Network Analysis to Identify Critical Links for Relief Activities During Extreme Weather Events Dataset

Dataset available at: https://digitalcommons.lsu.edu/transet_data/104/

(This dataset supports report **Network Analysis to Identify Critical Links for Relief Activities during Extreme Weather Events**)

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The related final report **Network Analysis to Identify Critical Links for Relief Activities during Extreme Weather Events**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/61730.

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Abstract: As one of the principal lifeline systems, transportation networks are crucial for evacuation and delivering essential resources and services during the response and recovery phases of extreme weather events and must remain intact to enhance regional resiliency. The conventional evaluation measures that estimate the vulnerability or criticality of road network based on travel time or link volumes do not capture the community impacts due to disruptions. This study seeks to develop a framework to evaluate road network infrastructure criticality during extreme weather events by introducing measures that evaluate the vulnerability of roads users, rather than the physical aspects of link importance. The research develops an innovative approach that integrates three important concepts including hurricane evacuation behavior, community impacts, and road criticality to identify the critical links. Results show that the critical links for vulnerable populations during evacuation do not always align with conventional link-based measures. This highlights the importance of using a performance measure that takes the social vulnerability of road users into consideration when identifying the criticality of a road network and planning for fortification of links to avoid irreversible consequences for vulnerable population groups. Furthermore, decision-making that considers the risks to different communities may lead to a more effective distribution of resources and help support a timely and safe evacuation from disaster events by strengthening the preservation of critical infrastructure links.

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Dataset description:
This dataset contains 1 file described below.

Datasets.xlsx:
The .xlsx and .xls file types are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine.

National Transportation Library (NTL) Curation Note:
As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (https://ntl.bts.gov/public-access) Section 7.4.2 Data, the NTL staff has performed ***NO*** additional curation actions on this dataset. NTL staff last accessed this dataset at https://digitalcommons.lsu.edu/transet_data/104/ on 2022-05-19. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.