Impact of Post-Disaster Debris Management on Communities: A Case study on Hurricane Helene and Milton

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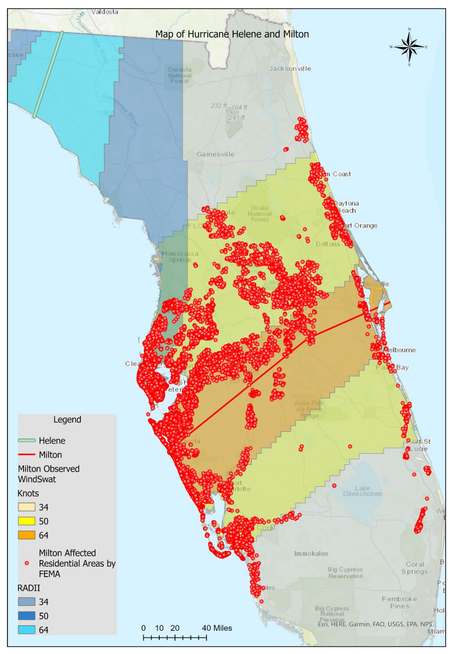
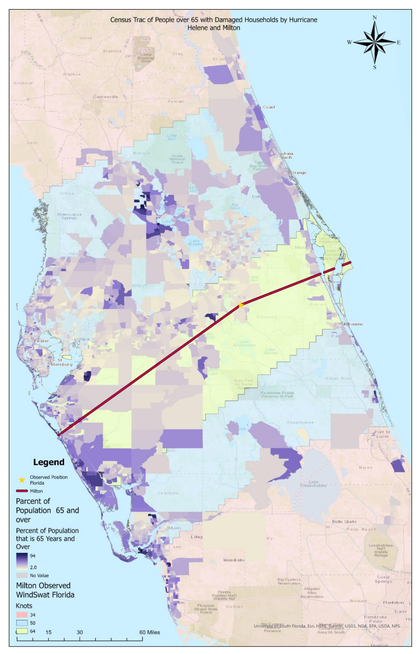
Introduction and Background

The United States faces significant challenges in managing natural disaster debris, which encompasses various materials generated by events like earthquakes, hurricanes, and floods.[1] While substantial resources are being allocated for disaster recovery efforts, the management and clearance of disaster debris remain understudied.[2] This study aims to identify key challenges faced by local communities and stakeholders when debris removal is delayed. To understand these challenges, we interviewed stakeholders and residents impacted by the 2024 Hurricanes Helene and Milton in Florida. We will use the key findings from these interviews to build survey instrument for Cascadia coastal stakeholders and residents that will face similar debris accumulation after a Cascadia subduction earthquake and tsunami.





Events such as Tsunami and hurricanes can produce 5 to 15 times the annual waste generation rates of a community.[3]

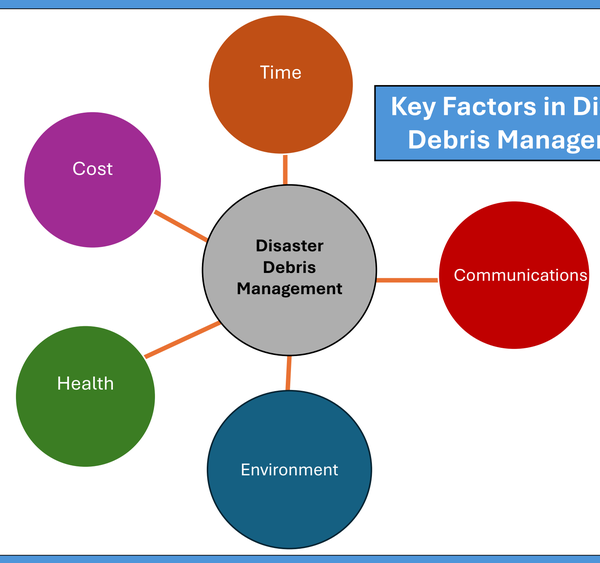
According to the FEMA, handling the debris from disasters can cost local and federal governments more than 25% of their total disaster recovery budget.[4-5]

Prolonged exposure to disaster debris causes significant health impact such as asbestos causes lung cancers.[6]

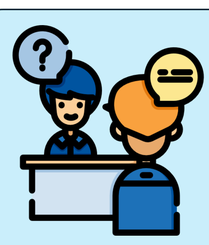
Research Questions

- What factors in disaster debris are considered and prioritized when developing debris management plans & decisions and why?
- How do the prioritization of these factors differ between stakeholders and community members?
- How can these differences in prioritization be balanced or reconciled?

Methods



Key Factors in Disaster Debris Management



32 semi-structured in-depth interviews with stakeholders working on Hurricane Helene and/or Milton disaster debris removal (contractors, city officials, county officials)

Preliminary Findings

Cost & Capacity

- **Limited availability of debris haulers and equipment:** *"Usually, I'd have 10 to 15 crews. This year, I had four... there was more work than workers."*
- **Escalating contractor costs and price hikes:** *"Some contractors were holding counties hostage and saying that they weren't going to have any contractors coming if they didn't pay the rates and some of the rates increased from $9 per cubic yard to $48."*
- **Delayed FEMA reimbursement creates financial strain** as cities and counties struggle to cover costs while waiting for FEMA funds.
- **Limited capacity such as staffing or geospatial tools and knowledge to quickly identify high volume debris areas.**

Time

- **Deciding which areas to clear first can create tension in the community:** *"You're looking at your worst-hit areas... but medical, fire, and police routes come first, then hospitals and retirement communities."*
- **Delays in debris removal occurred if residents do not comply with sorting requirements**: *"The problem has been people mixing everything together... If it's completely mixed up, we're not picking it up. We go past it and contact the homeowner or code enforcement."*
- **All residents desired fast debris removal**, especially before holidays (Thanksgiving and Christmas)

Communication & Coordination

- **Coordination between municipal and county agencies affects debris operation:** *"Municipalities were expected to find their own debris sites after the county prioritized its own needs."*
- **Public understanding of debris separation and disposal processes is a recurring issue.** Many municipalities use social media, local news, and hotlines to disseminate information yet it's not working.
- **State and federal environmental regulations can slow down debris removal:** *"We needed immediate haul-out operations, but the county landfill refused to accept storm debris. That was a huge challenge."*
- **Unclear guidance from FEMA can also slow down debris removal:** *"FEMA guidance changes all the time, and what works in one region doesn't always work in another. Sometimes, we have to explain to FEMA staff how their own process works"*

Health Concerns

- **Inadequate debris sorting and illegal dumping issues:** *"People dump debris illegally in canals and natural reserves, which becomes an environmental nightmare to clean up."*
- **Using public parks and green spaces as temporary debris sites raises environmental concerns and public dissatisfaction:** *"There's very little green space left, so we had to use a baseball field as a debris management site, which wasn't ideal."*

Environmental Issues

- **Delays in removing debris can create sanitation and pest problems:** *"When debris sits too long, it attracts pests, mold, and bacteria, creating a bigger health hazard."*
- **Debris removal workers and disaster survivors face high stress and emotional trauma:** *"People go through stuff like this... it's almost like a crime scene, where you see destruction everywhere. That takes a mental toll on workers too."*

Inequities

- **Available debris clearing assistance programs are limited to specific property types:** *"The biggest struggle is, residents reaching out and say 'hey, when will you come to my business or apartment?' and we have to tell them, you know, our program is for private residential debris only."*
- **Communication with Hispanic communities is particularly challenging.**

References

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