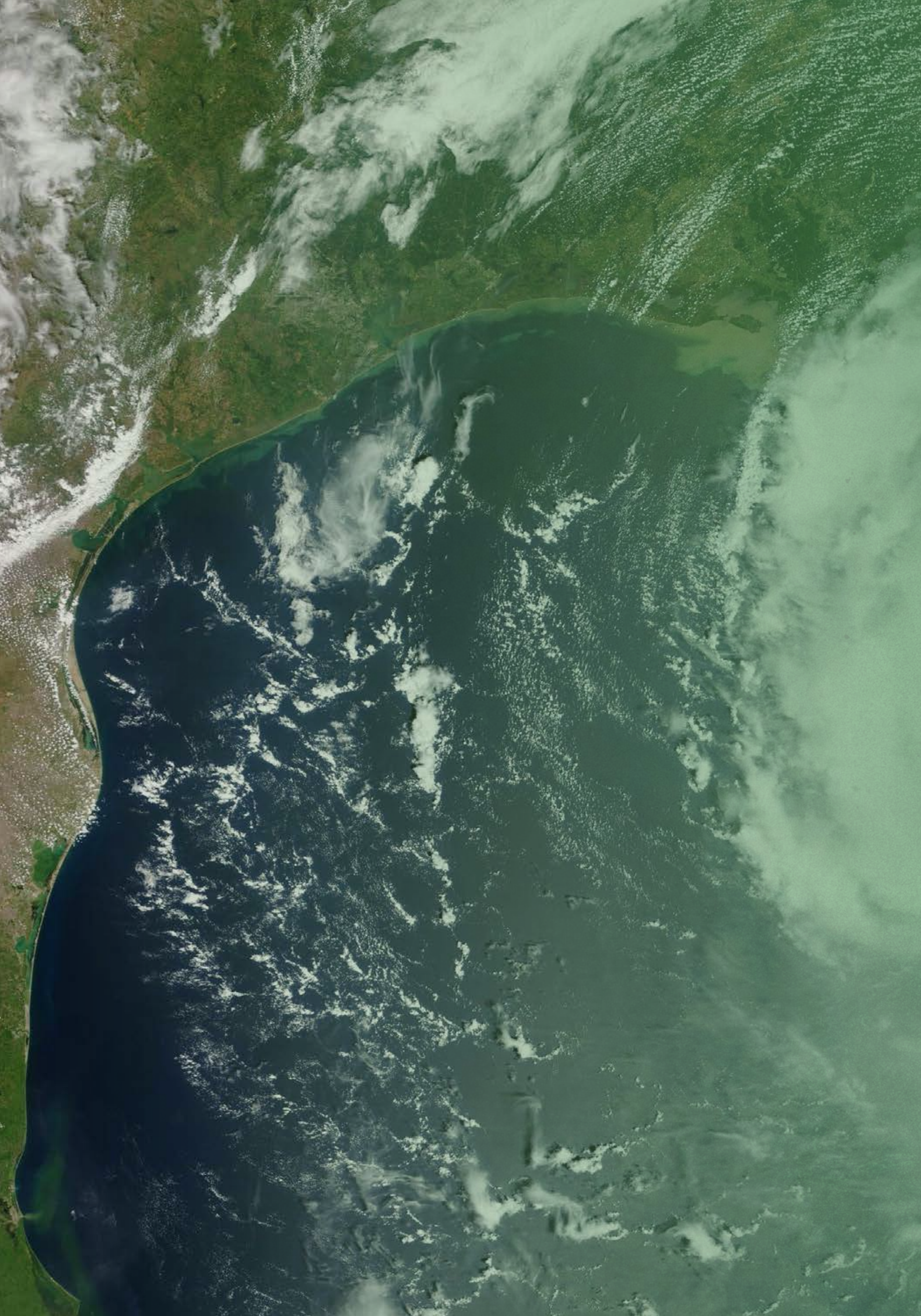

ARTICLES:

MITIGATION AND RESILIENCE

Talcahuano Neighborhood.

DISASTER SUBCULTURES

CAN SAVE LIVES

BY KAREN ENGEL, JEROEN WARNER, AND GEORG FRERKS

A magnitude 4.0 temblor shakes the nation of Chile **five times per week on average**, and some Chileans barely notice. The nation lies near the intersection of three tectonic plates and the threat of more severe earthquakes, magnitude 7.0 or greater, is a constant presence. Over the centuries Chileans have developed a body of knowledge to help them cope with this ever-present threat. This disaster subculture played an important part in saving people's lives in the Greater Concepción area after a magnitude 8.8 earthquake that triggered a tsunami struck the region in February 2010.

LIFESAVING LESSONS OF TRADITIONAL EARTHQUAKE KNOWLEDGE

Disaster subcultures develop in places where there is a recurring threat of a specific type of disaster, the threat allows for a period of forewarning, and the damage from the disaster cuts across class divisions within the community. To study the role that the disaster subculture of the Greater Concepción area played in the aftermath of the 2010 earthquake and tsunami, our research group interviewed 93 survivors individually and 147 survivors in group settings, about their experiences during and after the disaster. The interviewees came principally from the coastal community of Talcahuano and the inland community of Hualqui.

Respondent ni Talcahuano indicating how high the tsunami water reached in her home. ©Karen Engel, 2013

The interviews revealed a set of values ingrained in the disaster subculture. Survivors spoke of community solidarity that took the form of helping elderly people and people with disabilities to higher ground before the tsunami struck. The communities had volunteer fire brigades who came together to assist during the disaster. Respondents also reported that they didn't see themselves as victims, and that they did not feel like they were at the mercy of nature. Some even saw the disaster as a re-development opportunity. One respondent said, "emergencies are opportunities because previously tight resources are finally released." Talcahuano used disaster recovery funds to enact a plan that was already in place to improve the city's appearance. Hualqui used their funds to address a housing shortage. These types of outlooks and actions worked together to make the communities more resilient to the effects of the earthquake and tsunami.

Cultural knowledge also helped individuals survive the disaster. People were used to going outside and heading to high ground after a severe earthquake. The guideline that was used by many interviewees was if the earthquake was strong enough to make a person fall then a tsunami was likely and it was important to immediately head uphill. This practice pre-dates the Spanish colonization of Chile. It actually began with the indigenous Mapuche people who would gather their food and children as soon as the earth stopped shaking and climb the nearest hill or mountain. This belief allowed the people of the Greater Concepción area to quickly assess the risks the disaster posed and rapidly take action to protect themselves. However, these beliefs are mostly held by people living near the coast. Respondents from inland areas were less likely to have this knowledge, and people from outside of Chile were unlikely to have it at all. One result was that tourists who were camping in Pellehue and Curanipe were killed by the tsunami.

To increase tsunami evacuation knowledge, especially for people visiting or new to the coastal city of Talcahuano, signs have been placed to indicate evacuation routes in case of tsunamis. ©Karen Engel, 2014

In addition to traditional knowledge, new technologies are also available to help mitigate the threat of earthquake-triggered tsunamis—although our research revealed their effect is mixed at best. The Pacific Tsunami Warning System, which is made up of a network of seismometers, ocean pressure sensors, and sea-level monitoring stations, was in use at the time of the 2010 disaster. Officials in Chile, however, seemed to ignore the warning it provided. Officials stated that the earthquake was expected to generate higher waves but that the impact would be limited. Respondents told of police officers saying that it was safe for people to return to their homes in low lying areas. The result was that many more people were killed by the tsunami that followed than would have been if they had relied only on centuries old local knowledge.

STRATEGIES LEARNED FROM DISASTER SURVIVORS

Interviews with disaster survivors revealed several areas for improvement in disaster response. Matching donated goods to the needs of survivors resulted in surpluses of items that were not needed but nevertheless took valuable time to dispose of. The volunteer fire brigades from poor areas were under trained and under resourced compared with their counterparts from wealthier neighborhoods, a disparity that should be dealt with to provide better response in the future. Disaster aid was also concentrated in the areas that received the most media attention resulting in some heavily damaged areas receiving inadequate amounts of aid. The Pacific Tsunami Warning System was retired in 2014, but its failure revealed that a complex warning system that relies on input from too many sources is too slow to be relied upon in an emergency.

The disaster subculture of the Greater Concepción area, however, served the residents well by giving them the tools to quickly assess the level of threat they were facing and take appropriate protective actions. The attitude of looking forward to a new normal rather than feeling resigned to the destruction of constant disasters may be the greatest resource for keeping threatened communities resilient.

ABOUT THE AUTHORS

KAREN ENGEL earned her PhD in disaster studies from the University of Wageningen. She is an experienced researcher, lecturer and facilitator. Her work focuses on dealing with complex issues through multi-stakeholder processes. Engel's specific areas of interest are community resilience, disaster risk reduction, and sustainable climate change adaptation. Her research explores opportunities for increasing disaster resilience and disaster risk reduction, as well as the politics of disaster risk reduction.

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GEORG FRERKS was the chair of conflict prevention and conflict management at Utrecht University and the chair of international security studies at the Netherlands Defence Academy until his retirement in 2021. Until 2014, Frerks was also chair of disaster studies at Wageningen University in the Netherlands. His research focuses on disasters and conflict, including international and national policies and interventions. Frerks published 25 academic books, 120 journal articles and book chapters, and 90 policy reports and monographs. Frerks directed numerous policy-related studies and evaluations, and served on boards of national and international academic institutions and nongovernmental organizations.

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New Orleans Covid floats.

BOUNCE RAP
AS RESISTANCE TO IMPOSED RESILIENCE
BY NATALIE D. BAKER

On August 29, 2005, Hurricane Katrina made landfall in Louisiana ultimately killing 1,833 people and causing $105 billion in property damage. It was the costliest storm in American history and one of the top five deadliest. Much of the damage occurred in New Orleans where the storm overwhelmed protective levees and left 80 percent of the city underwater. The communities that were most vulnerable to the storm were, unsurprisingly, poor Black neighborhoods.

LISTENING AND LEARNING FROM LYRICS

As discussions turned toward rebuilding the city, familiar narratives of resilience were imposed on the people who previously lived in the wards and public housing projects. These narratives asserted that neighborhoods that have been systematically neglected for decades should "bounce back" in the same way as wealthier neighborhoods. Stereotypes of these neighborhoods as wastelands of poverty and crime may have helped sell the idea that the wards and projects needed to be torn down and replaced including some that were not damaged by the storm. However, the stories that the communities themselves were telling through the lyrics of "bounce rap" songs, a style of music that originated in the Black communities of New Orleans, illuminate a different side of life in the projects. The lyrics revealed the importance of the family and community support networks and mourned their loss. The voices of community members were not considered when those communities were demolished in the name of resilience, but the voices were there nonetheless.

Bounce rap emerged in the 1990s as a way for the Black New Orleanians to cope and react to the racism, systemic neglect, and insults their communities face. Bounce rap is hyper-local. The song lyrics and the names of the rappers specifically refer to neighborhoods such as 10th Ward Buck and 5th Ward Weebie. I sampled lyrics from 147 songs to identify themes within the music. Sixty-five songs that were recorded pre-Katrina between 2000 and August 2005, and 82 post-Katrina songs were recorded between September 2005 and 2010.

At the outset of my research, I expected that the lyrics would contain themes of inequality, violence, and poverty—similar to other genres of rap music. But those themes were relatively minimal in the post-Katrina music. There was also relatively little mention of the storm, although there were prominent exceptions. After two years and several rounds of thematic analysis I was still stuck with the question of why these themes were missing. Solving the puzzle of why outsiders portrayed these post-Katrina neighborhoods as a hell on earth while people from these places avoided that kind of negativity led me to question how outsiders continue to perpetuate marginalization through their characterization of Black spaces.

This realization also led me to confront the hypotheses and assumptions I was bringing to this research as a highly educated White woman who lived in New Orleans at different periods in her life before and after Hurricane Katrina. Several events exposed for me the way that narratives of resilience are continuing a colonialist mindset (1,2) in disaster scholarship. One pivotal moment occurred at a conference where a group of

accomplished White women scholars had presented their work where they had successfully "built resilience" in Indigenous communities of color. I found myself asking how they concluded that the groups they studied needed or wanted to be resilient in the ways they decided.

Those kinds of questions were never asked of New Orleans' poor, Black communities and that lack of engagement is reflected in the lyrics of 5th Ward Weebie's "**Katrina Song (F*ck Katrina)**."

> 5th Ward Weebie, he back and we soldiers. / I'm reppin New Orleans till the day that I'm over. / Mississippi people y'all feel where I'm at, / same sh*t, same story, so it' time to bounce back.

The lyrics evoke Weebie's personal identity as a New Orleanian and a member of a community that is used to endless struggle but will not quit. In the last line he brushes off the hurricane as nothing more than his community had dealt with before—same sh*t, same story.

Rapper Mia X wrote "**My FEMA People**" about the destruction of her community but also as a love letter to her city. "We were left for dead, for vultures, all through the city," she wrote but a few lines later continued: "Where my people? Y'all my people. I got love for my people. That's right, 504 represent... New Orleans, I love you."

Gotty Boi Chris wrote about the demolished housing projects in "**Hustlaz At**," name checking the Iberville, Calliope, Melpomene, and St. Bernard housing projects and saying "a party ain't a party" if each of those projects "ain't in it." 5th Ward Weebie and Big Choo also grieved the loss of poor, Black wards and projects in their song "**Dip it**," mixing references to dancing with memory of the demolished communities.

Bounce rap provided a positive voice for the projects celebrating the city and Blackness despite institutional neglect and ongoing patterns of racial exclusion. It reflects a lived experience that defies the narrative that was imposed on those communities from more powerful white-led institutions and actors.

CULTIVATING CULTURES OF RESILIENCE THROUGH RESISTANCE

Bounce rap is only one of the ways Black citizens resisted the conditions that were imposed on them post-Katrina. They were not vulnerable because of some condition inherent to poor, Black people but because the still dominant White culture has rendered this population group vulnerable due to centuries of institutionalized racism. To quote a 2014 paper by Evans and Reid, "there is no resilience asked of those who can afford to take flight." Resilience is often only demanded of those with the fewest resources. Black New Orleanians had no other recourse than to resist with their own culturally appropriate tactics.

As disaster researchers we need to be careful not to reproduce narratives that portray poor communities of color as inherently fragile while ignoring the role that institutional racism and neglect plays in creating vulnerability to disasters. We should also pay attention to how our discussions of "building resilience" in communities to which we do not belong can marginalize the people we are trying to help. Resilience is not something that can be imposed by White scholars on communities of color. Resilience, as well as resistance, is already present there in unique forms if we take the time to listen and learn.

ABOUT THE AUTHOR

NATALIE BAKER is an associate professor of strategy at the National War College. Her research focuses on the importance of social order in instances of disruption. Examples include large-scale crises like disasters, war, or interpersonal trauma. She studies alternative forms of social order, such as criminal governance and spontaneous collective altruism after disasters. In addition, Baker works in collaboration with the Medical College of Wisconsin and Marquette University to study post traumatic stress in veterans.

Big Freedia Queen of Bounce with New Orleans background.

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THANK YOU FOR TAKING THIS RESEARCH AND MAKING IT COUNT.

If you have questions about ***Research Counts***, please contact us at hazctr@colorado.edu.

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Thank you for reading ***Research Counts***. Please take a moment to complete this short survey so we can continue to improve the series and future special collections: **hazards.colorado.edu/rcsurvey**

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