EXECUTIVE SUMMARY - *updated FEBRUARY 2019*

USDOT Tier-1 University Transportation Center

CM² Cooperative Mobility for Competitive Megaregions

MEGAREGION EVACUATION TRANSPORTATION NETWORKS

Robustness of Transportation Networks under Megaregion Evacuations (#CM2-46)

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08/01/2018 - 09/30/2019

Project Information Form: http://sites.utexas.edu/cm2/files/2018/06/Year-3-Brian-Wolshon-Robustness-of-Transportation-Networks.pdf

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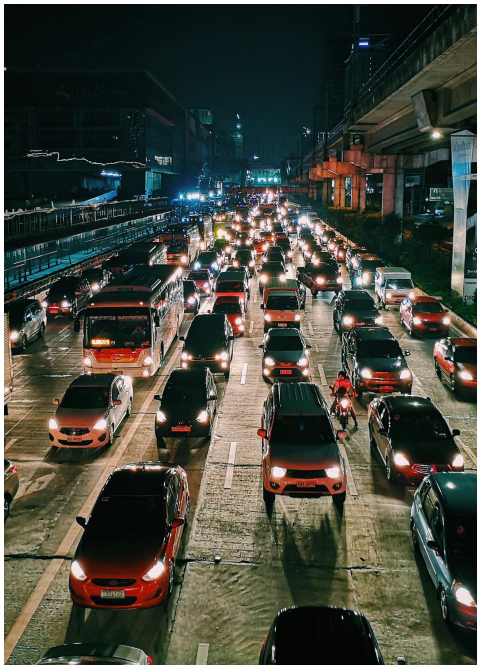
Evacuations, the movement of people from locations of imminent or potential danger to locations of safety, are a key element to protect the health and safety of the public in the event of disasters. Different factors related to the evacuation process could affect how fast an at-risk area is evacuated. These include overall demand, departure time, driving behavior, weather conditions, etc.

However, the characteristics of the at-risk area (and the surrounding areas) could also have a significant impact. The most obvious of these is the available network capacity. Additional factors such as network topology and population density can also be associated to network performance. Therefore, this research will identify and investigate possible associations between network performance with the network characteristics (e.g. available capacity, network topology), and surges of demand such as that observed in an evacuation.

Traffic simulation will be used to assess different scenarios using a small network for proof-of-concept and later scaled to megaregions. Based on the analysis, a network robustness measure will be developed with consideration of all the above mentioned characteristics. In addition, this research will investigate applications of the robustness measure in CAV environments.

Anticipated contribution to practice include the development of a robustness measure that can be implemented by emergency managers and transportation planner in general. In addition, this measure could serve for planning and collaboration among different jurisdictions across a megaregion in the event of large scale-evacuations.



This study was funded by the consortium of Cooperative Mobility for Competitive Megaregions (CM²). CM² is a USDOT Tier-1 University Transportation Center (UTC). CM²'s consortium partners include The University of Texas at Austin, Louisiana State University, Texas Southern University, and the University of Pennsylvania, with affiliates at Cornell University and Rutgers University.