Transit-Based Mobility and Accessibility During Hurricanes

Recipient/Grant (Contract) Number: University of New Orleans; University of Florida/69A3552348337

Center Name: Center for Transit Oriented Communities (CETOC)

Research Priority: Preserving the Environment

Principal Investigator(s):
Guang Tian; University of New Orleans; gtian@uno.edu; ORCiD: 0000-0002-4023-3912
Xiang 'Jacob' Yan; University of Florida; xiangyan@ufl.edu; ORCiD: 0000-0002-8619-0065

Project Partners: The PIs will reach out to Florida DOT and Louisiana DOT and the state emergency management departments to seek feedback on the research and promote technology transfer.

Project Funding: $103,000 (USDOT) + $51,500 (matching funds) = $154,500

Project Start and End Date: 10/1/2024 – 5/31/2026

Project Description: Transportation plays a critical role as a social determinant of health, especially during extreme events like hurricanes, where access to essential services and resources becomes a matter of life and death. However, transit-dependent (TD) populations, including carless, low-income, elderly, and disabled individuals, often face significant challenges evacuating and accessing healthcare and food during hurricanes. This project aims to address key knowledge gaps regarding the transportation challenges faced by TD populations and the effectiveness of transportation assistance offered by public and private entities in facilitating evacuations and addressing healthcare and food access needs during hurricanes. Through a mixed-method approach encompassing surveys, interviews, and statistical modeling, this study will investigate the impact of transportation-related factors on evacuation decision-making and healthcare/food access challenges. Two hurricanes (Hurricane Ida and Hurricane Idalia) which caused major harm to regions with distinct socioeconomic and built environment contexts will be studied. Survey and interview data will be collected, and geographically stratified sampling will ensure representation from TD populations. Descriptive and spatial analyses will be conducted to provide insights into evacuation decision-making and healthcare/food access challenges across different population groups, and statistical modeling will be conducted evaluate the importance of transportation-related factors in determining evacuation decisions and healthcare/food access challenges. Moreover, qualitative analysis of interview data will offer a nuanced understanding of how TD populations cope with transportation challenges during hurricanes and their perceptions of transportation assistance resources. By comparing results from Hurricanes Ida and Idalia, this research will enhance understanding of transportation challenges faced by TD populations and the effectiveness of transportation assistance in different geographic contexts. Findings will inform hurricane preparation and emergency response practices, ensuring that transportation-disadvantaged individuals receive adequate support to evacuate safely and access essential services during and after hurricanes. Ultimately, this study seeks to improve the

resilience of TD populations to hurricanes and other extreme events through evidence-based policy and practice recommendations.

USDOT Priorities: This project aims to advance knowledge on how transportation-factors (e.g., vehicle ownership, disability) constitute a major barrier for TD groups to evacuate before hurricanes and to access healthcare and food throughout hurricanes. It contributes to the sustainability focus area by researching solutions that make public transportation more resilient during natural disasters. The project can lead to the development of more robust and efficient emergency response plans, ultimately saving lives and improving the quality of life for transit dependent populations during hurricanes. This aligns perfectly with the USDOT's focus on *Safety*, *Economic Strength,* and *Resilience*.

Outputs: 1) A new survey instrument focusing on evaluating mobility and accessibility challenges faced by transit-dependent and transportation-disadvantaged populations during hurricanes. 2) A final technical report to outline our findings and provide practical insights for state and local DOTs, transit authorities, and emergency managers. 3) 1 - 2 manuscript(s) for publication and presentation.

Outcomes/Impacts: By focusing on the needs of transit-dependent and transportation-disadvantaged populations, the project will lead to the development of safer and more efficient emergency preparedness practices, evaluation planning, and post-disaster adaptation strategies. It will enhance the reliability of transportation systems in extreme weather conditions and promote long-term community resilience. The research team will disseminate research findings to various stakeholders, including Florida and Louisiana emergency managers, state and local DOTs, and transit agencies, in the hope of promoting research implementation. The PIs and their students will also present the work at international/national conferences such as ACSP and TRB annual meetings.

Final Research Report: (Link to be provided after project completion).