

New Madrid Seismic Zone Wicked Problems Roundtable Report

MIT Humanitarian Supply Chain Lab

Memphis, TN
January 29, 2025



MIT Humanitarian
Supply Chain Lab



MIT Center for
Transportation &
Logistics



Executive Summary

On January 29, 2025, the Supply Chain Analysis Network (SCAN), American Logistics Aid Network (ALAN), and the MIT Humanitarian Supply Chain Lab (HSCL) held a workshop in Memphis, TN with industry, academic, and government stakeholders to discuss the New Madrid Seismic Zone (NMSZ) as a “Wicked Problem”: that is, a “class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing.”¹

This report summarizes the key discussions, insights, and action items from this workshop which focused on building resilience, supply chain disruption, and emergency response coordination. The workshop brought together professionals from multiple sectors, including food supply, fuel distribution, freight logistics, and emergency management, to address the coordination challenges associated with catastrophic events such as the NMSZ and other large-scale disruptions in both the Midwest US and the rest of the country.



¹ Churchman, C. W. (1967). Free for all. *Management Science*, 14(4), 141-146.



Workshop Goals

This workshop was designed with the following goals in mind:

1. Explore the *challenges and opportunities* in managing catastrophic risks like those posed by NMSZ events, including their impact on supply chains, infrastructure, and adaptive systems.
2. *Foster collaboration* by identifying shared crisis-management priorities across sectors, highlighting differentiated needs, and building mutual understanding of support mechanisms and strategic actions.
3. *Build connections* and gain insights into proactive behaviors, strategic collaboration, and actionable steps for improving readiness and resilience in extreme risk scenarios.

Wicked Problems and Resilience Planning

The workshop opened with presentations from Jarrod Goentzel, PhD, who described supply chain resilience as a “wicked problem,” and Philip Palin, who introduced the group to the specific “wicked problem” of preparing for a New Madrid seismic event. Participants discussed the concept of “wicked problems” in disaster preparedness, emphasizing the unpredictable and evolving nature of crises and the necessity of flexible strategies rather than rigid plans. Notable takeaways included:

- Facilitating the resilience and performance of existing supply chains in a disaster relief scenario, rather than relying on separate, relief-specific supply chains.
- Strengthening both private-private and private-public relationships to bolster response capabilities.
- Transitioning away from a “war room” mindset to a more adaptive and dynamic approach.
- Recognizing that technology will fail in some scenarios and incorporating resilience strategies.
- The importance of redundancy and supply chain resiliency for long-term operational continuity.

Sector-Specific Breakout Sessions

Breakout sessions were then held for the food, fuel, and freight sectors, each addressing specific concerns and solutions related to disaster response. Each breakout group was tasked with identifying supply chain resilience problems to prioritize and high-priority actions that should be undertaken to engage these problems.

Food Sector

Key concerns:

- Gathering intel about the safety and status of employees, the community, and regional impacts.
- Communications with employees and state officials.
- Infrastructure damage, especially to roads and bridges that are necessary for accessing the affected areas for food deliveries and fueling generators.

Actions:

- Conducting rapid impact assessments ("windshield surveys").
- Strengthening communication strategies for employees and partners.
- Advocating for food and grocery stores, including in-store pharmacies, to be classified as critical infrastructure / critical functions.
- Exploring alternative transportation methods (e.g., barges, rail).

Fuel Sector

Key concerns:

- Communication breakdowns during crises.
- Reconnaissance and information gathering about the changing situation.
- Damage to pipelines, terminals, access, and other critical infrastructure.

Actions:

- Enhancing coordination with emergency management agencies (FEMA, DOE).
- Developing pre-disaster agreements for waivers and access.
- Deploying alternative communication methods (satellite phones, HAM radios).
- Dividing affected regions into quadrants for structured fuel distribution.



Freight Sector

Key concerns:

- Infrastructure safety and accessibility.
- Workforce and asset availability post-disaster.
- Fuel and power restoration.

Actions:

- Create common capacity to share and request assessment information
- Mobilize reconnaissance capability, e.g. satellite phones and images
- Establish alternate fuel supply options, e.g. locations, access prioritization, off-grid transactions

Cross-Sector Collaboration & Key Takeaways

The full group then reconvened to share learnings from their discussions and reinforced the importance of cross-sector coordination, particularly in the following areas:

- **Grid Restoration:** Recognized as a foundational requirement for recovery across all sectors.
- **Workforce Availability:** Challenges in reaching and retaining employees post-disaster. Employees may have personal, communications, housing, and/or transportation availability issues that impact their ability to return to work.
- **Emergency Communication:** Establishing bi-directional communication systems to push and pull critical information.
- **Re-entry & Waivers:** Addressing inconsistencies in state-by-state access permissions and creating a streamlined process.
- **Common Assessment Capability:** Build capability for rapid reconnaissance and platform for information sharing across sectors to inform adaptation.

Final Reflections & Next Steps

Participants reflected on key learnings and outlined actions to sustain momentum:

- **Strengthening Engagement:** Participants expressed interest in further engaging with key partners across sectors.
- **Revising & Exercising Plans:** Organizations recognized the need to regularly update and rehearse emergency response strategies.
- **Developing Clear Coordination Mechanisms:** Efforts will be made to standardize communication and information-sharing across industries.
- **Building a More Resilient Workforce:** Plans will include considerations for employee safety, housing, transportation, communications, accessibility, and re-entry processes, as well as addressing existing vulnerabilities such as food deserts.

Several recommended actions were brought forward by the group that could be taken in blue-sky settings to improve response in a crisis setting. These recommendations include:

- Availability of hours of service and weight waivers not only to trucks near the affected area, but also in the states where those trucks originated. Otherwise, smaller carriers may not be willing or able to send additional resources to respond in a crisis because they will not be able to meet their existing demand.
- Standardize the process for ensuring access into restricted areas.
- Continue to build relationships among private sector actors and with public sector supporting organizations.

Conclusion

The workshop provided a critical forum for inter-sectoral collaboration on disaster preparedness and response. Moving forward, continued engagement and structured coordination will be essential in mitigating the impact of future catastrophic events. Future discussions will focus on refining implementation strategies, fostering collaboration with government agencies, and ensuring the resilience of supply chains, infrastructure, and workforce readiness.

