

Research at The University of North Texas: Department of Emergency Management and Disaster Science

Emergency Management and Disaster Science at UNT



The Department of Emergency Management and Disaster Science at the University of North Texas is home to the nation's first bachelor's degree program in Emergency Administration and Planning (EADP) and, as of 2018, also houses a Master of Science program in Emergency Management and Disaster Science (EMDS). Faculty within the department hail from diverse disciplinary backgrounds, including hazards geography, disaster sociology, planning, and policy studies. All are committed to conducting cutting edge research at the nexus of hazards, disasters, and emergency management. This poster highlights current research under way by faculty and graduate students in the department.



Acknowledgements and Funding Sources

Featured EMDS Faculty and Researchers:

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Examining the Usage of Community Strong Slogans

Dr. Mary Nelan

Dr. Nelan is currently working on a project that examines the usage of "strong" slogans following disaster and crisis events. These slogans have emerged after events for over a decade, with the earliest examples of Boston Strong, Joplin Strong, and Jersey Strong. Drs. Nelan and Zavar have published an article that investigates the various ways that these slogans are used within the affected communities. Findings reveal that the slogans contribute to community pride and social cohesion, which helps individuals cope with loss. Additionally, strong slogans were present in material culture reflecting the unique cultures of each locale and were also associated with local events or iconic places. Importantly, these slogans can foster disaster resilience by maintaining a collective memory of hazards that impacted communities in the past.



Currently, Dr. Nelan is analyzing data on how the "El Paso Strong" slogan has evolved over the 5 years since the Walmart Mass Shooting from August 2019. Dr. Nelan also researches disaster volunteers and donations.



Selected Works:

Nelan, M.M., Zavar, E. & Saltzgeber, M. (2024). #[Community]strong: how commemorative slogans emerge following crises. *Geojournal* 89, 56.

Nelan, M. M. (2021). Disaster volunteers: The constructed identity of disaster aid workers and their place in the affected community. In T. Waterman, J. Wolff, & E. Wall (Eds.), *Landscape Citizenships* (1st ed., pp. 164–181). Routledge.

Quality of Life and Wildfire Mitigation After the Smoke Settles

Dr. Mitchell Snyder

Dr. Snyder's research focuses on the impacts of wildfires on and across communities, including the diversity of needs which emerge in the weeks to months after fires. Snyder's doctoral work investigates how these needs and impacts vary over time and can impact residents' overall quality of life years after the smoke settles. Building upon his prior qualitative work with over 4,000 households across California in the wake of the 2017 and 2018 wildfires, Snyder's current research efforts focus on efforts to reduce future wildfire risk through mitigation activities in Lake and Sonoma counties in northern California.



Snyder's current study explores the potential differences in how implementers and residents view their own responsibility for undertaking wildfire mitigation efforts. Studies have shown these entities have differing resource capabilities and constraints, and that they are motivated by different incentive structures. This work stems from a project funded by the Joint Fire Science Program, led by Dr. Miranda Mockrin and Dr. Ronald Schumann, which focuses solely on implementers' perspectives. This new line of inquiry seeks to add residents' viewpoints, asking questions about who and what should be protected. Few studies have investigated how implementers (i.e., government and community leaders) and homeowners understand their respective responsibilities for mitigating wildfire, or how expectations around public versus private costs and benefits differ.

Selected Publication: Snyder, Mitchell, Miles, M. Hertz-Picciotto, I. and Conlon, K. (2025). Household Needs Among Wildfire Survivors in the 2017 Northern California Wildfires. *Environmental Research: Health* 3(1). <https://doi.org/10.1088/2752-5309/ad951c>.

Place Attachment and Mitigation in Wildfire Recovery

Dr. Ronald Schumann

Dr. Schumann's research focuses on the overlap between long-term recovery and mitigation and the challenges in achieving these often-competing goals at once. Issues of place identity, cultural memory, and environmental perception feature prominently. Schumann has conducted fieldwork on household and community recovery after Hurricanes Katrina, Sandy, and Harvey. His two current projects focus on destructive wildfires over the last decade in northern California and Hawaii.



The first project, funded by the National Science Foundation, explores residents' post-fire housing adjustment decisions using photovoice. Specifically, the study asks: how does place attachment influence the decision to either 1) rebuild in the same location, 2) rebuild *in situ*, but in fire-adapted ways, or 3) relocate? While the California portion of the study focuses exclusively on homeowners whose homes were destroyed, in Hawaii, the participant pool includes renters and people living in nontraditional arrangements.



The second project, funded by the Joint Fire Science Program, inventories, traces funding, and spatially locates post-wildfire risk reduction activities in Sonoma and Lake counties, in California. Interviews with implementers, qualitative analysis, stakeholder participation, and computational modeling explore both the efficacy and combined effectiveness of home hardening, defensible space, and vegetation management activities.

Selected Work: Schumann, R.L. III, Mockrin, M.H., Balachandran, B., Binder, S.B., and Greer, A. (2025). "Flashpoints between Wildfire Recovery and Mitigation in Northern California." *International Journal of Disaster Risk Reduction* 119:105270.

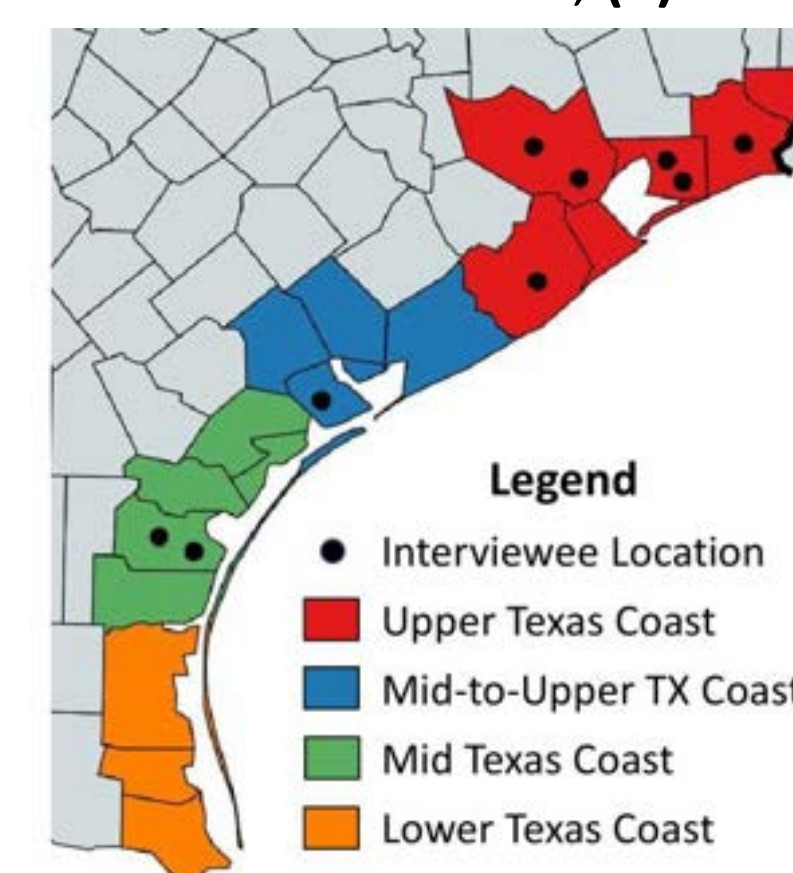
Hurricane Risk Communication Along the Texas Gulf Coast

Dr. Tristan Wu

The project, funded by Texas OneGulf, aims to enhance risk communication strategies for emergency management (EM), with a focus on hurricane evacuation and re-entry in Texas coastal counties. Its goal is to align public information preferences and behaviors with EM messaging to improve compliance and reduce misinformation. Key tasks include conducting interviews with EM professionals, running a social experiment on information-seeking behavior with local residents, surveying households on communication preferences, and co-producing a publicly available risk communication guidebook.



Interviews with EM professionals (Fig. 1) revealed seven key communication challenges during hurricane events: (1) Channel Preferences – a lack of understanding about preferred communication channels among public subgroups; (2) "Right" Channels – uncertainty about which channels are most effective for various types of emergencies; (3) Avoiding Public Disengagement – the risk of people "tuning out" due to an overload of information sources; (4) Message Effectiveness – limited tools to evaluate the impact of EM messaging; (5) Cutting Through the Noise – difficulty in helping the public navigate the volume of messages to find reliable information; (6) Managing Misinformation – the need to address misinformation, especially on social media; and (7) Refreshing Risk Communication – rebuilding trust in official messaging after COVID-19. Addressing these challenges will support more effective, evidence-based EM communication strategies.



Selected Work: A. D. Ross, L. Siebeneck, H.-C. Wu, S. Kopczyński, S. Nepal, and M. Saucedo. (2024). Seven Challenges for Risk Communication in Today's Digital Era: The Emergency Manager's Perspective, *Sustainability* 16(24), Article 24. doi: 10.3390/su162411306.

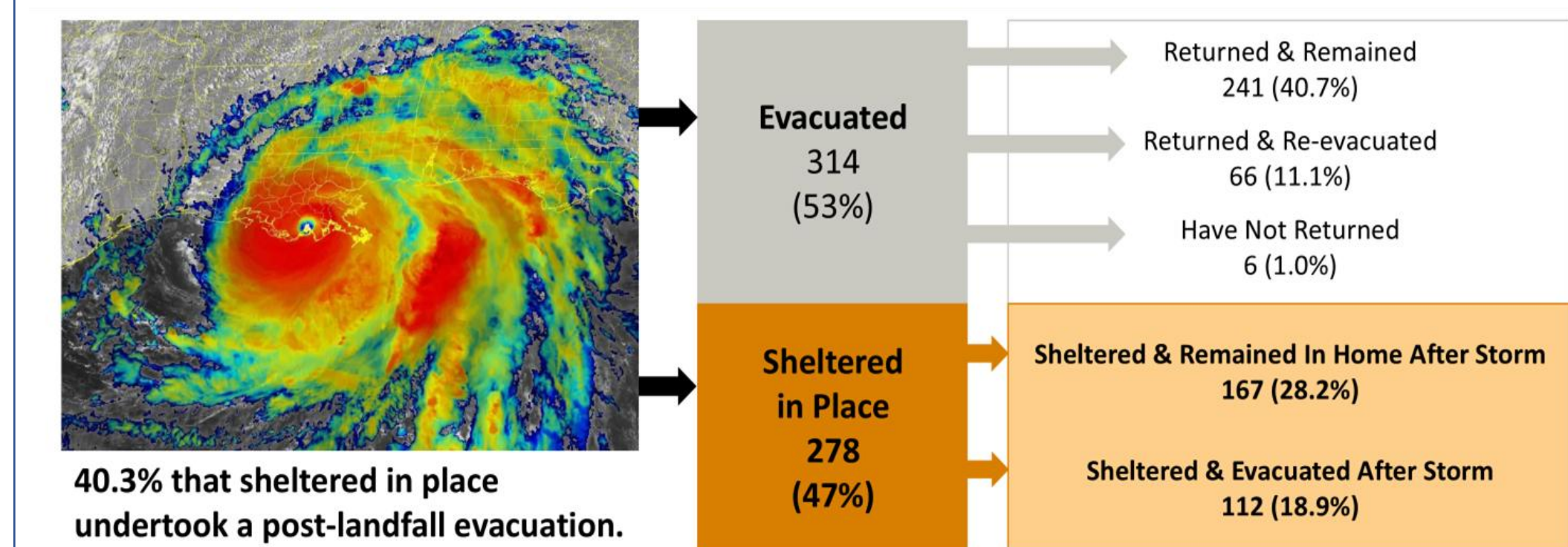
Understanding Evacuation Decisions Post-Landfall

Dr. Laura Siebeneck

Evacuation and shelter-in-place decisions in response to hurricanes is an important thread of inquiry in the disaster science literature. Throughout the past several decades, studies have identified variables salient in the prediction of these decisions. While these studies have forwarded knowledge of household evacuation decision-making before a hurricane, they offer limited understanding of the experiences of households that remain and shelter-in-place.



This study explores the experiences of households that sheltered-in-place during Hurricane Ida in 2021. Specifically, we examined two research questions: (1) what factors influenced the decision to evacuate post-landfall; and (2) where did households go when evacuating post-Ida and how do those destinations compare to pre-landfall destinations? Preliminary findings indicate that 40% of participants that sheltered-in-place during Ida evacuated after the storm. Mold in the home and lack of electricity significantly influenced the likelihood to evacuate, whereas increased concern of looting and risks posed by Tropical Storm Nicholas decreased the likelihood of leaving post-landfall. Lastly, no significant differences existed between pre- and post-event evacuation destinations.



Selected Work: Siebeneck, L.K., Lei, Z., Sharma, P., Verma, R., Osazuwa-Peters, M. & Ukkusuri, S.V., 2024. Household evacuation decision making during simultaneous events: Hurricane Ida and the COVID-19 pandemic. *International Journal of Disaster Risk Reduction*, 114:104914.

Ecosystem Services and Stakeholder Preferences in Buyouts

Dr. Elyse Zavar

This multidisciplinary study, funded by the National Science Foundation, seeks to understand the environmental benefits of open space created through flood buyout programs. Buyouts, a popular hazard mitigation tool, remove people and buildings from high-risk areas and convert the land to open space. This open space offers potential to increase ecosystem services for the communities such as improved air and water quality, nutrient cycling, and recreational opportunities to name a few. However, residents value these services differently and buyout managers currently lack empirical data on post-buyout land use benefits and resident needs and preferences for post-buyout open space management.



From this study, we seek to develop guidance for communities on open space land management options that align with federal requirements, meet evolving community needs, and maximize ecological services. Collaborators on this NSF DISEX project include Jason Martina at Texas State University, Alex Greer at University at Albany, and Sherri Brokopp Binder at BrokoppBinder Research and Consulting.



Above: Dr. Zavar and UNT students collect field data on uses of buyout land in Houston, Texas.

Selected Publications:

Niazi, S., Zavar, E., Binder, S. B., Greer, A. (2025). The influence of power on post-buyout land management practices. *Histories*, 5(1), 14. <https://doi.org/10.3390/histories5010014>

Zavar, E., Binder, S. B., Greer, A., & Breaux, A. (2023). Using the past to understand future property acquisitions: an examination of historic voluntary and mandatory household relocations. *Natural Hazards*, 116(2), 1973-1993. <https://doi.org/10.1007/s11069-022-05749-2>