Researchers at the University of South Florida have created a method to categorize and plan restoration of key infrastructure after natural disasters.

Natural disasters are inevitable and somewhat unpredictable. There have been multiple major hurricanes which affected North America. These disasters cause a large amount of damage to man made systems and critical infrastructures, requiring costly repairs. The damages from Hurricane Harvey and Irma, major hurricanes from a single season, cost an estimated $150 billion to date. This high cost is due in part to the large amount of man hours needed to assess and plan restoration. There is a need for a streamlined approach after a natural disaster to plan transportation infrastructure restoration and resource allocation.

USF inventors have created a comprehensive method to assess damages and resilience and efficiently plan repairs and reconstruction of transportation infrastructure. This novel methodology has superior decision making tools to select roads and/or infrastructure to be restored and allocate resources while taking in to account multiple factors. These factors can range from type of degradation or destruction, resource consumption per job, and urgency for entire system performance. This optimizes and prioritizes the resources, money, and time spent on repairing and reconstructing infrastructure systems. The method has great potential to improve transportation and infrastructure in a multitude of places after natural disasters.

**ADVANTAGES:**
- Efficient allocation of time and resources
- Fast decision making
- Optimization of multiple factors in capacity-flow transportation

**Decision Making Tool and Methodology for Transportation Systems and Infrastructure Restoration**

**Bi-Level Problem Formulation for Transportation Infrastructure Restoration Optimization After Disruptive Events Considering Unmet Demand in Resilience Measure**

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